Hunter Power Project Response to Submissions

Submissions Report

| Rev1

4 August 2021

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Contents

Executive Summary

Background and introduction

This Submissions Report has been prepared to address submissions made on the Environmental Impact Statement (EIS) (Jacobs, 22 April 2021) prepared for Snowy Hydro Limited for the Hunter Power Project (the Proposal). This report summarises all submissions received and provides Snowy Hydro's response to the submissions, supplemented by updated technical studies or addenda where appropriate to support the response. An update of stakeholder consultation activities undertaken during public exhibition and planned future consultation activities is also provided.

A total of 261 submissions were uploaded to the NSW Department of Planning, Industry and Environment's (DPIE) website from public authorities (government organisations), organisations and members of the public. An additional 47 representations were provided to Snowy Hydro and contained no additional issues. All 261 submissions have been considered in this Submissions Report. Submissions were received from:

- 14 public authorities
- 26 organisations
- 221 members of the public.

The key issues raised, and clarifications sought in relation to the EIS are addressed in this Submissions Report.

Public Authority Submissions

A total of 14 public authority submissions were received, all of which were comments on the EIS or the Proposal with some recommendations for clarification or additional assessment. The public authority requests can be found on DPIE Major Project's website, and detailed responses are contained in Section 4 of this report.

Snowy Hydro has continued to engage with public authorities during the preparation of this Submissions Report to explore the comments and to confirm that Snowy Hydro's approach to responding to issues aligns with expectations.

The updated technical studies undertaken on behalf of Snowy Hydro to support the Submissions Report include:

- Biodiversity Development Assessment Report Addendum detailing some minor updates and clarifications
- Aboriginal Cultural Heritage Assessment Addendum providing a provisional procedure for archaeological monitoring
- Surface Water Quality and Aquatic Ecology Addendum addressing some additional water quality enhancement measures
- Groundwater Impact Assessment Addendum including dewatering and drawdown assessments during construction
- Revised Air Quality Impact Assessment considering including further details of emissions inventories, meteorology, applicable standards, cumulative impacts and ozone assessment
- Revised Noise and Vibration Impact Assessment including additional background noise monitoring, review of noise catchments and assessment criteria and further consideration of cumulative impacts.

These addenda and updated technical reports have been undertaken to clarify and respond to comments raised by public authorities as well as some specific issues raised in public and organisation submissions. Minor revisions have been made to the noise and Aboriginal heritage environmental management and mitigation measures. No

changes to the Proposal description have been nominated as a result of the Submissions phase. Further clarifications regarding hydrogen readiness have been provided in consultation with DPIE.

Public and Organisation Submissions

The most prevalent issue raised in public and organisation submissions related to the use of fossil fuel rather than renewable energy and the Proposal's greenhouse gas emissions. The use of grid-scale batteries and pumped hydro-electricity were considered by some submissions as more desirable alternatives to open cycle gas turbines to provide dispatchable electricity.

Another common theme was that the Proposal is not required as there is no significant shortfall forecast in electricity supply. The project was also considered by some respondents as a 'waste of taxpayer's money' and that government (Snowy Hydro is 100% owned by the Federal government) should not fund power generation developments that could otherwise be provided by the private sector. Other concerns raised related to the effect of operational noise and air pollution impacting of the health of people in the vicinity of the Proposal, and lastly that the Proposal should be hydrogen ready.

Snowy Hydro recognise the concerns raised by the public and organisations and understand the importance of providing informative responses. The EIS and its supporting technical studies contain considerable detail on these issues, this Submissions Report provides further information where new issues were raised or clarifications on issues already addressed.

The primary function of the Proposal is to firm variable renewable energy (solar and wind in particular) through the provision of dispatchable electricity, and is therefore a key component in the transition of the NEM to a low carbon system within which the majority of electricity is provided by renewable energy. Open cycle gas turbine generation capacity, such as that proposed, provides dispatchable electricity required to do so. The Proposal provides flexible and longer duration firming capacity than other available technologies, such as grid-scale batteries, which currently have limited energy capability. As such open cycle gas turbines are a necessary technology in the transition and future of the NEM. It's considered that gas-fired generation and battery storage can provide complimentary benefits to the National Electricity Market (NEM), and accordingly the Proposal supports the further development of renewable energy. Recently AEMO has publicly stated their support for the development of firming plants, acknowledging that dispatchable gas-fired generation of this nature will unlock many multiples of low-cost renewable generation capacity.

Although a number of submissions queried there was a sufficient shortfall in electricity for this Proposal, the capacity proposed of up to 750 megawatt (MW) is within the capacity shortfall forecast by Australian Electricity Market Operator (AEMO) in the Interim Reliability Measure and the AEMO Integrated System Plan (AEMO, 2020b). Addressing this shortfall is required to enable reliable operation of the NEM and reliable electricity supply to consumers. The increasing reliability shortfalls in NSW shown in the 2020 AEMO Electricity Statement of Opportunities (154MW in 2023-24 increasing to 2,045MW by 2029-30) reflect issues that include the closure of Liddell Power Station, the absence of Humelink, and the reducing reliability of coal power stations.

With regards to funding of the Proposal by the Federal government. This will be achieved with an equity contribution, and as Snowy Hydro and the Proposal are100% owned by the Federal government, returns from the Proposal that accrue to Snowy Hydro will accrue to the Australian taxpayer. Over the past 7 years Snowy Hydro paid in excess of $1.5 billion in shareholder dividends to the Federal government, and it is anticipated that Snowy Hydro will continue to return a 70% dividend over the medium term. As such, the equity contributed by the Federal government is expected to be progressively returned to the taxpayer.

The most common potential local environmental impacts associated with the Proposal that were identified in submissions related to noise and air emissions. Revised background noise monitoring was conducted and has resulted in a small reduction in the operational noise criteria at some locations. Snowy Hydro is working with the

potential equipment suppliers to minimise these impacts to the greatest extent practical and will comply with noise criteria even under adverse weather conditions. The power station will also implement 'best practice' gas turbine engineering technology to minimise NOx emissions and minimise air quality impacts. Modelling demonstrated that operation of the Proposal, whether fuelled by natural gas or diesel, is not expected to cause adverse air quality impacts in the vicinity of the Proposal Site nor in the wider Lower Hunter region.

The Proposal is also being developed to use gas and hydrogen blended fuel at the levels provided by the gas transmission network, with capability to increase that capacity should a logistical solution to hydrogen provision become viable. As such the Proposal is being developed as 'hydrogen ready' and is aligned with the NSW Government Electricity Infrastructure Roadmap and NSW Government Future of Gas Statement.

The responses to organisation and public submissions are provided in detail in Section 5 of this report.

Conclusion

Snowy Hydro is committed to implementing best practice environmental management in the development of the Proposal, and considers its integration into the broader Snowy Hydro asset portfolio makes a significant contribution to supporting the future operation and reliability of the NEM and enabling increasing penetration of variable renewable electricity.

This Submissions Report will be considered, in addition to the EIS and associated technical studies, by the Minister for Planning and Public Spaces in determining whether to approve the Proposal, and if so, the conditions of approval.

All submissions were received electronically through the DPIE Major Project's website, where they are available for viewing: https://www.planningportal.nsw.gov.au/major-projects/project/40951.

Appendix A details the public and organisation submissions in alphabetical order together with submission ID numbers, and details of where in this report the submission has been addressed.

Glossary of terms and abbreviations

Terms and abbreviations	Description and definitions
AAR	Aboriginal Archaeological Report
ACC	Australian Competition and Consumer Commission
ACHAR	Aboriginal cultural heritage assessment report
AEMO	Australian Energy Market Operator
AEP	Annual Exceedance Probability
AHIMS	Aboriginal Heritage Information System
AIP	Aquifer interference policy
APZ	Asset Protection Zone
AQIA	Air Quality Impact Assessment
BAL	Bushfire Attack Level
BAM	Biodiversity Assessment Method
BAR	Bushfire Assessment Report
BAT	Best Available Techniques
BC Act	*Biodiversity Conservation Act 2016*
BCD	Biodiversity and Conservation Division
BDAR	Biodiversity Development Assessment Report
BFDB	Bush Fire Design Brief
CASA	Civil Aviation Safety Authority
CCGT	Combined Cycle Gas Turbine
CHMP	Cultural Heritage Management Plan
CICL	Cast Iron Cement Lined
CLM Act	*Contaminated Land Management Act 1997*
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CSSI	Critical State Significant Infrastructure
CWG	Community Working Group
DAWE	Department of Agriculture, Water and the Environment
dB(A)	Decibel: A-weighted, approximates the sensitivity of the human ear
DLE	Dry Low Emission
DLN	Dry Low NOx
DPI	Department of Primary Industries

Terms and abbreviations	Description and definitions
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	Environment protection Authority (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESD	Ecologically Sustainable Development
ESOO	Electricity Statement of Opportunities
FAQs	Frequently asked questions
Gas lateral	Branch pipeline to connect the main Sydney-Newcastle gas pipeline to the Proposal Site (not yet built)
GDE	Groundwater Dependent Ecosystems
GHG	Greenhouse gas
GLC	Ground level concentrations
GRS	Gas Receival Station
GW	Gigawatt
ha	hectare
HIPAPs	Hazardous Industry Planning and Assessment Papers
HNEPH	Hunter New England Population Health
HWC	Hunter Water Corporation
Hz	Hertz
ID	Identifier
IEA	International Energy Agency
ISP	Integrated System Plan
JGN	Jemena Gas Networks
kV	kilovolt
LAFMax	The maximum Sound Level with 'A' Frequency weighting and Fast Time weighting during the measurement period.
LBL	Load Based Licensing
LCP	Large Combustion Plant
LEP	Local Environment Plan
LNG	Liquified Natural Gas
ML	Megalitre
MW	Megawatt
MWh	Megawatt-Hour

Terms and abbreviations	Description and definitions
NCAs	Noise Catchment Areas
NCC	National Construction Code
NEM	National Electricity Market
NEPM	National Environment Protection Measure
NGER	National Greenhouse and Energy Reporting
NIA	Noise Impact Assessment
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
NPI	Noise Policy for Industry
NRAR	Natural Resources Access Regulator
NSW	New South Wales
NZE	Net Zero Emissions
O_3	Ozone
OCGT	Open Cycle Gas Turbine
OEM	Original equipment manufacturers
OSD	On-site detention
PAH	Polycyclic Aromatic Hydrocarbons
PBP	Planning for Bush Fire Protection
PCT	Plant Community Types
PM	Particulate matter
$PM_{2.5}$	Airborne fine particles 2.5 micrometres or less in diameter
PMF	Probable Maximum Flood
ppb	Parts per billion
RAP	Remedial Action Plan
RAPs	Registered Aboriginal Parties
RBL	Rating Background Level
REF	Review of Environmental Factors
RERT	Reliability and Emergency Reserve Trader
RFS	Rural Fire Service
SAII	Serious and Irreversible Impact
SCONOx™	Catalytic absorption system for natural gas fired power plants
SCR	Selective Catalytic Reduction
SEARs	Secretary's Environmental Assessment Requirements

Terms and abbreviations	Description and definitions
SEPP	State Environmental Planning Policy
SEPP	State Environmental Planning Policy
SNCR	Selective Non-catalytic reduction
SO_2	Sulphur dioxide
SRD	State and Regional Development
t	tonnes
TfNSW	Transport for NSW
TJ	Terajoule
TN	Total nitrogen
TP	Total phosphorus
TSS	Total Suspended Solids
VOCs	Volatile Organic Compounds
WWTP	Wastewater Treatment Plant

1. Introduction

1.1 Proposal overview

Snowy Hydro Limited (Snowy Hydro) propose to develop an open cycle gas fired power station near Kurri Kurri, NSW (the Proposal) – refer to Figure 1.1. The Proposal involves the construction and operation of a power station, electrical switchyard and associated supporting infrastructure – refer to Figure 1.2. The power station is expected to have a generation capacity of up to approximately 750 megawatts (MW), which would be generated via two industrial frame heavy duty F-Class gas turbine units in open cycle gas turbine configuration. The gas turbines would primarily be fired on natural gas with the use of diesel fuel as a backup.

The Proposal will operate as a "peak load" generation facility supplying electricity at short notice when there is a requirement in the National Electricity Market (NEM). The Proposal would connect into Ausgrid's existing 132 kV electricity overhead transmission infrastructure located adjacent to the Proposal Site. The Proposal is being designed and approval is being sought to operate at a capacity factor of up to 10 per cent on natural gas and up to two per cent on diesel in any given year. However, it is expected that likely operations would result in a capacity factor of about two per cent in any given year.

For gas operation, the Proposal would also require a new gas lateral pipeline and gas receiving station. These would be developed, constructed, and operated separately to this Proposal by a third party, subject to a separate environmental assessment and planning approval. Gas would be supplied to the Proposal from Australia's existing gas fields that feed Sydney and Newcastle via the existing NSW gas transmission system. The proposal is being designed as 'hydrogen ready' to enable use of hydrogen at a level as provided in the gas transmission system, which is expected to be up to 10 per cent.

This Submissions Report has been prepared to address submissions made during the exhibition period on the Environmental Impact Statement (EIS) (Jacobs, April 2021) prepared for the Proposal.

1.2 Proposal objective

The objective of the Proposal, as detailed in E.8 of the EIS, is to provide dispatchable capacity and other services into the NEM, and to meet demand when the needs of electricity consumers are highest. Although a combination of grid-scale batteries and fast-start gas turbines could provide these capabilities, gas fuelled peaking generation is considered to be best suited to providing dispatchable capacity over short and extended periods of time, providing an increased level of energy reliability to the NEM primarily through provision of firming capacity over extended periods, as and when required. The Proposal would operate in conjunction with the various forms of energy storage (such as pumped hydro and grid-scale batteries), as these are further developed in the NEM.

Without dispatchable and firming generation or grid-scale storage, a power system that is solely reliant on intermittent renewable generation will have unacceptable levels of customer supply failure. Therefore, the Proposal is a vitally important component in the transition to renewable energy and would ultimately benefit the environment and future generations by facilitating the displacement of carbon-based electricity generation.

Proposal Site
Detention basin
Existing electrical transmission easement
Motorway
Main roads
Roads
Railway
Waterbodies

1 Proposed Switchyard Area
2 Proposed Plant Area
3 Proposed Buffer Area

0 250 500 m

1:12,000 at A4
Coordinate System: GDA2020 MGA Zone 56

Data sources:
Jacobs
Metromap (Aerometrex) 2020
NSW Spatial Services

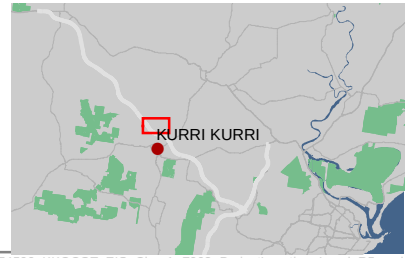

Figure 1-1 Proposal location (local)

snowy hydro renewable energy Jacobs

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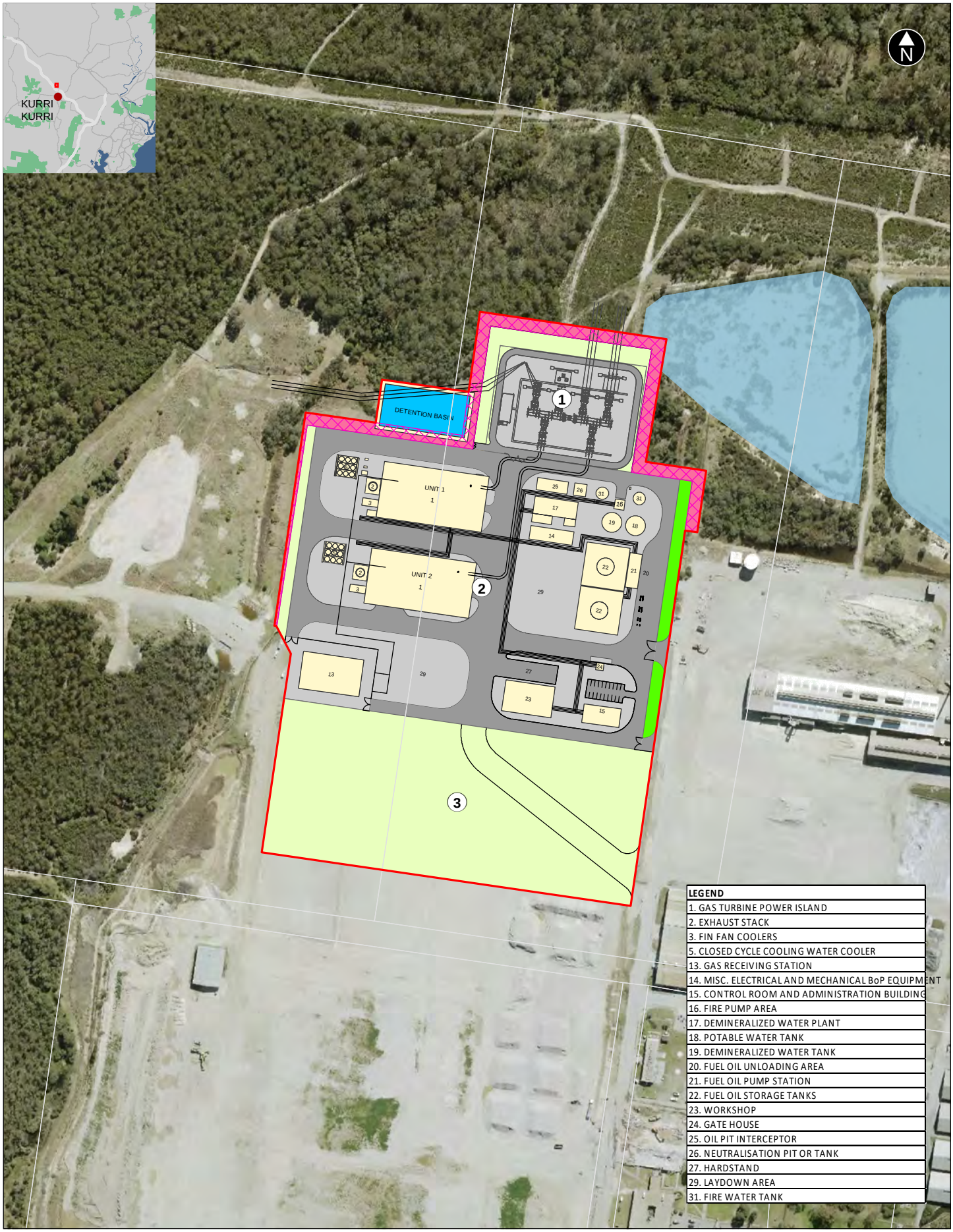


Proposal Site
Asset protection zone
Detention basin
Sealed roadway
Crushed rock
Landscaping
Grass / Road base
Existing waterbodies
Existing cadastre
1 Proposed Switchyard Area
2 Proposed Plant Area
3 Proposed Buffer Area

0 100 200 m

1:4,000 at A4
GDA2020 MGA Zone 56

Data sources:
Jacobs
Metromap (Aerometrex) 2020
NSW Spatial Services

Figure 1-2 Proposal Site Layout

1.3 Assessment process

1.3.1 State

On 16 December 2020 the Minister for Planning and Public Spaces declared that the Proposal is Critical State significant infrastructure (CSSI) under Section 5.13 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). As such, the Proposal is considered to be "essential for the State for economic, environmental or social reasons", and is listed under clause 16 and Schedule 5 of State Environmental Planning Policy (State and Regional Development) 2011. The land use and permissibility requirements under the Cessnock Local Environment Plan 2011 (LEP) therefore do not apply to the Proposal, and hence it is to be assessed and determined under Part 5, Division 5.2 of the EP& A Act. An EIS was prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the DPIE on 5 February 2021.

1.3.2 Commonwealth

The Proposal was referred to the Commonwealth Department of Agriculture, Water and the Environment (DAWE), under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). On 30 March 2021 DAWE notified Snowy Hydro that the Proposal is a controlled action, and requires Australian government approval, in accordance with the EPBC Act. The DAWE concluded that, based on the information provided in the referral, "the proposed action is likely to have a significant impact on the environment, including but not limited to:

- generating emissions and pollutants which may impact air quality, and
- potentially disturbing contaminated and/or acid-sulphate soils in the proposed action area with potential flow on impacts to surface or ground water."

The Proposal is therefore being assessed in accordance with the bilateral agreement made between the Commonwealth and the NSW Government, and the EIS therefore satisfies the environmental assessment requirements under the EPBC Act.

1.3.3 EIS public exhibition

The EIS was placed on public exhibition for a period of 28 days from 13 May 2021 to 9 June 2021. During the exhibition period, 261 submissions were provided to the DPIE from the public, organisations and public authorities (government organisations).

An additional 47 representations were received after the exhibition period. No new issues were raised, clarifications to the representations are provided in the organisation and public responses (see Section 5).

No additional submissions were received that were not addressed in this report. In total, 261 submissions have been considered in this Submissions Report. All submissions were received electronically through the DPIE Major Project's website, where they are available for viewing:

https://www.planningportal.nsw.gov.au/major-projects/project/40951

The EIS was also made available on Snowy Hydro's project website and a hard copy was made available to the public at Cessnock City Council's offices. Appendix A details the submissions received by respondent type and submission ID and indicates where in this report the submission is addressed.

1.3.4 Report purpose

In accordance with Section 5.17(6)(a) of the EP&A Act, this Submissions Report has been prepared to identify and address issues raised within the submissions received on the Proposal during the exhibition period for the EIS. This Submissions Report has also considered the additional representations that were received following the statutory exhibition period. Table 1.1 outlines the structure of this report

Table 1.1: Structure of this Submissions Report

Chapter number	Description
1	Provides an introduction and purpose of this report
2	Provides an update of consultation activities and planned future consultation activities
3	Summarises all submissions received
4	Public authority response to submissions
5	Organisation and public response to submissions
6	Conclusion

2. Stakeholder consultation

2.1 Consultation undertaken during public exhibition

Consultation has been undertaken with various stakeholders to discuss the findings of the EIS and gain a greater understanding into the submissions made. This has included ongoing liaison with State agencies to ensure their submissions have been understood and adequately addressed in this Submissions Report or through the updated assessments and addendums.

The EIS was exhibited for 28 days from 13 May 2021 to 9 June 2021, inclusive. During the exhibition period, members of the Working Group were provided with links to the exhibition documents and encouraged to get in contact with the project team with any questions. Members were also invited to meet again in the second week of the exhibition period to discuss any comments or issues they may have on the final assessment documents. Members did not raise any additional outstanding issues.

2.2 Future consultation

Snowy Hydro is committed to ongoing consultation and have engaged a Community and Local Engagement Manager to support stakeholders prior to and during construction of the Proposal. Communication tools are described below in Table 2.1.

Table 2.1: Communication tools during Proposal construction

Communication tool	Description
Continuation of Proposal webpage	The Proposal webpage will be maintained and will provide stakeholders and the community access to at least the following information: ▪ a description of the Proposal ▪ maps showing the Proposal's location in both its local and regional context, and at a scale that locates properties likely to be impacted ▪ the rationale or reason for the Proposal ▪ the Proposal's strategic planning context ▪ the relevant matters considered in the EIA and response to submissions ▪ the point of contact for the community and other stakeholders to obtain more information if needed ▪ how feedback from the community and other stakeholders has been sought and will be addressed. ▪ frequently asked questions (FAQ) ▪ library of documents relevant to the Project including planning documents, determination reports, project updates and news.
Continuation of Proposal email	A dedicated Proposal inbox for stakeholders and the community to contact the Proposal team by email and for correspondence to be issued. Opportunities to register via distributed Proposal post card at Proposal approval.
Continuation of Proposal hotline (phone)	A dedicated free-call 1800 number for stakeholders to contact the Proposal team. The number is 1800 570 529.

Communication tool	Description
Briefings	Formal meetings with a range of critical stakeholders including local Members of Parliament and Local Government councillors as required
Proposal Contact Cards	Business cards with the Proposal name and contact details for enquiries and complaints. Provided to site staff to give stakeholders when approached by community members.
Letters	Addressed mail containing information, clarification, response or request to a particular household, business or individual
Advertising	Paid notices in local newspaper publications to advise of Proposal updates, opportunities for community sponsorship and donations and how stakeholders can contact the Proposal team
Media releases	Proactive media statements to provide Proposal updates, address concerns and clarify information
Meetings	One-on-one or small group meetings to discuss issues and concerns in detail.
Doorknock	Members of the Proposal team go door to door to speak with nearby residents and businesses to provide them with communication collateral
Letterbox drop	Unaddressed mail containing information about the Proposal
Proposal updates (including monthly construction update)	Updates to communicate with subscribers, customers, community, usually delivering information direct to mailboxes, email inboxes or made available online
Pop-up information stalls	A pop-up is an engagement stand set up at community events, shopping centres and key locations to engage with stakeholders face-to-face, should NSW Health orders allow
Presentations	A presentation delivered to a group of interested persons, club, or committee on request or by invitation
Proposal fact sheets	Key Proposal information on issues such as: ▪ noise ▪ traffic ▪ air quality ▪ environmental controls ▪ workforce and local business opportunities ▪ FAQs
Site tour	An escorted tour of the Proposal Site will assist interested stakeholders to understand how the Proposal is located geospatially and fits into the surrounding environment
Community Working Group	A structured group of community and stakeholder representatives has been established and while no further meetings are planned post Proposal approval, the group can be a source of feedback, community contact and message testing. Members can continue to act as a conduit between the broader community and the Proposal

Communication tool	Description
Time-lapse cameras (construction tool)	Time-lapse is a photography technique that captures single frames of photography at intervals and when viewed together appear to "speed up" changes to its subject matter such as during construction of a Proposal
Live Traffic Updates	To advise of any road closures
Variable message signs	Electronic variable message sign during major construction activities including traffic impacts to provide advanced notice to road users of traffic changes. At least seven days prior to major changes to traffic and access arrangements
Community signage	To be installed on gate entries to construction site, providing Proposal contact details, if required

3. Submissions received

3.1 Respondents

The DPIE received a total of 261 submissions in response to the EIS during the 28-day public exhibition period (13 May 2021 to 9 June 2021). An additional 47 representations were received outside of the exhibition period, no new issues were raised. Clarification of the additional representations are included in the organisation and public responses (see Section 5).

In total, 261 submissions have been considered in this Submissions Report. Appendix A details the submissions received by organisations and the public and indicates where in this report the submission is addressed.

3.2 Overview of issues received

All submissions received were reviewed and categorised by the primary and secondary issue raised. Each issue raised by public authorities have been responded to separately (see Section 4). Organisational and public submission responses have been grouped together by key issue (see Section 5).

3.2.1 Public authority submissions

A total of 14 public authority submissions were received, all of which were comments on the EIS or the Proposal. Each authority's issues are summarised below, while their full comment can be found on DPIE Major Project's website: https://www.planningportal.nsw.gov.au/major-projects/project/40951.

3.2.1.1 Crown Lands

Crown Lands confirmed that the Proposal does not impact on any Crown land. Crown Lands have no further comment.

3.2.1.2 Cessnock City Council

Cessnock City Council confirmed that the council has no objection to the Proposal and look forward to their continued involvement with the project's development. Cessnock City Council has no further comment.

3.2.1.3 TransGrid

TransGrid confirmed that the Proposal connection works pertain to Ausgrid's easement and therefore TransGrid is not affected by the Proposal. TransGrid has no further comment.

3.2.1.4 Biodiversity and Conservation Division of the DPIE

The Biodiversity and Conservation Division (BCD) has requested further clarification to adequately assess the potential impacts of the Proposal on biodiversity and flooding.

3.2.1.5 Heritage NSW

Heritage NSW have requested further clarification in relation to the management and mitigation measures included in the Aboriginal Cultural Heritage Assessment Report (ACHAR).

3.2.1.6 NSW Rural Fire Service

The NSW Rural Fire Service (NSW RFS) advised that an amended bushfire report must be provided to provide further information in relation to Sections 8.3.1, 8.3.9 and Appendix 1 of *Planning for Bush Fire Protection 2019* (PBP) (NSW RFS, 2019).

3.2.1.7 Civil Aviation Safety Authority

Once a vendor is selected and the Proposal design is finalised, the Civil Aviation Safety Authority (CASA) recommends that the Proponent conduct an additional plume study for which CASA, Defence and Airservices Australia will determine appropriate mitigation measures as required. CASA supported the level of engagement undertaken with stakeholders and has no further comment.

3.2.1.8 Department of Defence

Defence have requested the implementation of additional mitigation to account for vertical plume velocities of the Proposal. Defence concurs with CASA's request in relation to the additional plume study when a vendor is selected, and the Proposal design is finalised.

3.2.1.9 DPIE Water and Natural Resources Access Regulator

DPIE Water and Natural Resources Access Regulator (NRAR) have requested the implementation of pre and post approval recommendations in regard to groundwater take, minimal impact considerations of the NSW Aquifer Interference Policy (AIP), controlled activities on waterfront land and the potential disturbance of acid sulphate soils.

3.2.1.10 Hunter Water Corporation

Hunter Water Corporation (HWC) has provided servicing advice. The servicing advice provided by HWC may be subject to change prior to the Proposal proceeding.

3.2.1.11 Environment Protection Authority

The Environment Protection Authority (EPA) have requested additional information to adequately assess potential impacts to air quality and noise.

3.2.1.12 NSW Health

Hunter New England Population Health (HNEPH) has requested additional response to the management of air quality, noise and issues which may have an impact on public health and advised the benefit of continued community engagement.

3.2.1.13 Transport for NSW and Roads and Maritime Services

Transport for NSW (TfNSW) and Roads and Maritime Services have no objection as it is considered that there will be no significant impact to the nearby classified (State) road network.

3.2.2 Organisation and public submissions

A total of 26 organisations made submissions on the EIS. Of the submissions from organisations, 24 are objecting, one is commenting, and one is supporting.

A total of 221 public submissions were received regarding the EIS. Of the public submissions, 217 are objecting, three are commenting and one is supporting. Of the public submissions received, 198 are from NSW and 23 are from other States and Territories, including one international submission. Only four of the submissions received are from the Proposal's postcode of 2326.

The most common issues raised by organisations and the public centred around project justification, renewable energy and climate change, and potential noise and air pollution impacts. The specific issues aggregated by topic area and their responses are provided in Section 5.

4. Public authority response to submissions

4.1 Biodiversity and Conservation Division of the DPIE

BCD requested further clarification in relation to site constraints including biodiversity and flooding. The BCD's key issues and a response addressing each key issue is provided below.

Biodiversity

An addendum to the Biodiversity Development Assessment Report (BDAR) which includes a few minor updates, as outlined below, in response to BCD's submission is provided in Appendix B and has been uploaded to the online portal.

Comment 1

Commentary and results are provided for all species except bush stone curlew, eastern pygmy possum, koala and pale headed snake. BCD assumes that these were not recorded given that there is no 'species' credit obligations for these species. BCD recommends the accredited assessor update Section 5.2.6 of the BDAR to include the results of all the targeted threatened fauna surveys to ensure continuity of the results section.

BCD recommends the accredited assessor update Section 5.2.6 of the Biodiversity Development Assessment Report to include the results of all the targeted threatened fauna surveys.

Response 1

The Bush Stone Curlew (*Burhinus grallarius*), Eastern Pygmy Possum (*Cercartetus nanus*), Koala (*Phascolarctos cinereus*) or the Pale-headed Snake (*Hoplocephalus bitorquatus*) were not detected from targeted surveys conducted in the Study Area. Given the range of techniques and survey effort deployed for the size of the site, the species are considered absent from the Proposal Site. Therefore, species polygons have not been prepared and no 'species' credit obligations are required (see Appendix B).

Comment 2

BCD does not clearly understand why the proposal could not be moved 100 – 150 meters south to avoid most impacts associated with the mapped important habitat areas and biodiversity in general, unless the land to the south is too far from the connection to gas lateral pipeline, is not appropriately remediated or is required as part of another development. This area does not appear to contain significant biodiversity values and would easily avoid areas of mapped important habitat, and thus not trigger serious and irreversible impacts (SAII). BCD recommends the accredited assessor justify why the proposal cannot avoid areas of mapped important habitat for the regent honeyeater, and thus not trigger SAII.

BCD recommends the accredited assessor justify why the proposal cannot avoid areas of mapped important habitat for the regent honeyeater, and thus not trigger serious and irreversible impacts.

Response 2

Based on available literature and current knowledge of habitat preferences for the Regent Honeyeater species in the Hunter Valley, the habitat on the Proposal site would not be considered important, despite overlaying a portion of the important habitat mapping, as it contains no key foraging species, with the exception of low numbers of stringybark. There are no significant impacts predicted to foraging habitat for the Regent Honeyeater because of the minor clearing required for this Proposal (refer to Appendix B). Additionally, Section 9.1 of the

BDAR, Appendix B of the EIS, includes a detailed assessment of SAII as per the BAM and concluded that the Proposal is unlikely to result in a significant impact, reduce the population size or decrease the reproductive success of the Regent Honeyeater.

Moving the Proposal Site south was considered, and is not considered viable as it would extend the connection distance to the powerlines, and reduce the distance between the power station and the closest residences which would mean the requirements of the Industrial Noise Policy may not be met for those residences. Accordingly, it is not possible to move the entire development 100 – 150 meters south. During detailed design consideration will be given to adjusting the northern section of the Proposal Site to further minimise impacts on biodiversity values if possible, through sizing of the assets to be located in those areas. However, at this stage consistent with all other specialist studies and sections of the EIS, the assessment of biodiversity impacts and associated offsets are based on the realistic worst-case disturbance area.

Comment 3

BCD recommends the accredited assessor submits the credit calculator via the NSW Biodiversity Accredited Assessor System prior to the submission of response to submissions report to finalise BCD's assessment of the BDAR.

BCD recommends the accredited assessor submits the credit calculator via the NSW Biodiversity Accredited Assessor System prior to the submission of response to submissions report.

Response 3

Snowy Hydro accepts this recommendation. The credit calculator via the NSW Biodiversity Accredited Assessor System was submitted online and confirmation from the BCD was sought via email (22 June 2021).

Comment 4

BCD recommends the accredited assessor include the plot field data sheets in the BDAR to ensure consistency between the data sheets, the BDAR and the credit calculator.

BCD recommends the accredited assessor includes the plot field data sheets in the BDAR.

Response 4

Snowy Hydro accepts this recommendation. The plot field data sheets have been submitted online and confirmation from the BCD was sought via email (22 June 2021).

Flooding

Responses to the issues raised with respect to flooding are detailed below, an addendum has not been prepared.

Comment 5

The determination of nil flood impact made in the hydrology report should be justified. If the development encroaches into the flood plain, a flood impact assessment should be prepared. The on-site detention (OSD) pond appears to encroach on the 1% Annual Exceedance Probability (AEP) flood extent and appears to be partially inundated in the Probable Maximum Flood (PMF). The impact of flooding on the proposed OSD basin should also be assessed. Table 3.1 in the Hydrology report also shows incorrect calculations for fraction impervious on site (the total is greater than 100%), however; it appears to indicate that the proposal will result in an increase in impervious coverage from 10% current to 95% proposed. This is considered to be a significant

change and will result in not only increases in the rate of runoff, but also the volume and frequency of runoff from the site

BCD recommends that the determination of nil flood impact made in the hydrology report should be justified. If the development encroaches into the flood plain, a flood impact assessment should be prepared. The impact of flooding on the proposed OSD basin should also be assessed.

Response 5

Figure 4-6 of Appendix J of the EIS shows the mapped flood extents encroach onto the stormwater detention basin area of the Proposal Site by a small margin (about 15 square metres in the 1% AEP event and 200 square metres by the PMF). The hydrology and flooding assessment clearly state that the proposed building platform levels are above the 1% AEP and PMF levels and hence there is no need for any filling to raise any area of the Proposal Site. The areas of the Proposal Site within the flood extents are proposed bushfire asset protection zones (APZ) and a portion of the proposed detention basin. Therefore, the project would not result in loss of floodplain storage or flow obstruction.

The detention basin will be constructed mostly in cut and the basin will have flood immunity up to the 1% AEP level. Peak flooding is caused by backwater from the Hunter River into Wentworth Swamp and up into the vicinity of the Proposal Site, with a downstream floodplain area of about 19 square kilometres in the 1% AEP event. The loss of floodplain storage, if any, due to the possible encroachment of the toe of the basin and discharge structure would result in a negligible increase in 1% AEP flood level. Regarding the PMF, the proposed detention basin would be allowed to be inundated in the PMF with no loss of floodplain storage. Based on these negligible impacts, further detailed flood impact assessment is not warranted.

In relation to flooding impact on the operation of the proposed detention basin, the basin would be constructed to 1% AEP flood immunity and hence its functionality would not be impacted by flood events up to the 1% AEP event. This is an appropriate level of flood immunity for such a facility. If floodwater impedes free drainage of the basin through its low flow pipe, basin flows would overflow via a high flow bypass weir.

Table 3.1 in the Hydrology Report (Appendix J of the EIS) is correct. It shows the percentage impervious for each of the three areas of the Proposal Site. The first row of the table shows the size of each of the three areas shown in Figure 1-3. Therefore, it is incorrect that an "increase in impervious coverage from 10% current to 95%" is proposed.

Comment 6

The groundwater assessment indicates that ground water was found between 1.2 m and 4.0 m below ground in various parts of the site. The proposed on-site detention system requires excavation between 3 and 3.5 m, and the groundwater assessment outlines that issues with groundwater ingress into excavations will be dealt with as a part of detailed design. The stormwater detention basin is shown with battered slopes which will not be able to be constructed below the water table. In addition, the system is proposed to be a permanent part of the water management on site and it may not be able to achieve this function if it is located below the water table level.

There has been no groundwater assessment carried out where the on-site detention system is proposed to be located. Figure 5.1 of the EIS shows the likely interaction between the footings of the development and the water table during construction. This figure does not show the foundations for the turbine which are noted to be 18 m deep. The impact of water table on infrastructure during construction and post construction has not been adequately assessed. Particularly, how groundwater affects the construction and operation of the on-site detention pond requires greater consideration.

BCD recommends that the impacts of water table on infrastructure during construction and post construction has not been adequately assessed. In particular, how groundwater affects the construction and operation of the on-site detention pond requires greater consideration.

Response 6

No issues are foreseen with excavating a portion of the detention basin below the water table. The lower portion of the basin which acts as part of the water quality management system, comprises a wet pond and hence will function perfectly even if sections are at or below the water table.

The location of the proposed detention basin under the power lines currently precludes drilling of monitoring boreholes. However, the existing boreholes allowed a determination of the groundwater table to be made as explained in Section 4.5.2 of Appendix H of the EIS.

Further groundwater assessment and modelling investigated construction excavation activities likely to intersect the water table (see Groundwater Addendum provided in Appendix E). The EIS recommends that the construction contractor adopt methods to minimise water inflow to excavations. However, in the event that no controls are implemented, the worst-case scenario predicted the total dewatering of some 1.3 ML, which is well within the exemption criteria of 3 ML per year.

The modelling showed that the predicted cone of drawdown from the worst-case dewatering falls predominantly within the Proposal Site. The extent and magnitude of predicted drawdown outside of the Proposal Site is not considered to be significant. Following the brief period of construction dewatering (if required), water levels will recover with no long-term or residual drawdown anticipated.

Piling will however have no measurable effect on groundwater during construction as no dewatering / groundwater take will be required. Post construction, the piles will create small areas of localised impermeability to lateral groundwater flow which will have no measurable effect on groundwater levels in the long term.

Comment 7

Mapping provided in the groundwater report indicates ground water dependent ecosystems within the northern boundary of the site and downstream of the existing stormwater ponds. These ponds have historically been used for irrigation of the downstream lands. Removal of these ponds may have adverse impact on the hydrology of the downstream environment which over time has adapted to increased water supply. The site is also proposed to be significantly increased in impervious coverage which will reduce transfer of water to groundwater. The impact of proposed changes in hydrology on ground water dependent ecosystems should be considered.

BCD recommends that the impact of proposed changes in hydrology on ground water dependent ecosystems should be considered.

Response 7

Figure 4-5 in Appendix H of the EIS shows regionally mapped GDEs. In the vicinity of the Proposal Site, this presumably is based on the mapped area of PCT1633. See Appendix B and Section 7.2 of the EIS for further details on the vegetation within the Study Area.

The existing stormwater ponds (from the demolished aluminium smelter) are outside of the Proposal Site. While in close proximity, these ponds are not part of the proposed Hunter Power Project. We understand that the ponds are on Hydro Aluminium land that is currently the part of the Regrowth Kurri Kurri rezoning application for an industrial estate. The ponds also form part of the temporary water management system for the Hydro Aluminium demolition and remediation project (https://www.planningportal.nsw.gov.au/major-projects/project/11486).

The relatively small increase in impervious coverage associated with the Proposal and localised effect of the proposed detention pond are not predicted to have any effect on groundwater recharge, groundwater levels or groundwater dependant ecosystems.

Comment 8

Although the proposed on-site detention has been modelled to match the post- development flow rate to the pre-development flow rate, the concentration and diversion of flow resulting from stormwater management on-site has not been considered. A single discharge point to an ephemeral creek could have significant impact on hydrology and erosion at the point of connection. The potential impacts of concentration and diversion of discharge to Black Waterholes Creek together with requirements for bed and bank protection at point of discharge should be considered. Removal of riparian vegetation will also be required for the piped connection and for creation of an asset protection zone. Removal of vegetation during construction and maintenance of the asset protection zone should also be considered.

BCD recommends that the impact of concentration and diversion of discharge to Black Waterholes Creek together with requirements for bed and bank protection at point of discharge should be considered. Removal of riparian vegetation for construction and maintenance of an asset protection zone should also be considered.

Response 8

Section 14.3 of the EIS describes the discharge from the proposed detention pond and Section 14.4 outlines the mitigation measure to minimise potential local scour related impacts on the tributary of Black Waterholes Creek. The removal of vegetation within the Proposal Site, inclusive of the APZ has been assessed in the BDAR and EIS. As shown in Figure 4-1 of Appendix B of the EIS, no native vegetation within the riparian zone will be impacted as part of the APZ, although depending on the detailed design, a very small area of predominantly exotic riparian vegetation may be impacted by the detention pond discharge structure. It should be noted that the section of the tributary of Black Waterholes Creek along the western boundary of the Proposal Site has historically been excavated/ channelised as part of a realignment to allow for expansion of the aluminium smelter.

Comment 9

It is unclear how the proposed pond will treat stormwater flows apart from allowing for some settling of suspended solids. MUSIC water quality modelling provided with the EIS indicates a small reduction in pollutant load will be achieved through this approach, although this result is much lower than would generally be required for a development in areas where water quality targets are established through the planning system. The modelled reduction in pollutant loads is stated as 36% reduction in Total Suspended Solids (TSS), 29.8% Total Phosphorus (TP), 5.1% Total Nitrogen (TN). Commonly adopted targets for other local government areas are 85% TSS, 65% TP and 45% TN.

The level of pollutant reduction proposed is not sufficient for discharge to a waterway. BCD also considers that the predicted reductions in pollution loads are unlikely be achieved when the pond is located on-line and receives all flows. Stormwater pollution controls should be made offline and provided separately to the on-site detention pond. A higher standard of pollution control should be provided and the existing poor quality of water downstream of a site undergoing rehabilitation should not be used to justify a low level of stormwater treatment.

BCD recommend that stormwater pollution controls should be made offline and provided separately to the on-site detention pond. A higher standard of pollution control should be provided and the existing poor quality of water downstream of a site undergoing rehabilitation should not be used to justify a low level of stormwater treatment.

Response 9

Further MUSIC modelling was undertaken (see Surface Water Quality and Aquatic Ecology Addendum provided in Appendix C). The updated water quality modelling shows that increasing the proposed basin wet basin volume from 950m^3 to 2,350m^3 improves water quality compared to the current situation even further, and also achieves the nominated annual average pollutant load reduction percentages.

Comment 10

The EIS indicates that the development's water supply and wastewater services will be achieved through connections to Hunter Water Corporation's services. It is not clear if Hunter Water Corporation has been consulted about this and if there is adequate capacity in either system to accommodate the project. The proponent should consult with Hunter Water Corporation regarding its proposed connections to existing water and wastewater services.

BCD recommend that the proponent should consult with Hunter Water Corporation regarding its proposed connections to existing water and wastewater services.

Response 10

Snowy Hydro has proactively engaged with Hunter Water with the initial applications having been lodged and advice received from Hunter Water. Please refer to the Hunter Water submission, which confirms their in-principle ability to provide both potable and wastewater services.

4.2 Heritage NSW

Heritage NSW stated that the ACHAR is complete and complies with the project SEARs. They have requested further clarification in relation to the management and mitigation measures included in the ACHAR. Heritage NSW's key issues and a response addressing each key issue is provided below. An addendum to the ACHAR which includes the additional information is provided in Appendix D.

Comment 1

The ACHAR must outline procedures for the monitoring program, including but not limited to:

- The number of Registered Aboriginal Parties (RAPs) that will be on site each day
- A list of the artefact attributes that will be recorded on all recovered artefactual material
- Methodology for the monitoring of bulk excavations, including the method of fill and sediment removal (i.e. bulk or spit)
- A hand excavation procedure that includes details on if removal of surrounding fill material is required and the requirements for commencement and termination of excavations.

Response 1

It is proposed that the procedures for archaeological monitoring would be developed in consultation with the RAPs during the post approval phase and be incorporated into a Cultural Heritage Management Plan (CHMP) to be submitted to DPIE for approval. Nonetheless, a provisional monitoring procedure has been drafted and is included as Appendix D of this report.

Comment 2

The predictive model outlined in Section 4.3 of the Archaeological Assessment Report (AAR) (Appendix B of the ACHAR) requires explication of the assumptions of the model, supporting evidence, and a detailed assessment of other predictive models used in the region.

Response 2

The predictive model is based on background research described in Section 3.0 and Section 4.1 of the AAR. The predictive model is based on existing and publicly available environmental and archaeological information and previous investigations of the Proposal Site. Further details are contained in the Aboriginal Cultural Heritage Addendum (refer to Appendix D of this report).

Comment 3

The significance assessment must assess the potential for sub-surface deposit based the findings from archaeological excavations throughout the surrounding region and be updated accordingly. The significance assessment must consider the significance statements provided by the RAPs during the consultation process. Must include an Unexpected Finds Protocol (non-skeletal remains).

Response 3

Based on comments received from the Awabakal Traditional Owners Aboriginal Corporation (see Appendix D), any Aboriginal objects identified within the Proposal Site would be considered to be of high cultural value to Aboriginal people.

An Unexpected Finds Protocol (non-skeletal remains) would be developed in consultation with the RAPs during the post approval phase and be incorporated into a Cultural Heritage Management Plan (CHMP). However, a provisional procedure has been drafted and included in the Aboriginal Cultural Heritage Addendum (refer to Appendix D).

Comment 4

Correction of in-text referencing throughout the ACHAR, with specific mention to Section 5.

Response 4

It is understood that this comment refers to references missing from the ACHARs list of references and the inclusion of references that have not been cited in text. The revised reference list is provided in the Aboriginal Cultural Heritage Addendum (refer to Appendix D of this report).

4.3 NSW Rural Fire Service

The NSW RFS has requested an amended bushfire report must be provided which will provide further information in relation to Sections 8.3.1, 8.3.9 and Appendix 1 of *Planning for Bush Fire Protection 2019*. NSW key issues and a response addressing each key issue is provided below.

Comment 1

As a non-residential development Section 8.3.1 Buildings of Class 5 to 8 under the NCC of the NSW Rural Fire Service document *Planning for Bush Fire Protection 2019* (PBP 2019) is to be addressed as follows: Whilst bush

fire is not captured in the NCC for Class 5-8 buildings, the following objectives will be applied in relation to access, water supply and services, and emergency and evacuation planning:

- to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation
- to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development
- to provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building
- provide for the storage of hazardous materials away from the hazard wherever possible.

Response 1

Provision of firefighters with safe access to/from the public road system: this objective is addressed in Sections 4.1.6 for operation of the Proposal and 4.2 of the Bushfire Assessment Report (BAR) for the Proposal's construction phase (Appendix E of the EIS). Specific details of the access arrangements, including plans/maps will be developed as the Proposal moves into detailed design.

Emergency and evaluation arrangements: this objective is addressed for the operation phase in Section 4.2 of the BAR. Details will be developed as part of the construction contractor's site emergency management plan. In our introduction to Section 4 of the BAR (Appendix E of the EIS)., we note that emergency and evacuation planning for the Proposal's operating phase will be incorporated with responses to other hazards in the operator's site emergency management plan.

Fire water supplies: the provision of fire water supplies is addressed in Sections 4.1.7 (operations) and Section 4.2 (construction) of the BAR (Appendix E of the EIS). The Proposal Site will have access to potable supplies, with back up water supply that is accessible to RFS appliances available. Details for operation of the Proposal, including the storage of hazardous material will be developed in detailed design and included in the site operation plan.

Comment 2

As a power generating works the proposed development is identified to address Section 8.3.9 Hazardous industry of PBP 2019 as follows: In preparation of a performance-based solution or Bush Fire Design Brief (BFDB), the Fire Safety Study prepared under the DPIE Hazardous Industry Planning and Assessment Papers (HIPAPs) should be considered. This study provides details of all credible fire hazards and the associated fire prevention and mitigation measures for the development.

The BFDB must address the appropriate protection measures to be provided commensurate with the bush fire hazards and associated risks. Care should also be taken to ensure that such facilities do not impact on existing developments.

Response 2

The storage of diesel fuel and other hazardous materials during construction is addressed in Section 4.2 of the BAR. Operational management of fire risks associated with hazardous materials are contained in the BAR was well as in the Hazard and Risk Report (Appendix F of the EIS) prepared in terms of DPIE's Hazardous Industry Planning and Assessment Papers (HIPAPs) process (DPIE 2011).

Our analysis of bushfire protection measures was informed by assessments of Bushfire Attack Level (BAL) exposure that were made using Planning for Bushfire Protection 2019 Appendix 1 (noting that the Proposal is not a residential development), as per Figure 4-2 in the BAR.

4.4 Civil Aviation Safety Authority

Civil Aviation Safety Authority (CASA) commends the proponent for the quality of its analysis and the pro-active way it consulted aviation industry stakeholders.

Comment 1

Once a vendor is selected and the Proposal design is finalised, CASA recommends that the Proponent conduct an additional plume study for which CASA, Defence and Airservices Australia will determine appropriate mitigation measures as required.

Response 1

Snowy Hydro agree to provide a revised plume study once the design has been finalised.

4.5 Department of Defence

Based on the information provided and earlier consultation with consultants engaged by the proponent, Defence agrees that it is appropriate that the Critical Plume Extent be based on the 99.9% percentile statistic of hourly results and a Critical Plume Velocity of 6.1 m/s. This approach is also consistent with subject matter advice from government bodies including CASA and Defence stakeholder input.

Defence considers that the construction of the power station will not adversely impact upon civil or military flying operations at RAAF Base Williamtown / Newcastle Airport, provided that the following mitigating measures are adhered to. Defence's key issue and Snowy Hydro's response is provided below.

Comment 1

Defence requests that permanent charted Danger Area is to be promulgated using Global Airspace Solutions dimensions to account for the vertical plume velocities generated from the plant. The parameters of the Danger Area will include a vertical elevation of 884 m (2,900 feet) and a horizontal radius of 155 m, it should include a note to avoid the Danger Area. In addition, Defence note that CASA (in correspondence dated 27 April 2021) has requested that the proponent conduct another plume study once a vendor is selected and the final design is approved. Defence concurs with this request.

Response 1

Noted. The plume rise study will be updated based on the final design, and the need for a Danger Area to be promulgated confirmed with CASA at that time.

4.6 DPIE Water and Natural Resources Access Regulator (NRAR)

The DPIE Water and NRAR have made recommendations relating to further information regarding groundwater take, minimal impact considerations of the NSW aquifer interference policy (AIP) and controlled activities on waterfront land. An Addendum to the Groundwater Impact Assessment has been compiled to address these and is provided in Appendix E. DPIE Water and NRAR's key issues and a response addressing each key issue is provided below.

Comment 1

Groundwater levels vary across the site between 1.2 –4 m below ground level and, based on the proposed design, interception of groundwater is inferred during construction of bored piles (approximately 18 m in depth), a

stormwater basin, and some footings, and the proponent asserts that 'significant inflow or requirement for substantial dewatering is unlikely'.

DPIE Water notes that a quantified estimate of groundwater inflows during construction was not provided, however, information presented in Table 12.3: Groundwater mitigation measures, suggests the proponents is planning a subsequent body of work, potentially including a dewatering plan. This suggests the proponent does not currently have sufficient confidence in the estimate of the volume of take to adequately assess potential impacts during construction. The proponent intends to adopt 'means to minimise water ingress during construction' of a stormwater basin and other services with potential for intercepting groundwater.

Consideration should also be given to preventing seepage and/or ingress during construction and operation to prevent contamination of groundwater or unnecessary take. The proponent identified the project site as located within the Wallis Creek Water Source of the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009, however, DPIE Water notes that the site lies within the mapped extent of the Sydney Basin-North Coast Groundwater Source of the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 –identified as a less productive groundwater source.

DPIE Water and NRAR recommend prior to approval that the proponent should demonstrate a reasonable quantified estimate of groundwater take for the proposed development. The proponent should refer to the Sydney Basin-North Coast Groundwater Source of the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 in the Response to Submissions and any future documents.

DPIE Water and NRAR recommend post approval that the proponent must ensure that any groundwater take is appropriately licenced unless eligible for an exemption. For take less than 3 megalitres per year (ML/yr) during construction, the proponent is referred to Division 3 Exemptions, Clause 21 of the NSW Water Management (General) Regulation 2018 regarding relevant conditions. Detailed design should include methods of preventing ingress and/or seepage during construction and operation –e.g. with impermeable linings –for stormwater basins, and pits with inverts below the high groundwater level.

Response 1

The location of the proposed detention basin under the power lines currently precludes drilling of monitoring boreholes. However, the existing boreholes allowed a determination of the groundwater table to be made as explained in Section 5.4 of Appendix H. DPIE Water and NRAR support for the EIS recommendation that the construction contractor adopt methods to minimise water inflow to excavations is noted.

In order to provide a reasonable quantified estimate of groundwater take, further groundwater assessment and modelling of construction excavation activities likely to intersect the water table has been undertaken (see Water Quality and Aquatic Ecology Addendum, Appendix E of this report). In the event that no controls are implemented, the worst-case scenario predicted the total dewatering of some 1.3 ML which is well within the exemption criteria. With the proposed seepage/ ingress controls, this is expected to be a small fraction of this volume.

We concur that the site lies within the mapped extent of the Sydney Basin-North Coast Groundwater Source of the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 –identified as a less productive groundwater source.

Noted that detailed design methods should minimise ingress to foundations, but the detention basin is proposed to be unlined. Groundwater take will consider the implications of the exemption conditions.

Comment 2

The proponent assessed the impacts of the development against the minimal impact considerations of the NSW AIP, however, DPIE Water considers the assessment as unsatisfactory based on the lack of quantifiable inflow estimates.

DPIE Water and NRAR recommend prior to approval that after demonstrating a reasonable quantified estimate of groundwater take (as recommended in section 1.0 Groundwater Take above) that the proponent provide additional evidence to support an assessment of the impacts of proposed take against the minimal impact considerations of the NSW AIP and rules of the relevant Water Sharing Plan.

Response 2

Based on the worst-case scenario with no controls, water ingress into excavations could result in dewatering of 1.3 ML. Under this worst-case scenario, the predicted cone of drawdown falls predominantly within the Proposal Site (see Appendix E). The extent and magnitude of predicted drawdown outside of the Proposal Site is not considered to be significant. Following the brief period of construction dewatering, water levels will recover with no long-term or residual drawdown anticipated. An assessment against the AIP and Water Sharing Plan is provided in the Water Quality and Aquatic Ecology Addendum (refer to Appendix E).

Comment 3

Proposed works including vegetation clearing, earthworks and heavy vehicles are likely to cause mobilisation of sediments. Controls are to be implemented before construction activities occur. This includes a sediment basin during the construction phase and water quality basin during operation to reduce sediments before water is released into the stream. Stormwater is to be directed into a stormwater basin with an outlet into the tributary of Black Waterholes Creek. The design is yet to be confirmed.

DPIE Water and NRAR recommend post approval that outlets onto the adjacent watercourse must be designed and constructed in in accordance with the NRAR Guidelines for Controlled Activities on Waterfront Land. The NRAR Guidelines can be found: https://www.industry.nsw.gov.au/water/licensing-trade/approvals/controlled-activities/guide

Response 3

Noted.

Comment 4

DPIE Water notes nearby mapped potential for Class 2 and 4 Acid Sulphate Soils and the proponent's intent to prepare and implement an Acid Sulphate Soils Management Plan in the event that Acid Sulphate Soils are disturbed during construction.

DPIE Water and NRAR recommend that post approval that as suggested by the proponent, if Acid Sulphate Soils are encountered prior to or during construction, the proponent should prepare and submit an Acid Sulphate Soils Management Plan.

Response 4

Noted.

4.7 Hunter Water Corporation

Hunter Water has provided general information on water and sewer issues relevant to the Proposal including, network infrastructure and delivery, water supply, wastewater transportation, wastewater treatment, and environmental assessment procedures. The preliminary servicing advice is not a commitment by Hunter Water and may be subject to significant change prior to the development proceeding.

The proposed development is located within the industrial precinct of the Hydro redevelopment site. At this stage the "Hydro" site developer is required to prepare water and sewer servicing strategies that will confirm how the Hydro site is to be serviced. The Power Station development would normally be included in the strategies and the specific servicing requirements assessed and determined. Hunter Water understands that the urgent timing of the Power Station and potential need for this development to proceed prior to the overall Hydro strategies being finalised. The following advice is offered on this basis to allow the Power Station development to proceed, if necessary, under an interim servicing arrangement.

Comment 1

The proposed development is in Coalfields Water Supply System. The nominal water connection is the existing 200mm CICL in Dickson Road. Hunter Water's assessment indicates there is a sufficient capacity in the local network to provide the proposed development with the required operational demand. A development of this scale requires security of water supply; however, the existing surrounding mains are not capable to meet this requirement. It will be necessary to deliver an alternative minimum 200mm watermain to the development site to satisfy this requirement. This watermain would need to be sized to provide capacity to the wider Hydro catchment. The Developer would need to engage an Accredited Design Consultant to prepare and submit a Water Servicing Report to Hunter Water for review.

Response 1

Snowy Hydro is working closely with Hunter Water and the developer of the Kurri Regrowth area to progress the necessary engineering investigations and will submit a Water Servicing Report as soon as practicable.

Comment 2

There is an existing 150mm CICL sewer rising main nearby the development which discharges to maintenance hole W250. The rising main was constructed in 1968 and recently recorded breaks tend to indicate the rising main may no longer be fit for purpose. The rising main could be utilised as temporary option, provided it could be demonstrated that it has capacity and is suitable to operate at the proposed pump rates. To confirm this the Developer would need to undertake a condition assessment and risk analysis to ensure it is structurally sound and suitable to be recommissioned. The assessment would identify whether relining or upgrades are necessary. The report would be submitted to Hunter Water for review. The Loxford 1 WWPS has extra 580ET capacity which could service the development accordingly.

Response 2

Snowy Hydro is working with Hunter Water and the developer of the Kurri Regrowth area to progress the engineering and will submit a Water Servicing Report including the required condition assessment and risk analysis.

Comment 3

The proposed development falls within the Kurri Kurri Wastewater Treatment Plant (WWTP) catchment which currently has sufficient capacity. The Kurri Kurri WWTP has treated effluent capacity of 4.5 ML/d. Given the proximity of the WWTP the option for servicing the development with recycled water may be feasible. This option has been discussed with Hunter Water with further consultation agreed as required regarding a recycled water servicing arrangement.

Response 3

Noted.

Comment 4

Hunter Water would require a Review of Environmental Factors (REF) to be submitted (refer to Appendix HW 1 of Water Supply Code of Australia – Hunter Water Edition) prior to providing final approval of designs. Contact with the Hunter Water Development Services Group would be required prior to engaging the services of a consultant to prepare and submit an REF to confirm the need and scope for such an assessment. Hunter Water would decide if an REF is required in accordance with the provisions of EP&A Act. A Controlled Activity Approval would also be required from the NSW Office of Water for any excavation within 40 meters of a water body or should groundwater be present.

Response 4

Noted.

Comment 5

The proposed works may require entry to another property. The proponent would need to arrange for entry and have evidence of consent by way of a signed Entry Permit with the affected landowner. The Permit would be submitted with the Design submission.

Response 6

Noted.

4.8 Environment Protection Authority

The EPA have requested further clarification in relation to potential impacts to air quality and noise. The EPA's key issues and a response addressing each key issue is provided below.

Air quality

The Air Quality Impact Assessment (AQIA) has been updated to include the additional clarifications and is provided in Appendix F.

Comment 1

Unclear Cumulative Impact Concentrations - The AQIA provides contour plots of the maximum incremental impacts and summary tables of maximum cumulative impacts. However, the results as presented in Section 6 of the AQIA do not provide enough information or clarity regarding how the maximum predicted impacts of the proposal were determined or what they represent. Although the AQIA states a contemporaneous assessment

approach was taken, the AQIA does not provide enough transparency to evaluate the predicted impacts as only summary of the background air quality and the summary results are provided.

The EPA recommends the AQIA include more detailed background air quality data for the modelled year if contemporaneous assessment is undertaken. The EPA recommends the AQIA be revised to include a refined assessment for the most impacted receptors which evaluates the cumulative impacts from both the highest backgrounds and the highest increments, which includes, as a minimum:

- Time/date
- Project (only) increment
- The adopted background
- Cumulative (total) impact.

Response 1

A cumulative air quality impact assessment was undertaken as part of the EIS and AQIA. The assessment included hourly-varying pollutant concentrations as part of the cumulative impact assessment where data were available, and as required. Graphics illustrating the contribution of the Proposal and background levels for the worst receptor were presented at the third Community Working Group meeting in April 2021. The updated AQIA Report in Appendix F provides more details.

Comment 2

NO_2 and SO_2 criteria - In April 2021, the National Environment Protection Council agreed to vary the National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM), to tighten ambient NO_2 and SO_2 standards: http://www.nepc.gov.au/system/files/pages/d2a74405-16f6-4b06-baf1- 7c2fc1c1e12f/files/key-changes-aaq-measure-agreed-ministers-april-2021.pdf

The EPA recommends the proponent note the revised Ambient Air Quality NEPM standards for NO_2 and SO_2 and include them accordingly in the assessment.

Response 2

The new air NEPM was registered on 26th May 2021, and as requested, the updated report reviews the model results in light of the new NEPM standards, and they are not put forward as appropriate assessment criteria.

The updated AQIA Report in Appendix F provides more details.

Comment 3

Ozone Assessment - Ozone precursors, NOx and VOCs, will be emitted from the proposed power station. The AQIA does not include an ozone assessment, nor does it robustly evaluate potential for inter-regional pollutant transport.

The EPA advises that exceedances of national ozone standards have been recorded by the NSW Government air quality monitoring network at Lower Hunter and Central Coast monitoring sites.

Further, given the nature of the proposed power station, a peaking station, it is likely that the power station will operate during periods of high electricity demand on the grid. These periods have typically occurred during hot summer days which historically coincide with higher risks of ozone impacts, however, demand side volatility will increasingly play a role in determining when dispatchable power will be required. Additionally, the approved Newcastle Power Station will be located only 22 km away from the proposed project which is also intended to operate as a peaking power station and likely to contribute to cumulative ozone impacts.

The EPA recommends that the proponent conduct an ozone and inter-regional transport assessment. The ozone assessment must be conducted in accordance with Tiered Procedure for Estimating Ground-Level Ozone Impacts from Stationary Sources: https://www.epa.nsw.gov.au/- /media/epa/corporate-site/resources/air/estimating-ground-level-ozonereport.pdf?la=en&hash=5B3D0AC78A22BE0863A37B6570108E5336E53B03

Response 3

It is noted that there is no requirement in the SEARs or EPA agency input to the SEARs to assess inter-regional ozone transport, consequently this was not carried out in the Air Quality Impact Assessment in the EIS. Importantly for assessment by dispersion modelling, the main statutory instrument is the *Approved methods for the modelling and assessment of air pollutants in NSW* (EPA, 2016). EPA (2016) lists statutory methods for modelling and assessing air pollutants from non-moving sources such as chimneys and industrial machinery, which is relevant to modelling assessment supporting the Hunter Power Project. The air quality assessment was conducted in accordance with the Approved methods publication and SEARs provided.

However as requested by EPA a new ozone assessment in accordance with the EPA (2011) ozone assessment guideline has been undertaken to provide further information with regard to the project. The updated report shows time series plots of ozone monitoring data at Beresfield and how the predicted worst case increases in ozone ground-level concentrations due to the Proposal will not cause (or cause insignificant) increases of the ozone assessment criteria i.e. maximum 1 hour average ozone and maximum 4-hour average ozone (EPA, 2016). Additionally, the updated report shows corresponding results for the new NEPM standard (maximum 8-hour average ozone. As shown in the updated AQIA Report in Appendix F, the analysis showed that the ozone contribution from the Proposal is minimal and meets the requirements of relevant regulations.

Comment 4

Start-up and shut-down assessment - The AQIA incorrectly states that the Protection of the Environment Operations (Clean Air) Regulation 2010 (Clean Air Regulation) does not require assessment of conditions during start-up and shutdown. Whilst clause 52 of the Clean Air Regulation exempts the standards of concentration applying during start-up and shutdown periods, it does not exempt assessment of emissions and impacts. Further, the premises will still be subject to the requirements to prevent and minimise air pollution at all times.

The EPA advises that there can be considerable variation in emissions and pollution control efficiency across plant load, including start-up and shutdown of the plant, which can result in increased peak impacts from the operation of the plant. The AQIA has not considered potential impacts associated with the expected emission variability.

The EPA recommends that the proponent prepare a revised assessment which adequately considers emission variability, including evaluating emissions and impacts from plant start-up, shutdowns and variable load.

Response 4

These other operating cases have been considered and details provided in the updated AQIA Report (Appendix F). Operation of the power station at 100% load remains the worst-case scenario as reported in the original and updated AQIA Report.

Comment 5

Validation and clarity of emissions - The AQIA states the emission parameters used in the modelling represent worst-case impacts as final plant design has not been determined. The AQIA states that best practice technology controls (DLE and water injection) will be in place and while the proposed emission concentrations (Table 2.2) generally align with the EU's BAT (European Commission, 2017) a detailed evaluation of achievable emissions has not been provided.

Figure 2.2 indicates 1 exhaust stack per turbine, however, the emission parameters in Table 2.3 are unclear in the derivation of the emission rates and whether they apply per stack or are combined. Additionally, no emission parameters for principal or individual toxics (e.g. formaldehyde, acrolein and PAHs) have been provided.

The EPA recommends the proponent:

- *undertake a detailed control technology and emissions performance benchmarking against all relevant international guidance and technologies*
- *assess worst-case impacts based on final design. Where final plant design cannot be provided, the proponent must provide all information used to model impacts for all pollutants, including, but not limited to:*
    - *the specific emission factor(s) and/or manufacturer emission parameters*
    - *all calculations and assumptions used to determine emission rates and concentrations*
    - *emission parameters provided at reference conditions and per stack.*

Response 5
Control Technology

The following provides an outline of the emissions control technologies proposed on the Hunter Power Project, alternative emissions control technologies, and why they have not been selected for the Proposal. The most typically available emission control technologies to reduce emissions for open cycle gas turbines (OCGT) are:

- Dry Low NOx (DLN) burners
- Water or Steam Injection
- Selective Catalytic Reduction (SCR)
- Selective Non-catalytic reduction (SNCR)
- SCONOx™

The potential suppliers for the gas turbines associated with the Proposal will be supplying the gas turbines with DLN burners and a water injection system when operating on diesel. The recommended use for the above-mentioned technologies are as follows:

Dry Low NOx (DLN) burners

- A Dry Low Emission (DLE) combustor operates on the principle of lean premixed combustion. The lean fuel and air mixture results in a lower firing temperature during combustion and consequently less generation of thermal NOx
- This is a well-established and highly used technology for gas turbines operating on natural gas fuel in Australia and across the world
- NOx levels of 25ppmv are being guaranteed by original equipment manufacturers (OEMs)
- Recommended by the Best Available Techniques (BAT) Reference Document for Large Combustion Plants (LCP) (European Commission, 2017).

Water or Steam Injection

- Diesel fuel burns at a higher temperature than the gas fuel, and hence thermal NOx is produced at a higher rate compared with gas fuel. Water injection is commonly used to assist in control of NOx emissions to within the prescribed limits when operating on diesel. Demineralised water is injected into the combustion chamber, which has the effect of reducing the combustion temperature and hence the formation of thermal NOx.
- This is a well-established and highly used technology for gas turbines operating on liquid fuel in Australia and across the world.

- NOx levels of 42ppmv are being guaranteed by original equipment manufacturers when operating on diesel fuel
- Recommended by the BAT Reference Document for LCP (European Commission, 2017).

The other control technologies (SCR, SNCR, SCONOx^{TM}) available can also reduce NOx emissions, however, are typically not technically and commercially practical for OCGT plants for some of the below reasons. Similar conclusions were also drawn by the Proponents for the Newcastle Power Station EIS, Appendix C (April 2020) and the Tallawarra Stage B Gas Turbine Power Station Modification Environmental Assessment report (June 2020).

Selective Catalytic Reduction (SCR)

- The technique is based on the reduction of NOx to nitrogen in a catalytic bed by reaction with ammonia (in a general aqueous solution). This is a post combustion control treatment.
- A SCR process requires additional land for the site and would produce additional noise and use of consumables
- The high velocity of the exhaust in an open cycle gas turbine is a significant technical difficulty for the removal of contaminants, compared to gas turbines in combined cycle configuration where the exhaust velocity and temperatures are reduced significantly
- The optimum operating temperature for SCR is 300-450°C. This is not suitable for the large industrial open cycle gas turbines proposed for this Project as the exhaust temperature is well above this (typically 600°C-650°C).
- There are additional health and safety risks for storage, handling and emissions of ammonia and additional emissions of particulate matter (GER 4172 "Gas Turbine NOx Emissions Approaching Zero – Is it Worth the Price?")
- This technique may be costly in the case of plants operated between 500 h/yr and 1500 h/yr and even more so for plants operated <500 h/yr (European Commission, 2017). Considering this Proposal is expected to operate in the vicinity of 350 hours per year, which is below the lower threshold as indicated in the European Commission (2017), the commercial suitability for this technology reduces further.
- There is limited commercial experience of SCR on large frame OCGTs internationally and no experience of SCR on OCGTs in the Australian national electricity market.

Selective Non-catalytic reduction (SNCR)

- The technique is based on the reduction of NOX to nitrogen by reaction with ammonia or urea at a high temperature, without the need of a catalyst. This is a post combustion control treatment
- The required operating temperature window is between 800°C and 1000°C for optimal reaction. This is not suitable for the OCGT proposed for this Project as the exhaust temperature is well below this (typically 600-650°C).
- This technology is not recommended by the European Commission (2017) for OCGTs
- No commercial experience of this technology on gas turbine installations in Australia or internationally

SCONOx^{TM}

- Use of a single catalyst that operates by simultaneously oxidising CO to CO2, NO to NO2, and then absorbing NO2 onto its surface through the use of a potassium carbonate absorber coating. This technique does not require ammonia injection.
- The optimum operating temperature for SCONOxTM is 150-370°C. This is again not suitable for the open cycle gas turbines proposed for this Project as the exhaust temperature is well above this (typical 600-650°C).
- Performance is highly sensitive to even small amounts of sulphur in the gas fuel
- This technology is not recommended by the European Commission (2017) for OCGTs

- There is no commercial experience of this technology in gas turbines over 100MW globally

Emissions Performance Benchmarking

As there is not a technically viable alternative to the Dry Low NOx (DLN) and water injection technologies used for an open cycle gas plant, there are no power stations against which alternative emissions control technologies can be directly benchmarked in any meaningful way to the DLN and water injection technologies being proposed for the Hunter Power Project. For example, while SCR is applied at some small diesel power stations in Australia and the technology has been developed for combined cycle gas fired power stations, it is not viable on the high velocity and temperatures of OCGT exhausts. As such, to undertake a benchmarking exercise across power station generation technology types, such as OCGT to CCGT to small capacity diesel, would not be a like for like comparison or provide an informative or valid conclusion. If the comparison is intended to be used in a determinative way for the selection of the generation technology itself, this would also not provide a useful view, as the F class OCGT technology selected has been done so based on its ability to provide the dispatchable capacity required to achieve a viable project.

It's noted that all industrial frame open cycle gas fired power stations in Australia use DLN when gas-fired and water injection when diesel fired, in the same manner as proposed for the Hunter Power Project.

Information used to model impacts for all pollutants, including specific emission factor(s) and/or manufacturer emission parameters, calculations and assumptions

The pollutants data used for modelling was based on data acquired from a market enquiry where a few gas turbine original equipment manufacturers responded. The data received from the various manufacturers is representative of that summarised in Table 2.3 of Appendix K Air Quality Impact Assessment in the EIS and are the values expected with the use of dry low NOx burners and water injection control technologies.

Comment 6

Unable to verify SO_2 emission calculations - The AQIA evaluates SO_2 emission rates based on the sulphur content in the fuels used: 50 mg/m^3 for natural gas and 10 mg/kg for diesel. However, the AQIA does not provide enough information to evaluate the validity of the calculated SO_2 emission rates in Table 2.3.

The EPA recommends that the proponent provides all information and calculations used in the determination of the SO_2 emission rates.

Response 6

Information and calculations used in the determination of the SO_2 emission rates are provided in the updated AQIA Report (Appendix F).

Comment 7

Background data and results given at 25°C - The AQIA provides the background air quality data and the predicted impact results at 25°C. For criteria pollutants the conversion to µg/m3 is to be done at 0°C in accordance with the Ambient Air Quality NEPM and as used to convert the concentrations in the Approved Methods for the Modelling and Analysis of Air Pollutants in NSW (Table 7.1).

The EPA recommends that the proponent revise the AQIA to provide concentrations of criteria pollutants in µg/m^3 at 0°C

Response 7

The assessment was conducted in accordance with the modelling guideline (NSW EPA, 2016) and it is understood the national (NEPM) air monitoring standards are not required to be used for this assessment. As part of the cumulative impact assessment, the background data were added to the model predictions. The

assessment included comparisons of these cumulative results with the NSW EPA (2016) air quality impact assessment criteria.

The NSW EPA (2016) air quality impact assessment criteria for the 'non-criteria' pollutants are specified with a temperature of 25°C (Table 7.2a and Table 7.2b), whereas no temperature is specified to be used to convert background data for use with the impact assessment criteria listed in Table 7.1 (for the criteria pollutants).

Note CALPUFF provided results in mass concentration units, (i.e. no temperature conversion required for the model results).

As temperature of 25°C is more reflective of conditions in the Lower Hunter Valley, it was considered appropriate to apply a conversion temperature (for the monitoring data), reflective of the conditions (i.e. annual mean temperatures at Maitland range between approximately 12°C and 25°C). In any case if a conversion temperature of 0°C was used for the background data it would be immaterial to the outcomes of the assessment because the assessment results for the relevant criteria pollutants (CO, NO_2, and SO_2), were all substantially lower than their impact assessment criteria.

Comment 8

Validation of modelled meteorology - The AQIA has provided limited description of the parameters used to generate the meteorology data used in the modelling. Only basic information on the grid resolution is provided. Validation of the model generated meteorology has not been sufficiently presented. Only basic wind speed comparison is provided.

The EPA recommends that the AQIA be revised to include:

- all *information regarding the methodology for the meteorological modelling. This must include presenting the adopted parameters and settings used to set up the model*
- *additional information to evaluate the performance of the modelling, including, but not limited to CALMET generated wind roses for the project site and for Beresfield or another suitable.*

Response 8

Additional information about the meteorological modelling is provide in the updated AQIA Report (Appendix F).

Noise and vibration

A revised Noise Impact Assessment (NIA) has been prepared to clarify the issues raised. The updated NVIA Report is provided in Appendix G.

Comment 9

Section 3.3 states that background noise monitoring was carried out during the summer months of December 2020 and January 2021, and that fauna/insect noise affected the background noise measurements at NM1 and NM3. Table 3.1 states that 'environmental noise' was a predominant background noise feature at all four monitoring locations. While it is acknowledged that noise contributions from the Hunter Expressway would also be significant in some locations, the EPA is concerned that the background noise environment during the cooler months (in the absence of fauna/insect noise) may be lower than that presented in Table 3.2 at all of the monitoring locations.

In addition, some of the RBL values (e.g. at NM4) shown in Table 3.2 appear very high for a location described in Section 3.1 as 'isolated farmhouses and pasture'. No attended noise monitoring results are presented in the report that might provide insight into the background noise sources, and their relative contributions, giving rise to these results at NM4, other than a general description of 'environmental noise' in Table 3.1.

The EPA is also concerned that the results of noise monitoring have been assigned as being representative across a large catchment (e.g. NM1 results are considered representative of the entire NCA1 catchment), and whether those results are representative at all locations within that catchment. For example, location NM1 is shown to be approximately 200 m from the Hunter Expressway carriageway. However, its noise environment has been considered representative of residences in NCA1 on the western side of Sawyers Gully Road, up to approximately 1 km from the Expressway, and where the traffic noise contribution and resultant background noise levels are likely to be significantly lower.

The EPA also notes that less than the 7 days of valid monitoring data required in Table A1 of the Noise Policy for Industry (NPI) has been collected at NM2 (approx. 6 days), NM3 (approx. 3.5 days) and NM4 (approx. 5.5 days).

The EPA recommends that the proponent:

- *Provide additional background noise monitoring (for a minimum of 7 days of valid data) that is not likely to be affected by fauna/insect noise (preferably during the winter season) at surrounding sensitive receivers.*
- *Provide operator-attended background noise measurements to identify the nature and relative contribution of any ambient noise sources and support the results of the long-term unattended monitoring*
- *Review the defined noise catchments and representative receivers, and provide additional detail, in the form of measurements and/or supporting analysis, to justify that the noise environment at a receiver is fully representative of its entire catchment.*

Response 9

Revised background noise monitoring was performed during a period of 14 days between the 29 June and 13 July 2021 to account for the Winter period as advised by the EPA. The principal outcome of the background monitoring was to amend the operational noise criteria and for those criteria to be adopted in development of the Project. The attended monitoring, also conducted, confirmed the presence of traffic noise as a key component of the ambient noise environment at the closer receivers to the Project site. The details of the monitoring and the results are provided in the updated NIA provided in Appendix G.

Comment 10

Amenity Criteria Section 4.2.3 states that the 'urban' amenity category was applied for residential receivers as the measured background noise levels were over 45 dBA (day), 40 dBA (evening) and 35 dBA (night). This appears to be based on the 'typical existing background noise levels' column in Table 2.3 of the NPI. This table describes the noise environment of the 'urban' amenity category as being dominated by 'urban hum', having through traffic with characteristically heavy and continuous traffic flows, near commercial or industrial districts. These attributes do not align significantly (or at all in the case of NCA3 and NCA4) with the 'predominant background noise feature' column description in Table 3.1 of the NIA. It is also difficult to reconcile land uses described in Table 3.1 of the NIA as predominantly 'rural residential' and 'farmland' as being 'urban' in nature. The EPA is concerned that adopting the 'urban' noise amenity category without strong justification may set artificially high noise criteria and unduly impact the noise environment in these catchments, particularly at those receivers more distant from road traffic and industrial noise influences.

The primary basis for selecting a receiver amenity category should be the land use zoning in the LEP. From the Cessnock City Council mapping portal at: https://maps.cessnock.nsw.gov.au/intramaps99/default.htm, the predominant land use zoning in all NCAs defined in the NIA is RU2 – rural landscape, and as such the rural residential receiver category applies. This has the potential to result in lower operational noise criteria for the proposal than those currently in the NIA, in some cases.

The EPA recommends that the proponent:

- *Adopt the 'rural residential' noise amenity category at residential receivers in the noise catchment areas currently defined in the NIA; or*
- *Provide strong justification, to the satisfaction of the EPA, as to why an alternative amenity category is appropriate, with detailed reference to each of the considerations in table 2.3 of the NPI.*

Response 10

The updated NVIA report (refer to Appendix G) provides details of the amenity categories. It is noted that the land use zoning of the site and surrounds is expected to significantly change between now and the time operations are proposed to commence, with the zoning changes proposed in the Kurri Regrowth Master Plan (as provided in the EIS) moving towards a more industrial emphasis around the power station.

Comment 11

Table 4.4 shows sleep disturbance criteria. The LAFMax criteria should be set 5dB higher than those presented, at 15dB above the night-time adjusted Rating Background Levels presented in Table 4.5. These should be reviewed as appropriate to reflect comments in 'Background Noise' above.

Response 11

The sleep disturbance criteria have been reviewed and amended, details are provided in the revised NVIA Report provided in Appendix G.

Comment 12

Section 6.2 states that additional construction traffic associated with the Proposal would only contribute 0.2 dBA to the overall traffic noise level during the day, and less than 0.1 dBA during the night. This wording should be revised. The EPA understands that the construction traffic contribution would increase predicted overall traffic noise levels by these amounts.

Response 12

The updated NVIA report contains the requested minor rewording (see Appendix G).

Comment 13

Table 6.6 of the NIA shows predicted noise levels below the relevant criteria yet states that there is an exceedance of the criteria. This should be revised as necessary.

Response 13

The updated NVIA report has been revised as necessary (see Appendix G).

Comment 14

The EPA notes that Table 6.8 shows the predicted low frequency noise contribution in the 50Hz band at NCA 2 Nearest Residential Receiver is 5 dB above the relevant threshold value. While the assessment has appropriately applied a 2dB correction based on the guidance in the NPI in this instance, there is some potential for a higher 5dB correction to apply if the post-commissioning measured level is higher than the prediction. This may, in turn lead to a potential exceedance of the criteria at NCA2 based on the results in Table 6.4 of the NIA. The proponent should carefully review the modelling carried out to support the low frequency noise assessment and confirm that sufficient feasible and reasonable noise mitigation measures can be implemented to ensure any low frequency noise impacts are satisfactorily addressed.

Response 14

Noted.

Comment 15

Section 6.6 states that additional operational traffic associated with the Proposal would contribute less than 0.1 dBA to the overall traffic noise level during the day. This wording should be revised. The EPA understands that the construction traffic contribution would increase predicted overall traffic noise levels by these amounts.

Response 15

The updated report contains the requested minor rewording (see Appendix G).

Comment 16

The EPA notes that the cumulative construction noise impacts predicted in Section 6.8.1.1 of the NIA are close to or at the criterion level in some phases. Cumulative construction works should be carefully managed to ensure cumulative noise impacts are minimised.

Response 16

Noted. The NVIA contains additional mitigation measures to manage potential cumulative construction noise.

Comment 17

Section 6.8.2 of the NIA states that modelling was carried out to determine the contribution of the gas receival station (GRS) to overall operational noise levels. Further detail should be provided on what other items of plant and equipment were modelled to be operating in conjunction with the GRS, together with their sound power levels and locations, operating modes, etc. The statement that the GRS would contribute 'less than 0.1dB' to the noise levels at the boundary is unclear, and further detail should be provided on the predicted noise levels of the GRS in relation to other site components.

Response 17

Details of noise emissions from the GRS relative to the power station have been included in the updated NVIA Report (see Appendix G).

Comment 18

Further detail should be provided in Section 6.8.3 on the quantitative noise impacts of the demolition and remediation of the Hydro Aluminium smelter, a qualitative assessment is not sufficient to determine whether the cumulative impacts of these activities will be acceptable over their duration.

Response 18

Details of the anticipated demolition and remediation works were obtained from Hydro Aluminium and the cumulative construction noise impacts modelled. The results of the modelling are contained in Appendix G.

Comment 19

Depending on the outcomes of a revised assessment of noise triggered by any necessary revisions to the operational and construction noise criteria or other matters, additional feasible and reasonable mitigation may be required to achieve the criteria. Any additional detail on the nature and extent of those mitigation measures should be included in Section 7. The proponent should take care to ensure that any plant and equipment sound

power levels used in the noise assessment are accurate and suitably guaranteed by the manufacturer(s), so as to not present the proponent with a potential compliance risk.

Response 19

Noted. These are explored in detail in the revised NVIA Report (see Appendix G). Mitigation measures have been revised to address some construction exceedances. No changes to the operational mitigation measures were made as no additional exceedances of operational criteria were identified.

4.9 NSW Health

NSW Health have requested further clarification in relation to potential impacts to air quality and noise which may have an impact on public health. NSW Health's key issues and a response addressing each key issue is provided below.

Comment 1

Air quality - NSW Health note the advice provided by the NSW EPA in relation to updating the AQIA with the revised Ambient Air Quality Standards NEPM Standards for NO_2 and SO_2. The revised standards for 1-hour and annual average NO_2 are now 80 ppb and 15 ppb respectively and SO_2 standards for 1-hour and 24-hour SO_2 are now 100ppb and 20ppb respectively. The 1-hour SO_2 standard will be lowered again in 2025 to 75 ppb (see Key Changes to AAQ Measure, April 2021): http://www.nepc.gov.au/system/files/pages/d2a74405-16f6-4b06-baf1-7c2fc1 c1e12f/files/key-changes-aaq-measure-agreed-ministers-april-2021.pdf.

Additionally, please state and reference the conversion factors used to convert between ug/m^3 and parts per billion-unit measures in ambient air quality standards. A revised assessment cognisant of current and future ambient air quality standards may need to account for other emissions into the air shed including the proposed Newcastle Power Station. It is important that the projects emissions have a minimal contribution to ambient air quality.

There is no evidence of a threshold below which exposure to particulate matter (PM) is not associated with health effects. Therefore, it is paramount that all reasonable and feasible measures are taken to minimise human exposure to PM, even where assessment criteria are met.

Response 1

See EPA Response 2 above.

Comment 2

Noise - Environmental noise can have negative impacts on human health and wellbeing and trigger ongoing community complaints about annoyance and stress. NSW Health would like to reinforce to the applicant that they should ensure compliance with all NSW EPA noise criteria and that all reasonable and feasible measures are undertaken to minimise public exposure.

Response 2

Noted.

Comment 3

Legionella – Any cooling towers must comply with the requirements of the *Public Health Act 2010* and *Public Regulation 2012*. NSW Health recommends that the system should be managed in accordance with the *NSW Health Guidelines* Legionella *Control in Cooling Water Systems 2018*. They must be installed and maintained to prevent the growth of Legionella.

Response 3

Noted. This will be included in the plant design specifications if applicable.

Comment 4

Community engagement – NSW Health emphasises that due to the sensitivity within the community and concerns already raised by surrounding residences, that the proponent seeks additional specialist advice in relation to ensuring meaningful ongoing engagement.

Response 4

Snowy Hydro is of the view that adequate consultation with the community and surrounding residences has been undertaken. However, to further demonstrate Snowy Hydro's commitment to ongoing community and stakeholder support a Community and Local Engagement Manager has been employed to ensure that adequate communication tools would be available for the duration of construction of the Proposal. The communications tools that would be provided are detailed in Table 2.1 of Section 2.2.

4.10 Transport for NSW

TfNSW have no requirements for the proposed development as it is considered that there will be no significant impact on the nearby classified (State) road network. TfNSW key issues and a response addressing each key issue is provided below.

Comment 1

TfNSW main area of concern will be the construction of the supply gas main and the interactions of this infrastructure with TfNSW State Roads. It is understood that these matters are being assessed by TfNSW Asset team separate to the subject application.

Response 1

Noted and agreed.

Comment 2

TfNSW notes that signage has not been submitted for consideration however it is advised that TfNSW does not support the signage within the Hunter Expressway corridor. Signage may be considered at the top of the off ramp on Hart Road indicating the direction of the power station, subject to agreement by Cessnock City Council.

Response 2

Noted and accepted.

Comment 3

The consent authority must ensure the road pavement of the local road network including Hart Road, is suitable for the proposed heavy vehicle movements.

Response 3

Noted and agreed.

Comment 4

TfNSW recommends that consideration should be given to ensure that appropriate traffic measures are in place during the construction phase of the project to minimise the impacts of construction vehicles on traffic efficiency and road safety within the vicinity. DPIE should have consideration for appropriate sight line distances in accordance with Section 3 of the Austroads Guide to Road Design Part 4A (Unsignalised and Signalised Intersections) and the relevant Australian Standards (i.e. AS2890:1:2004) and should be satisfied that the location of the proposed driveway promotes safe vehicle movements.

Response 4

Noted and accepted.

5. Organisation and public response to submissions

All submissions, were received electronically through the DPIE Major Project's website, where they are available for viewing: https://www.planningportal.nsw.gov.au/major-projects/project/40951.

Appendix A details the number of submissions by respondent type in alphabetical order and submission ID and indicates where in this report the submission has been addressed.

5.1 Proposed design

Issue 1	**The Proposal Site has no ready natural water supply and would place an unacceptable demand on the existing Hunter Water potable water supply network**
Submission ID	SE-20726637, SE-20726638, SE-20726645, SE-20726653, SE-20726679, SE-20726687
Response 1	The infrastructure to connect to the Hunter Water potable network is already in place, as the former aluminium smelter relied on mains supply to meet its water demands. The Preliminary service advice from Hunter Water is that there is sufficient infrastructure to support the power station operation (Refer to Hunter Water's submission). To connect to the potable water supply, Snowy Hydro would need to finalise a supply agreement with Hunter Water. This process has been initiated by Snowy Hydro and the preliminary advise has informed the design of the relevant aspects of the Proposal. Open cycle gas turbines are do not use large volumes of water to condense steam like most coal fired power stations. The water demand is primarily managed through water storage onsite, sufficient for the power station to operate for approximately 10 hours, after which the site water storage is progressively refilled from the Hunter Water network. That is, there is does not need to be a direct demand on water supply at the time the station is operating. Furthermore, due to its highly intermittent operation, the Proposal will have relatively low annual water demands. The site water balance provided in Section 14.2.2 of the EIS estimates the total annual water demand for operation of the Proposal as approximately 80 ML. To place this in context, Hunter Water can supply approximately 76,000 ML per year, so under the worst-case scenario (based on a 10 per cent capacity factor on gas and 2 per cent capacity factor on diesel) the power station would consume about 0.1% of the volume of water available to Hunter Water. This would be considerably less in the normal scenario of running on gas, as water is used for SOx control when running on diesel. The peak demand for water supply is 133 kL/hr, however, this is significantly buffered by the use of onsite water storage. On site potable and demineralised water storage has been agreed with Hunter Water as a means of reducing peaks and therefore instantaneous water demand on the Hunter Water supply connection. The intermittent operation of the Proposal further reduces the likelihood of a high instantaneous demand being placed on the local water supply. Based on engagement with Hunter Water and the design measures incorporated to smooth peak water demand, running the power station on mains water supply is considered viable and unlikely to place an unacceptable demand on the potable water

supply. Snowy Hydro will continue to work with Hunter Water to finalise supply arrangements.

Issue 2	**Delay to the gas pipeline project would extend the period the power station operates exclusively on diesel**
Submission ID	SE-20680606, SE-20726637, SE-20726638, SE-20726645, SE-20726653, SE-20726666, SE-20726679, SE-20726687, SE-20726692, SE-20726834, SE-20726862
Response 2	While Snowy Hydro is confident that the gas pipeline will be provided within six months of operations commencing, the potential worst-case environmental impacts with respect to diesel operation have been assessed within the EIS. In the event of any unforeseen delay in the gas pipeline, it can be anticipated that the Project Approval and Environment Protection Licence conditions for the facility would align with those stated in the EIS and would limit the number of hours that the plant can operate per year (the capacity factor). Approval is being sought for the facility to operate at a capacity factor of up to 10 per cent on natural gas and two per cent on diesel in any given year. The use of diesel would be constrained to the two per cent capacity factor, regardless of whether delay to the pipeline project occurs or whether gas supply is an issue. This is consistent with Section 2.2 of the EIS which notes that operation on diesel during the commissioning phase and initial post-commissioning phase would be as a peaking power station in line with the Proposal objectives, with the overall hours of operation expected to be low, in the order of approximately 2 per cent of available operating hours in that six month period. Following this initial period, the power station would operate as dual fuel once the gas supply to the Proposal Site has been established.

Issue 3	**Large scale batteries should be used for the generation of dispatchable electricity in preference to gas-fired generation**
Submission ID	SE-20726880, SE-20726829, SE-20726766, SE-20726763, SE-20726724, SE-20726071, SE-20726707
Response 3	Several submissions specifically suggest large scale batteries should be used at the site in preference to gas and seek further testing of the claim that batteries provide insufficient firming capacity. The emergence of battery projects and comparative capabilities between batteries and gas are addressed in Section 4.4.1 of the EIS. As identified in the EIS, the key limitation is that batteries cannot provide the same amount of assurance as gas or pumped hydro. Particularly with respect to the limited duration of discharge, and time taken to replenish the battery's energy supply, in comparison to gas which is essentially unrestricted in this context within the limits of the Project and environmental approvals. The EIS is consistent with the NSW Electricity Infrastructure Roadmap (November 2020) which describes batteries as providing short duration storage, while recognising long duration storage batteries may become economic in the future. There is currently no large-scale long duration storage battery operating in Australia. Another consideration is the lifetime of a grid-scale battery, which is likely to require replacement in the order of every 10 to 20 years, assuming discharge each day (Cole et al, 2019). This compares to a gas-fired power station which has a typical asset life of

30 years. Based on the current technology this is a further benefit of utilising gas-fired technology for dispatchable generation.

The Australian Pipelines and Gas Association commissioned a report by Frontier Economics to investigate the potential for gas-powered generation to support renewables in the transition to net zero emissions (APGA, 2021). Section 2.3 of APGA (2021) identifies the benefits and limitations of batteries, and confirms a role for gas-powered generation to provide cost-effective reliable energy supply during periods of prolonged wind and solar drought:

Batteries are suited to managing fluctuations in the energy balance over short time periods. They can respond very quickly, and with very high levels of precision, as well as switching quickly from charging to discharging depending on system requirements. However, they have limited energy storage capacity (typically hours), long recharge times, and are not well suited to managing bulk energy requirements or sustained export of dispatchable generation for energy purposes, or to cover ongoing intermittency of variable renewable energy.

Gas-powered generation has considerable advantages over longer periods, providing dispatchable capacity over days and weeks, in comparison to intra-day firming typically available from battery storage. Large volumes of gas may be stored in the gas network and in dedicated gas storages for very long periods in time, and the gas network supports continuous ongoing operation of gas generation on an unrestricted basis within the constraints of Project and environmental approvals. Gas powered generation makes use of existing infrastructure to cost-effectively manage energy balances over long periods, which is a particularly useful complement to battery and pumped hydro storages. This is particularly well suited to managing prolonged periods of low wind generation, which may last for weeks or months.

The Proposal has been put forward to provide flexible and longer duration firming capacity that batteries currently do not provide. The Proposal is complementary to battery storage and as such batteries are not a viable alternative to the Proposal.

Issue 4	**Concern the Proposal would operate at full capacity in the future, beyond the capacity factor which was assessed in the Environmental Impact Statement**
Submission ID	SE-20726637, SE-20726638, SE-20726645, SE-20726653, SE-20726679, SE-20726687, SE-20726870
Response 4	As stated in the EIS (refer to Section 1.1): The Proposal will operate as a "peak load" generation facility supplying electricity at short notice when there is a requirement in the NEM. On this basis, approval is being sought for the facility to operate at a capacity factor of up to 10 per cent on natural gas and two per cent on diesel in any given year. It can be anticipated that the Proposal approval and Environmental Protection Licence conditions for the facility would align with the EIS and would limit the capacity of operations. Any increase to the level of proposed operation would require further assessment and approval. As stated in the EIS (refer to Section 2.1), Snowy Hydro expects that likely operations would result in a capacity factor of about two per cent in any given year. The approval sought in the EIS (maximum capacity of 12%) is therefore considered a conservative upper limit.

Issue 5	**The Proposal is not designed to be "Hydrogen Ready" but should be. Hydrogen should be used in preference to gas as a fuel source**
Submission ID	SE-20726641, SE-20726645, SE-20726649, SE-20726852, SE-20726855, SE-20726684, SE-20726710, SE-20726718, SE-20726737, SE-20726754, SE-20726809, SE-20726867
Response 5	Submissions vary in response regarding hydrogen, with some suggesting an innovative move direct to hydrogen while others question the hydrogen readiness of the Proposal. Given the need to modify the facility to run on hydrogen, some submissions question whether hydrogen has a future role in the facility's operation. Hydrogen is not considered a viable alternative to gas for this Proposal. As noted in the EIS, it is not currently cost-effective or available (refer to Section 4.2.2). AEMO's Integrated System Plan (ISP) (AEMO, 2020b) is consistent with this conclusion, stating that "Hydrogen has the potential to meet some of Australia's energy needs, once it is economically competitive and the possible challenges to efficient sector integration are resolved (pg 22)". To date, there is no proven large-scale hydrogen project in operation. Large-scale hydrogen production has not yet been implemented in Australia. While increasing in number, projects are limited to pilot, demonstration, and small-scale projects in various development stages (Monash University, 2021). While clean hydrogen is identified as a priority low emission technology in the Australian Government's Technology Investment Roadmap, it is viewed as a longer-term option for large industry use (Department of Industry Science Energy and Resources, 2020, pg. 8). Accordingly, the Proposal is being designed to accept a 10% mix of hydrogen in natural gas, with the potential to be upgraded to higher hydrogen mixes. The 10% is premised on the expected capability of the Jemena Gas Networks Northern Trunk transmission pipeline to store and transport the hydrogen and gas blend, this being the transmission pipeline from which the gas lateral to the Proposal would connect into and draw gas, and the gas/hydrogen specification for the transmission pipeline. If the gas network specification increased to 15% hydrogen, we expect that the power station will be capable of accepting this mix. The case set out above is considered very likely however it is yet to be finalised with the equipment manufacturer in terms of a final contractual position. Based on this hydrogen and gas blend, the preferred equipment supplier's gas turbines have been assessed and can use a 10-15% hydrogen blend. The turbines' capability has the potential to be extended to a 30% hydrogen mix with changes to the internal equipment of the turbines, including the fuel gas burners and fuel supply valves and piping. To enable any hydrogen mix capability, additional costs would also be incurred for equipment outside the power station, particularly to the gas lateral piping and compressor station being installed by the pipeline owner and operator. As such, this equipment is to be designed to enable the same capability as the power station, being a 10-15% hydrogen blend. Changes to the gas lateral design to achieve performance over and above this capability would be significant and may prove to be uneconomic, and unnecessary as it would exceed the expected hydrogen mix in the gas transmission pipeline. For hydrogen blends above 10-15%, a second gas lateral is potentially required due to the pipeline specifications required for higher levels of hydrogen in fuel, notably increased wall thickness to prevent embrittlement caused by hydrogen blends. It is noted that this approach accords with the strategy outlined in the DPIE NSW Electricity Infrastructure Roadmap. The Roadmap identifies the potential for firming

capacity provided by gas-fired generation that balances the supply of variable renewable energy to run on hydrogen for a minimum proportion of its operating time each year, as the capability becomes economic. Using a 10-15% hydrogen blend means the power station will effectively run on hydrogen for 10-15% of its operating time each year

The Proposal will support the reliability of developing gas networks and support energy security in NSW through participation in the gas market as identified in the NSW Government Future of Gas Statement (NSW Government, July 2021).

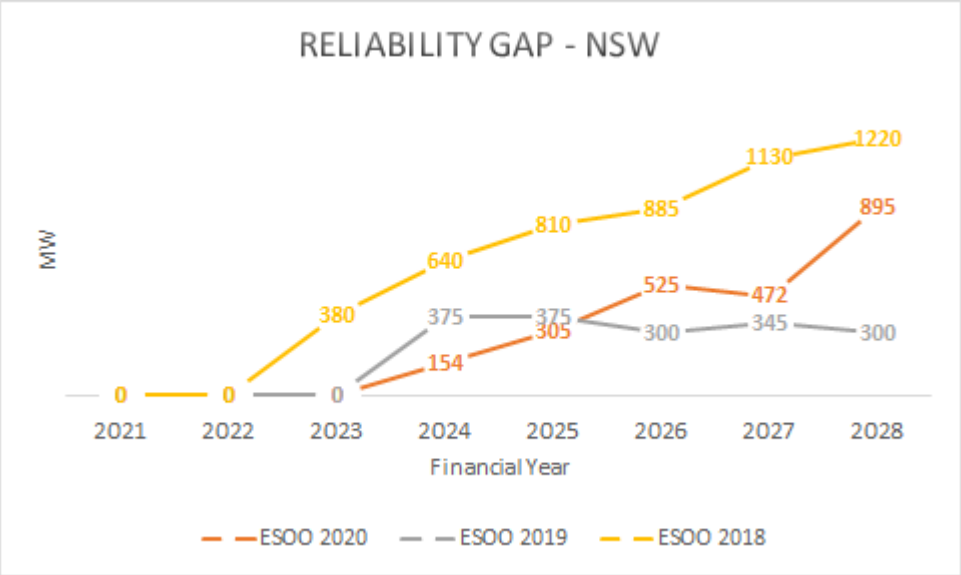
5.2 Proposal justification

Issue 6	**There isn't a shortfall of electricity in the NEM sufficient enough to create a 'reliability shortfall'. Additional dispatchable generation is not required (AEMO's figure of a 154MW shortfall is frequently referenced in submissions)**
Submission ID	SE-20726637, SE-20726638, SE-20726646, SE-20726653, SE-20726666, SE-20726675, SE-20726677, SE-20726679, SE-20726680, SE-20726686, SE-20726687, SE-20726694, SE-20726699, SE-20726704, SE-20726707, SE-20726710, SE-20726714, SE-20726716, SE-20726718, SE-20726742, SE-20726743, SE-20726748, SE-20726751, SE-20726754, SE-20726765, SE-20726766, SE-20726777, SE-20726787, SE-20726788, SE-20726799, SE-20726803, SE-20726809, SE-20726814, SE-20726818, SE-20726819, SE-20726821, SE-20726824, SE-20726829, SE-20726832, SE-20726833, SE-20726834, SE-20726835, SE-20726836, SE-20726839 SE-20726840, SE-20726841, SE-20726843, SE-20726845, SE-20726847, SE-20726848, SE-20726852, SE-20726861, SE-20726870, SE-20726871, SE-20726873, SE-20726874, SE-20726882, SE-20726686
Response 6	A strong theme throughout the submissions disputing the justification for the Proposal because of the reliability shortfall resulting from the closure of Liddell Power Station. It is important to identify that the 154MW figure often used is the shortfall identified for the 2023-2024 year in the AEMO 2020 Electricity Statement of Opportunities (AEMO, 2020a), as the forecast reliability gap to meet the Interim Reliability Measure for extreme events. In the 2020 ESOO this figure increases from 154MW in 2023-24, to 305MW in 2024-25 to 2,000MW by 2029-30, describing an increase in the reliability shortfall. These scenarios exclude consideration of the Hunter Power Project. As such, using 154MW to describe the reliability shortfall is a misuse of that figure, with AEMO's ESOO clearly identifying a reliability shortfall in the NEM that needs to be addressed for a reliable power system. It is also noted that the reliability figures are based on AEMO's P10 modelling, meaning 10% of their modelled scenarios require more than the capacity identified (e.g. 305MW in 2024-25). Having a power system that is short on capacity 1 in 10 days is not desirable. The figure below illustrates the progressive change in the reliability gap of capacity required to meet the reliability standard under a scenario of 10% PoE for unserved energy ("USE") i.e. USE ≤ 0.0002%. Specifically, whilst the trend shows some reduction in the gap in the early years the progressive year-on-year forecast clearly demonstrates an emerging reliability gap in NSW. Crucially, the inclusion of Snowy 2.0 has no impact on these early years, given the commissioning schedule across financial year 2026. Moreover, in later years, Snowy 2.0 has negligible impact on these outcomes without associated transmission being committed, specifically Humelink.

Accordingly, NSW remains highly exposed during the period from Liddell retirement to the commissioning of Snowy 2.0 which is highly dependent on Humelink approval.

The increasing reliability shortfalls in NSW shown in the 2020 ESOO (154MW in 2023-24 increasing to 2,045MW by 2029-30) reflect issues that include the closure of Liddell Power Station, the absence of Humelink, and the reducing reliability of coal power stations.

Figure 1 NSW Reliability Shortfall shown in the AEMO 2018, 2019 and 2020 ESOOs



Data extracted from AEMO Electricity Statements of Opportunities 2018, 2019, 2020

There are further developments since the AEMO 2020 ESOO that will increase the reliability risk to NSW. Announcements since the 2020 ESOO include:

- The NSW Government's renewable development targets under the NSW Electricity Infrastructure Roadmap, November 2020 (that will add to significant level of non-firm generation, which in turn will increase the operational challenges and associated costs of coal generators providing firm capacity)
- Announced earlier coal generator retirement dates and the potential for further earlier coal generator retirements (that will reduce firm / dispatchable capacity) (AEP Elical, 2020).
- Increasing forced outages from the ageing coal generators that can result in periods of significant low generation reserves.

Further, AEMO's ISP has been updated since preparation of the EIS, and any updates from the July 2020 release are reflected in this response document. The ISP highlights the need for firming capacity, identifying that by 2040 (refer to Section 4.3.2 of the EIS):

- Over 26 GW of new grid-scale renewables is needed in all but the Slow Change scenario
- 6-19 GW of new dispatchable resources are needed in support. pg.6.

For reasons stated, reliability in New South Wales is forecast to continue to deteriorate over the 10-year outlook due to the impact of increasing forced outage rates as generators age and near retirement. AEMO still considers significant risks in load

shedding if peak demands reach 10% of modelled scenarios and they coincide with either low VRE generation or with long-duration outages. As experienced at times in recent years, this could lead to significant load shedding.

More recently, AEMO has publicly stated their support for the development of firming plants, with particular reference to the Hunter Power Project (AEMO, 2021). Specifically, AEMO acknowledged that dispatchable generation provided by the HPP will unlock many multiples of low-cost renewable generation capacity and will provide the necessary security required when wind and solar renewable resources are not available, particularly where other storage cannot bridge the gap.

Submissions are also critical of the EIS for failing to identify that the Liddell Taskforce found that a range of already committed and probable projects would be "more than sufficient" to address the energy reliability gap in summer 2023-2024.

"Probable" projects, while providing useful background, are not considered a reliable basis for decision making given the long lead times in developing projects and uncertainties around final investment decisions. With respect to committed projects, page 10 of the Liddell Taskforce Report refers to analysis and modelling that indicates "only a portion of the capacity offered by Liddell can be replaced by committed projects in the NSW NEM region. If interconnectors are constrained (i.e. in relatively high demand periods) and generators do not change their bidding behaviour, NSW NEM Region wholesale electricity prices would be significantly higher without Liddell if there is no further investment beyond currently fully committed projects or Snowy 2.0".

Issue 7	**The justification does not satisfactorily address gas supply availably and alternatives**
Submission ID	SE-20726834, SE-20726775
Response 7	This issue is primarily centred around concerns the EIS does not satisfactorily address gas supply availability, and that there is no discussion or treatment of alternatives. The SEARS requires: the strategic need and justification for the project having regard to energy security and reliability in NSW and the broader National Electricity Market including an analysis of gas supply availability. With respect to alternatives, the Proposal's main purpose and objective is to meet a specific need, which is to provide dispatchable capacity to the NEM when the needs of electricity consumers are highest. Therefore, the alternatives (which are discussed in Section 4.4 of the EIS) have been assessed with regard to their ability to operate as a peak load generation facility, capable of supplying electricity at short notice when there is high demand or other temporary constraints in regular supply networks. The commercially viable alternatives considered to meet the need of the Project include pumped hydro and batteries. Wind, solar and existing coal-fired power stations are also discussed.
Issue 8	**The Proposal will not keep electricity prices down - burning gas is expensive**
Submission ID	SE-19464915, SE-20726645, SE-20726649, SE-20726653, SE-20726664, SE-20726676, SE-20726680, SE-20726690, SE-20726702, SE-20726706, SE-20726707, SE-20726709, SE-20726712, SE-20726718, SE-20726737, SE-20726743, SE-20726757, SE-20726776, SE-20726787, SE-20726788, SE-20726803, SE-20726818, SE-20726821, SE-20726834, SE-20726836, SE-

	20726841, SE-20726843, SE-20726853, SE-20726855, SE-20726861, SE-20726862 SE-20726871, SE-20726872
Response 8	The Proposal will firm up solar and wind to prevent blackouts and high prices after the Liddell power station closes at the end of the summer in 2023. The investment in Kurri Kurri will contribute to the dispatchable capacity needed to maintain low prices and reliable supply. Increasing supply, through the additional MWs installed at Kurri Kurri, will have the effect of driving down electricity prices, and will provide the necessary dispatchable 'firmed' energy, ensuring security and stability to support the volatility that arises from intermittent renewables. While the Project would participate in the wholesale market, the business case is not dependent on market volatility and selling high-priced power into the spot market, but rather support lower prices through a combination of revenue streams and by offering competitive contracts to energy users. The combined revenue streams for the project providing a project with a rate of return exceeding 10%.
Issue 9	**The EIS fails to support the claim that gas power stations are reliable, as gas power stations are dependent on the availability and delivery of affordable gas**
Submission ID	SE-20726692, SE-20726718, SE-20726809, SE-20726818, SE-20726821, SE-20726834, SE-20726871
Response 9	This issue is based on a concern that the Proposal will be reliant on a steady supply of affordable gas. The 2017 example of Colongra power station not starting due to low pressure is referenced as evidence that gas power stations are not reliable. The Proposal's demand for gas and operating hours upon which the business case is predicated is based on the supply that can be provided by the Jemena Gas Networks Northern Trunk transmission pipeline, in combination with the gas storage capability of the gas lateral connecting the power station to the Northern Trunk, and on site back up diesel storage. Sufficient gas will be stored for the Proposal in a part of the gas lateral. This "gas bottle" will allow the Proposal to operate at full load for 6-7 hours on gas, with the gas lateral pipeline to be refilled over a one day. Optimisation through design of the gas delivery equipment has the potential to improve this refill rate. Jemena Gas Networks (JGN) have confirmed that the Northern Trunk contains sufficient spare gas transportation capacity to be able to refill the gas lateral to the power station over a one-day period, and to do so across every day of the year. Snowy Hydro will be entering into a firm gas transportation contract with JGN to such effect. JGN, as the network operator typically target availability and reliability numbers for the transmission pipeline of 98% and 99% respectively. Snowy Hydro and the gas lateral owner/operator are targeting availability and reliability numbers consistent with the gas transmission. Additional reliability is provided through the dual-fuel design of the facility. These availability and reliability targets will be optimised during detailed design and are expected to improve. Maintenance regimes will be established for outages on each of the facilities to occur during the low electricity demand periods of the year, likely Spring and Autumn, resulting in high levels of availability and reliability during the summer and winter electricity peaking seasons.

While the concerns about gas prices are acknowledged, the decision to proceed with the Proposal is underpinned by the underlying Hunter Power Project business case which has demonstrated that it will contribute positively to returns and will return earnings well in excess of its cost.

The Proposal will support the reliability of developing gas networks and support energy security in NSW through participation in the gas market as identified in the NSW Government Future of Gas Statement (2021), which identified Kurri Kurri as one of the developments that will be critical to "providing peaking power and supporting reliability and meeting the NSW Energy Security Target (pg 13). While the Future of Gas Statement identifies a need for investment in gas supply, Figure 3 (pg 11) shows forecast consumption is primarily driven by large industry, residential and commercial use, rather than gas powered generation.

Issue 10	**Capacity factor (the time the power station operates during the year) of 'peaking' gas-fired power stations is low and therefore another is not needed**
Submission ID	SE-20680606, SE-20726637, SE-20726638, SE-20726641, SE-20726645, SE-20726646, SE-20726653, SE-20726662, SE-20726671, SE-20726673, SE-20726679, SE-20726685, SE-20726687, SE-20726690, SE-20726692, SE-20726709, SE-20726712, SE-20726720, SE-20726723, SE-20726737, SE-20726754, SE-20726779, SE-20726796, SE-20726809, SE-20726813, SE-20726819, SE-20726821, SE-20726829, SE-20726834, SE-20726842, SE-20726843, SE-20726844, SE-20726854, SE-20726855, SE-20726862
Response 10	Scepticism regarding the need for the Proposal due to its low capacity factor was a key submission theme. Concern was also expressed in regard to the generation capacity not being not used when demand is high. An example raised was the Tomago aluminium smelter reducing its demand voluntarily, while Snowy Hydro's Colongra gas plant remained offline. This response addresses the following two key concerns: 1. Gas power stations with low capacity factors mean there is already sufficient dispatchable capacity available in the market. 2. Electricity is not being supplied to the market when demand is high to due electricity generators bidding at high whole-sale prices (i.e. if electricity generators changed their market practices, new (or less new) gas-powered generation would not be required to be built). *Issue 1*: Refer to Response 6, and the following response. Capacity factor is an aggregation of a generating plant's operation over, typically a year, as opposed to the total amount of MWs available at a point in time. It is possible to have several low capacity factor power stations in the NEM, and even though all have a low capacity factor, all of that capacity could be required in a period of high demand. Examples of this include the catastrophic failure of Callide C Power Station in May 2021, transmissions events and droughts. The capacity factor of dispatchable generation that supports intermittent renewable energy must by definition be low. If a power station was operated closer to maximum capacity factor, there would be no available capacity to draw on when renewable energy sources were not operating and not generating into the NEM (low solar periods of the day, or low wind periods). A low capacity factor provides the reserve needed to support intermittent renewable energy generation.

The 2006 drought is an example where the capacity of the power generating system became tenuous as inflows and storages within hydro systems fell to unseen low levels in south-east Australia. Water storages for hydro generation assets fell to approximately 17 percent of capacity, with individual storages at significantly lower levels, and inflows feeding the storages at approximately only 25 per cent of their long-term average. The resultant impact on demand for dispatchable generation was significant enough for Snowy Hydro's Victoria gas generation assets to generate above their original forecast capacity.

AEMO emphasised the relevance of dispatchable generation at the Committee for Economic Development of Australia in Melbourne this year, advising with regard to low capacity factor power stations, "*Even at two per cent of the time, dispatchable generation like this unlocks many multiples of low-cost renewable generation capacity into the market, by providing the security for when the sun isn't shining, the wind isn't blowing, and other storage can't bridge the gap.*"

Issue 2: The need for capacity provided by a new power station is determined by reliability shortfall over a longer period, rather than single instances of bidding / availability which are influenced by more complex financial circumstances, contract positions, and competitive behaviour between generators. The asset life of power stations are 30 years plus, and consequently deciding when to build new generation capacity is necessarily based on longer term market forecasts.

There are a number of peaking generators in the market, not only Snowy Hydro, that could supply MWs at a point in time, any of which could take a position lower in the bid stack by offering MWs for lower $/MWh.

AEMO is the market regulator and can issue notices and direction for generators to come on or be curtailed. The Market Price Cap (currently $15,000/MWh) is the price automatically triggered when AEMO directs network service providers to interrupt customer supply to keep supply and demand in the system in balance.

The importance of market-based generators having the ability to bid at the Market Price Cap is highlighted by the alternative method of addressing shortfall events. AEMO is empowered to deploy generation (or demand response) and it has contracted with suppliers operating outside of the market under its reserve trader (RERT) function to prevent potential blackouts. AEMO has increased its use of RERT in recent years, and the energy deployed under it has been very expensive for consumers - up to $60,000/MWh, or four times the Market Price Cap.

Tomago Aluminium near Newcastle is the country's largest electricity consumer. While it is a business with responsibilities to customers, it understands the electricity market, with its supply contract including a curtailment process to manage customer load during plant outages. In this regard, there are mechanisms in place to balance the interests of high electricity use consumers with the broader customer base.

Households are not prejudiced by occasional price spikes. This is because they do not pay the wholesale price, but rather the retail tariff, which is largely determined by average energy prices (in 2018 the ACCC found that the cost of volatility to consumers in NSW was 1% of the energy component of electricity tariffs). It is the job of the energy retailer to manage their exposure to wholesale price volatility by purchasing appropriate levels of hedging cover.

Issue 11	**The Proposal is a waste of gas reserves and does not support a transition from fossil fuels. There are cleaner and cheaper alternatives available for replacement energy capacity**
Submission ID	SE-19464915, SE-19602878, SE-20680606, SE-20726637, SE-20726639, SE-20726644, SE-20726645, SE-20726646, SE-20726649, SE-20726651, SE-20726653, SE-20726654, SE-20726655, SE-20726657, SE-20726658, SE-20726662, SE-20726663, SE-20726664, SE-20726670, SE-20726672, SE-20726674, SE-20726678, SE-20726679, SE-20726680, SE-20726681, SE-20726682, SE-20726683, SE-20726685, SE-20726686, SE-20726687, SE-20726688, SE-20726689, SE-20726690, SE-20726691, SE-20726692, SE-20726694, SE-20726697, SE-20726703, SE-20726709, SE-20726716, SE-20726717, SE-20726718, SE-20726720, SE-20726721, SE-20726722, SE-20726727, SE-20726729, SE-20726732, SE-20726734, SE-20726735, SE-20726736, SE-20726738, SE-20726744, SE-20726748, SE-20726749, SE-20726750, SE-20726753, SE-20726756, SE-20726757, SE-20726759, SE-20726764, SE-20726767, SE-20726768, SE-20726770, SE-20726776, SE-20726780, SE-20726781, SE-20726785, SE-20726788, SE-20726800, SE-20726801, SE-20726802, SE-20726804, SE-20726805, SE-20726806, SE-20726807, SE-20726809, SE-20726810, SE-20726811, SE-20726815, SE-20726816, SE-20726817, SE-20726819, SE-20726821, SE-20726822, SE-20726825, SE-20726827, SE-20726834, SE-20726836, SE-20726837, SE-20726843, SE-20726844, , SE-20726848, SE-20726852, SE-20726854, SE-20726855, SE-20726857, SE-20726858, SE-20726861, SE-20726862, SE-20726863, SE-20726864, SE-20726866, SE-20726867, SE-20726869, SE-20726871, SE-20726873, SE-20726877, SE-20726878
Response 11	Refer to Responses 3, 5 and the 6 and the following response provided. There was a strong sentiment through the submissions received that replacement generation capacity should be other than gas, due to clean affordable alternatives including battery-backed renewables (wind and solar), pumped-hydro and hydrogen. Various announced energy projects have been referenced in submissions, in support of the proposition that the Proposal is unnecessary (including interconnectors, solar farms and battery projects). It was also highlighted that due to the scarcity of gas, it should only be used where absolutely required. Refer to Response 6 above. The ISP states that existing gas-powered generation plants will continue to play a critically important role in the NEM (AEMO, 2020b). The ISP also states that the investment case for new gas-powered generation plants will critically depend on future gas prices and that significant new dispatchable capacity is needed in the 2030s. Alternatives to the Proposal are addressed in Section 4.4 of the EIS while the emergence of battery projects is recognised in Section 4.4.1 of the EIS. At the present time, and until there are significant breakthroughs in battery technologies, the cost of medium and long-term energy storage using batteries remains high. Battery storage is therefore not being considered by industry as an achievable means of providing all the firming capacity in the NEM for the foreseeable future. The NSW Electricity Infrastructure Roadmap (November 2020) is consistent with the EIS, describing batteries as providing short duration storage, while recognising long duration storage batteries may become economic in the future.

	In summary, NSW requires firming capacity to be provided in the near future to maintain network reliability, and gas is currently the most viable alternative in the short term to support a transition to a low carbon energy future by allowing increased renewable energy generation.
Issue 12	**The business case / financial justification for the Proposal is inadequate and should be available to inform the assessment of the Proposal**
Submission ID	SE-20680606, SE-20726638, SE-20726639, SE-20726642, SE-20726644, SE-20726646, SE-20726651, SE-20726653, SE-20726654, SE-20726655, SE-20726657, SE-20726658, SE-20726659, SE-20726662, SE-20726664, SE-20726666, SE-20726667, SE-20726668, SE-20726673, SE-20726674, SE-20726678, SE-20726685, SE-20726686, SE-20726690, SE-20726695, , SE-20726697, SE-20726702, SE-20726703, SE-20726704, SE-20726706, SE-20726714 SE-20726718, SE-20726719, SE-20726720, SE-20726721, SE-20726723, SE-20726726, SE-20726728, SE-20726730, SE-20726731, SE-20726733, SE-20726734, SE-20726736, SE-20726740, SE-20726742, SE-20726743, SE-20726746, SE-20726748, SE-20726752, SE-20726755, SE-20726757, SE-20726758, SE-20726760, SE-20726763, SE-20726764, SE-20726765, SE-20726774, SE-20726776, , SE-20726785, SE-20726790, SE-20726792, SE-20726794, SE-20726795, SE-20726799, SE-20726809, SE-20726813, SE-20726817,SE-20726819, SE-20726820, SE-20726824, SE-20726831, SE-20726832, SE-20726834, SE-20726837,SE-20726840, SE-20726842, SE-20726843, SE-20726844, SE-20726847, SE-20726848, SE-20726853, SE-20726855, SE-20726857, SE-20726858, SE-20726861, SE-20726863, SE-20726867, SE-20726873, SE-20726876, SE-20726877, SE-20726882
Response 12	The underlying Proposal business case is Commercial in Confidence, but it demonstrates that the Proposal will contribute positively to Snowy Hydro returns and will return earnings well in excess of its cost. An internal rate of return exceeding 10% is forecast for the project. The business case has been approved by the independent Board of Directors and the Shareholder (Federal Government). Refer also to Response 17.
Issue 13	**The Proposal should not be considered Critical State Significant Infrastructure**
Submission ID	SE-20726708, SE-20726736, SE-20726753
Response 13	The Proposal was declared by the NSW Minister for Planning and Public Spaces to be CSSI under Section 5.13 of the Environmental Planning and Assessment Act 1979 (EP&A Act) (refer to Section 3.3.1 of the EIS). As such, the Proposal is considered to be "essential for the State for economic, environmental or social reasons", and is listed under clause 16 and Schedule 5 of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). The general principles for the declaration of projects as CSSI are set out in the NSW DPIE website under the Critical State Significant Infrastructure Guideline (DPIE 2021): https://www.planning.nsw.gov.au/-/media/Files/DPE/Guidelines/Assess-and-Regulate/Declaration-of-SSI-and-CSSI---April---2021.pdf?la=en.

Issue 14	**The site location and purchase process raise integrity concerns**
Submission ID	SE-20726637, SE-20726638, SE-20726645, SE-20726653, SE-20726671, SE-20726679, SE-20726687, SE-20726706, SE-20726754, SE-20726804, SE-20726813, SE-20726814
Response 14	The site selection process considered alternative locations and selection criteria are detailed in Section 4.4.3 of the EIS. The site selection process identified the Kurri Kurri site as the only site that is unconstrained, accessible, and sufficiently distanced from incompatible land uses. There are sound environmental, operational and infrastructure connection reasons for selection of the site from a planning perspective.
Issue 15	**The project is politically motivated and not in the best interests of the public**
Submission ID	SE-20009914, SE-20680606, SE-20726641, SE-20726642, SE-20726656, SE-20726671, SE-20726672, SE-20726674, SE-20726675, SE-20726682, SE-20726687, SE-20726716, SE-20726718, SE-20726730, SE-20726737, SE-20726751, SE-20726754, SE-20726761, SE-20726796, SE-20726809, SE-20726818, SE-20726820, SE-20726837, SE-20726842, SE-20726855, SE-20726857, SE-20726871, SE-20726877
Response 15	The Strategic Context and Project Need is outlined in Chapter 4 of the EIS and detailed below in Response 17. The Proposal is fulfilling a genuine need for longer duration firming capacity for which there are no current alternatives, and the merits of the Proposal will be evaluated through the EIS process. This firming capacity will support increased variable renewable energy sources, supporting the transition to a future of reduced thermal generation sources. The need for this firming capacity will continue to grow as baseload coal-fired power stations become more unreliable and come off-line. The need for such firming capacity is further highlighted in times of crisis (e.g. power station failures, transmissions event, reduced solar/wind generation and droughts). More reliable energy supply and supporting increased variable renewable sources has a broad public benefit.
Issue 16	**Concern the approval of the Proposal would further harm the competitive operation of the National Electricity Market in NSW due to market concentration / Concern the government is interfering with the energy market and discouraging private investment in renewables**
Submission ID	SE-20726654, SE-20726676, SE-20726706, SE-20726710, SE-20726724, SE-20726818, SE-20726819, SE-20726845, SE-20726852, SE-20726870, SE-20726874,
Response 16	The Proposal will not crowd out private investment, simply because the installed generation capacity in the NEM is a long way from that identified as required by AEMO. Significantly more investment is required over the next decade, as noted by AEMO, to achieve the Interim Reliability Measure and avoid electricity shortfalls in times of high demand and increased intermittent generation. Refer to Response 6. The International Energy Agency (IEA) report (IEA, 2021) shows the demand for natural gas generation is expected to increase as coal retirements progressively occur. The faster coal-fired generators retire, the more it can be expected that natural gas generators will be required to firm the solar and wind electricity that replaces that coal generation, as such there is an expected increase in

demand for dispatchable gas fired generation through the closure of Liddell and on to the end of life of Vales Point and Eraring coal fired power stations.

AEMO analysis supports increased investment in firm capacity. It has stated that 6-19GW of new dispatchable resources are needed by 2040 to support the growth of renewables (AEMO, 2020b). In the most recent Electricity Statement of Opportunities, it noted that despite a pipeline of 57GW of new renewable capacity, there was no committed scheduled capacity beyond Snowy 2.0. AEMO stated that the investment in Kurri Kurri will contribute to the dispatchable capacity needed to maintain low prices and reliable supply.

Given the significant capacity forecast to be required by the market operator, there is commensurate opportunity for private investment in other dispatchable generation (as evidenced by Energy Australia reaching final investment decision on their Tallawarra open cycle gas turbine). The opportunity for investment in renewable energy is supported by the dispatchable capacity that would be provided by the Proposal.

Issue 17	**The Project is considered a waste of taxpayer funds that could be better spent elsewhere. How does government funding vs equity work?**
Submission ID	SE-20726644, SE-20726654, SE-20726658, SE-20726661, SE-20726666, SE-20726677, SE-20726681, SE-20726699, SE-20726706, SE-20726709, SE-20726710, SE-20726720, SE-20726722, SE-20726723, SE-20726731, SE-20726748, SE-20726758, SE-20726759, SE-20726769, SE-20726775, SE-20726778, SE-20726785, SE-20726788, SE-20726796, SE-20726822, SE-20726829, SE-20726831, SE-20726834, SE-20726844, SE-20726846, SE-20726854, SE-20726867, SE-20726868, SE-20726872
Response 17	Many submissions express a view that the Proposal is a waste of taxpayer funds and/or that $610 million in spending would be better directed to other areas (e.g. including health, education, and renewables). These submissions suggest the Proposal is being paid for as a subsidy by the Federal Government with no return on investment. Some of these submissions demonstrate a need to clarify the structure of Snowy Hydro, and its relationship with the Federal Government. Snowy Hydro is a public company incorporated under the *Corporations Act* 2001 (Cth). Snowy Hydro is 100% owned by the Commonwealth and is a "Commonwealth Company" and Government Business Enterprise" under the *Public Governance, Performance and Accountability Act* 2013 (Cth). Snowy Hydro operates at arm's length from the Federal Government. Snowy Hydro is a commercial entity and is expected to operate on a commercial basis and deliver financial returns consistent with commercial operations to its Shareholder. Snowy Hydro is governed by an independent Board of Directors and benchmarks its governance to the ASX Corporate Governance Principles. As with any business, to fund growth Snowy Hydro must raise financial capital, and seeks to optimise its capital structure using the best mix of debt and equity financing that maximises the company's market value while minimising its cost of capital. Snowy Hydro does not receive subsidies and all capital must earn a market return. Snowy Hydro has never written down an investment, with each investment to date earning a positive market return, and with the Hunter Power Project business case being no different. For the Hunter Power Project, the capital will be raised through a 100% equity contribution from the Company Shareholder, being the Federal Government.

Importantly, this is not paid as a subsidy, but as an equity contribution that is returned to the Shareholder through dividend repayments. The forecast revenue arising from the Proposal manifests as a contribution to normal Company dividend payments to the Shareholder, and consequently to the public purse. Over the past 7 years, Snowy Hydro has paid in excess of $1.5 billion in dividends, dividends that are paid wholly to the Federal government. When the Proposal is operating and generating revenue, it is expected that Snowy Hydro will continue to pay dividends to the Federal Government at a rate of 70% of underlying earnings.

The Proposal is expected to earn returns from multiple revenue streams, as part of the traditional Snowy Hydro revenue model which continues to undergo transformation along with transformation of the NEM itself and changing customer product requirements. The Proposal is an additive for Snowy Hydro in delivering bespoke products for customers, with variants on core products including capacity and hedging, firming, storage, peak and super peak swaps, and load following products for Retailers and Commercial and Industrial customers.

The underlying Proposal business case is Commercial in Confidence, but it demonstrates that the Proposal will contribute positively to Snowy Hydro returns and will return earnings well in excess of its cost. An internal rate of return exceeding 10% is forecast for the project. The business case has been approved by the independent Board of Directors and the Shareholder (Federal Government).

The Project being 100% owned by the Federal government, all returns that accrue to Snowy Hydro, accrue to the Australian taxpayer.

5.3 Stakeholder consultation

Issue 18	**Inadequate consultation during the EIS process and inadequate duration of the exhibition/submission period**
Submission ID	SE-20726689, SE-20726788, SE-20726829, SE-20726855, SE-20726873
Response 18	Concerns expressed about consultation during the EIS process included: ▪ The consultation should have covered a wider scope, including the question of renewables development over fossil fuels ▪ Whether adequate consultation with families in proximity to the plant had occurred and the outcomes of any consultation ▪ While some consultation events were held, they were held during business hours, preventing people from attending ▪ The effect of COVID-19 on people's ability to attend consultation events ▪ The consultation felt rushed and the exhibition period was too short ▪ The EIS committed to an appropriate level of engagement with interested community members during the public exhibition period (e.g. open house or subsequent CWG meeting). A community stakeholder identification process was undertaken in accordance with the SEARs and as outlined in Section 5.4.2 of the EIS. Community stakeholders with an interest or potentially affected by the Proposal were identified to include: ▪ Nearby residents, property owners and businesses with a 4 km radius of the Proposal Site. This was identified as being the area where residents and businesses are most likely to be interested in the Proposal ▪ The Cessnock, Kurri Kurri, and broader community

- The local business community
- Local interest groups such as community groups, environmental groups, and resident groups
- The Community Reference Group for the Hydro Kurri Kurri Site Redevelopment Project.

As identified in Section 5.4 of the EIS, the key steps in the community engagement process during EIS preparation included:

- Announcement of the Proposal, and establishment of dedicated Proposal email address, 1-800 hotline number and webpage
- Letterbox drops to 309 residences within 3 km of the Proposal Site (shown in Figure 5.2 of the EIS)
- Three CWG meetings, on 10 March, 30 March, and 12 April 2021. These were held at 6-8pm, outside of standard business hours to maximise attendance. Those wishing to attend had the option to do via Zoom to accommodate any COVID-19 restrictions
- Doorknocking at 38 residences and businesses within 2 km of the Proposal Site (shown in Figure 5.2 of the EIS)
- One-on-one meetings with nearby residents as requested.

The issues covered during consultation were wide in scope and included project alternatives (preference for renewables). These issues and Snowy Hydro's response are summarised in Table 5.3 of the EIS.

The exhibition period of 28 days was determined by the NSW Department of Planning, Infrastructure, and Environment in line with the requirements for Critical State Significant Infrastructure.

An additional CWG meeting was offered by Snowy Hydro during the exhibition period but was deemed not required by the broader CWG. Snowy Hydro is committed to ongoing consultation and have employed a Community and Local Engagement Manager to support stakeholders and the local community. Communication tools would be available for the duration of construction of the Proposal and are detailed in Table 3.1 of Section 3.2.

Issue 19	**The EIS does not provide an appropriate level of detail regarding the consultation which was provided and the communities response**
Submission ID	SE-20726751, SE-20726833
Response 19	The level of detail provided in the EIS (Section 5.4) regarding the consultation undertaken and the response is considered appropriate. The footprint of door knocking, and letterbox drops of residents in proximity to the site is shown in Figure 5.2 of the EIS. Detailed consultation records were collected, and the outcomes of consultation are presented in summary form (Table 5.3) in the EIS. This is consistent with the SEARs which requires the EIS to: describe the consultation that was carried out, identify the issues raised during this consultation, and explain how these have been considered and addressed. Additional content to support this response is provided Response 18 above.

5.4 Biodiversity

Issue 20	**Indirect impacts resulting from air pollution and increased ozone (O_3) on mapped important habitat for the Regent Honeyeater have not been considered**
Submission ID	SE-20726809
Response 20	Section 7.3.2 of the BDAR explains that the Proposal would directly impact approximately 0.40 ha of intact woodland of PCT1633 which is mapped as important habitat for the Regent Honeyeater. The Recovery Plan for the Regent Honeyeater identifies 9 key foraging species, none of which are found in PCT 1633 or confirmed in the Proposal Site. In addition to this, the plan also describes the ecological community and other tree species which may be regionally important, for example the Lower Hunter Spotted Gum Ironbark forest (not present on the Proposal Site), as well as flowering species such as *Eucalyptus eugenoides* (thin-leaved stringybark) and other stringybark species and *Eucalyptus fibrosa* (Broad-leaved Ironbark). Based on available literature and current knowledge of habitat preferences for this species in the Hunter Valley, the habitat on the Proposal Site would not be considered important, despite overlaying a portion of the important habitat mapping, as it contains no key foraging species, with the exception of low numbers of stringybark. There are no significant impacts predicted to foraging habitat for the Regent Honeyeater as a result of the minor clearing required for this Proposal. Section 9.1 of the BDAR includes a detailed assessment of serious and irreversible impact (SAII) as per the BAM and concluded that the Proposal is unlikely to result in a significant impact, reduce the population size or decrease the reproductive success of the Regent Honeyeater. Indirect impacts are considered in Section 9.2 and were considered minimal. Air pollution and increased ozone are within limits designed to protect human health. While no specific limits are known to exist for Regent Honeyeater, indirect air quality impacts are unlikely to have any effect on the Regent Honeyeater for the periods that they occupy the region.
Issue 21	**The Proposal contravenes the legal obligation to protect significant matters protected under national environment law - *Environment Protection and Biodiversity Conservation Act 1999***
Submission ID	SE-20726664, SE-20726694, SE-20726847
Response 21	An assessment of the biodiversity values and the likely biodiversity impacts of the Proposal was undertaken in accordance with the NSW *Biodiversity Conservation Act 2016* (BC Act) in accordance with the Biodiversity Assessment Method (BAM). Application of the *Fisheries Management Act 1994* and the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was also addressed. Assessment of significance have been conducted for threatened species, populations and communities that were recorded in the Proposal Site during field surveys or were identified as having a moderate or higher potential to occur in the Proposal Site based on the presence of habitat. For threatened biodiversity listed under the EPBC Act, significance assessments have been completed in accordance with the EPBC Act Policy Statement 1.1 Significant Impact Guidelines (Department of Environment, 2013) (see Appendix D of the BDAR). Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment that is affected, and upon the intensity, duration, magnitude, and geographic extent of the impacts (Department of

Environment, 2013). The assessment concluded that the proposal is unlikely to have significant impact on EPBC Act listed matters.

Nonetheless, the Proposal was referred to the Commonwealth Department of Agriculture, Water and the Environment who deemed the Proposal to be a controlled action under the EPBC Act as explained in Section 5.2.7 of the EIS.

Issue 22	**Revise the Proposal footprint to avoid biodiversity impacts to State and Federally listed species, ecological communities and areas mapped as important habitat**
Submission ID	SE-20726655, SE-20726786, SE-20726879
Response 22	The Proposal Site adopted for the EIS was informed by the proposed subdivision of land and is located almost entirely on previously disturbed industrial land. The Proposal Site represents the maximum area realistically required for the construction and operation of the project. The northern portion of the proposal site contains the switchyard which is influenced by the alignment of the existing north-south and east-west powerlines. The Proposal Site includes the requisite asset protection zone and some additional land to the south of the power station itself for construction laydown and maintenance activities, which also acts to help with meeting the Industrial Noise Policy requirements for surrounding land. During detailed design, consideration will be given to adjusting the northern section of the Proposal Site to further minimise impacts on biodiversity values. However, the assessment of biodiversity impacts and associated offsets is consistent with all specialist studies and is based on the maximum likely disturbance area.

Issue 23	**Potential impacts to the Hunter River Floodplain cannot be adequately assessed without the submission of a Biodiversity Offset Strategy**
Submission ID	SE-20726701
Response 23	Potential impacts to aquatic habitats inclusive of the Hunter River Regional Floodplain are considered throughout the EIS. Potential impacts were determined unlikely to result in a significant impact, as no channel works are proposed and as no significant impacts to water quality or hydrology are predicted. Therefore, aquatic habitats have no credit requirement or offset obligation and will not form part of the Biodiversity Offset Strategy. Should the Proposal be approved, Snowy Hydro would develop and implement a Biodiversity Offset Strategy under the Biodiversity Offsets Scheme to meet the Proposal's offset credit obligation. This is likely to comprise a combination of sourcing credits from the biodiversity credit market and payment to the Biodiversity Conservation Fund for any residual biodiversity credits. Details of the credit requirements requiring an offset are outlined in Table 12.1 and Table 12.2 of the BDAR.

Issue 24	**The EIS author not competent. The EIS for the Proposal does not establish that the significant environmental impacts will be reduced to as low as reasonably practical and to an acceptable level**
Submission ID	SE-20726724, SE-20726701

Response 24 The EIS has been prepared in accordance with the Environmental Planning and Assessment Regulation 2000 (see Section 1.6.2 of the EIS) and applicable State and Federal legislation. The EIS and relevant specialist studies have been prepared by competent technical professional's holding a degree or higher in the relevant field of study. All reports have been reviewed according to Jacobs' quality management system and technical framework.

The EIS contains all the information relevant to the environmental assessment of the Proposal. Assessment of significance have been prepared in accordance with State and Federal impact assessment guidelines. While some environmental impacts cannot be avoided, they have been minimised through site selection and design of the Proposal and would be further mitigated through implementation of mitigation measures that are outlined in the EIS and may be expected to be translated into the Project Approval.

5.5 Aboriginal heritage

Issue 25 **Concern about the adequacy of consultation with Traditional Owners by gas corporations**

Submission ID SE-20726863

Response 25 One submission was received regarding the adequacy of consultation with Traditional Owners by gas companies in relation to coal seam gas and pipeline projects generally. The gas lateral pipeline connecting to the Proposal is not within the scope of this EIS. Consultation with Traditional Owners and environmental impacts of the gas pipeline will be assessed as part of a separate EIS.

5.6 Hazards and risks

Issue 26 **Catastrophic fire conditions may render traditional bushfire prediction models and firefighting techniques less effective. Evidence is required to demonstrate that the increased risk of bushfire to surrounding lands as a result of climate change can be adequately mitigated**

Submission ID SE-20726701, SE-20726809, SE-20726837

Response 26 Climate change suggests a worsening of fire weather conditions, with the possibility that fires will be more intense, and that fire behaviour will at times be more difficult to control. Data supporting this are provided in Table 3-1 in the bushfire assessment report (Appendix F of the EIS). The key requirements for mitigating bushfire risk to the Proposal remain the same regardless of the potential worsening of fire weather conditions, namely:

- Managing bushfire fuels in the landscape
- Separating sensitive infrastructure from those fuels.

The hazard posed by vegetation/bushfire fuels to the Proposal are greatest to the north of the Proposal Site, as per Figure 4-6 in the Bushfire Assessment Report (Appendix F in the EIS). Vegetation in this area is managed as a Strategic Fire Advantage Zone by RFS, which should help to reduce the intensity and rate of spread of any fire approaching the Proposal Site, even with amplified fire weather. The proposed switchyard faces the greatest exposure to radiant heat from any fire. The separation (with the proposed 10m APZ in addition to the power line easement widths to the north and west) between bushfire prone vegetation and the remainder of the proposed power station, will significantly reduce radiant heat exposure. The Proposal

has been positioned and designed to manage the projected levels of radiant heat exposure. Flammable materials are planned to be stored remotely from bushfire fuel hazards with appropriate enclosures. As explained in Section 2.1 of the EIS, gas-fired powered stations are subject to stringent safety standards and the Proposal will include fire water storage, pumps, hydrants and deluges systems. While the risk may be amplified somewhat by climate change, the proposed controls are adequate to mitigate this risk.

As described in Section 10.2 of the EIS, a suite of measures is proposed to mitigate the risk of landscape fire to the Proposal. These measures will also serve to protect the surrounding bushland in the highly unlikely event of a fire emanating from the Proposal as a result of a structure fire or fire caused by failure of a transformer.

Issue 27	**Concern the Proposal represents an unacceptable level of hazard and risk**
Submission ID	SE-20726637, SE-20726638, SE-20726645, SE-20726653, SE-20726679, SE-20726687
Response 27	Six submissions raise concerns about several conclusions in the Hazard and Risk Assessment, including: ▪ The Proposal will exceed the electricity generation nominal energy output threshold and is therefore deemed as a potentially offensive industry development ▪ The minimum distance of the Proposal Site ... towards the western boundary is not met. Therefore, the Proposal is considered potentially hazardous (NSW, 2011) due to inadequate distance to the Rural Landscape-bushland." pg 21. The study methodology for the Hazard and Risk Assessment aligns with the former *NSW Department of Planning's Multi-Level Risk Assessment Guidelines* (NSW, 2011) and is set out in Appendix E of the EIS and Section 10.1.3 of the EIS. As explained in the EIS, the Proposal is falls into the category of 'potentially offensive development' because it exceeds the definition of designated development for electricity generating stations set out in Schedule 3 of the NSW Environmental Planning and Assessment Regulation 2000. Specifically, the Schedule 3 defines potentially offensive industry to include: "Electricity generating stations, including associated water storage, ash or waste management facilities, that supply or are capable of supplying – (c) more than 30 megawatts of electrical power from other energy sources (including coal, gas, wind, bio-material or solar powered generators, hydroelectric stations on existing dams or co-generation)." This was the trigger to undertake the Preliminary Hazard Assessment contained in Appendix E of the EIS. In addition, the Proposal was deemed to be a 'potential hazardous industry' based on the volume of dangerous goods / hazardous chemicals (natural gas) proposed to be stored within the Proposal Site. This also triggers a requirement for further assessment. Therefore, designation of the Proposal as a 'potentially offensive industry' development or potentially hazardous industry is not a conclusion of the Hazard and Risk Assessment, but rather a starting point. Because of the Proposal being categorised as a 'potentially offensive industry', broader environmental impacts on surrounding land use were required to be reviewed, analysed, and reported. To avoid repetition, the required technical studies form detailed sections of the EIS and include the analysis and management of the associated risks.

The Hazard and Risk Assessment considered heat and radiation effects for various volumes of gas (refer to Section 10.1.3 or Appendix E of the EIS). No sensitive receptors were predicted to be impacted), although as noted in the submissions, the minimum distance to other land uses of 35 m towards the western boundary is not met. This triggered further assessment of the risk, including semi-qualitative modelling at the request of the DPIE Hazards Team.

This additional analysis indicated:

- That the low-pressure gas supply pipework (i.e. the power station gas infrastructure) is unlikely to generate an ignited gas release event having thermal radiation or blast overpressure consequences much beyond the power station site perimeter except for a small area along the western boundary adjoining rural bushland
- The high-pressure (third-party designed, owned and operated) gas receiving station indicated that there is risk of an ignited gas release event with thermal radiation and blast overpressure consequences extending to neighbouring industrial land-use allotments, but not to any residential or sensitive land-use zones.

However, the consequence frequency assessment demonstrated that while there is potential risk, the likelihood of the such events is within the range of safe land-use criteria. The assessment concludes that no unusual risks have been identified that cannot be mitigated through the application of good industry practice, safety in design processes and operating practices.

The mitigation measures in the EIS stress that consideration of hazards, risks and safety will be prioritised in the selection and design processes and equipment specifications, construction, commissioning and operation. A suite of hazard assessment and safety workshops and investigations will be conducted and considered by DPIE, SafeWork NSW and NSW emergency services to ensure the highest levels of safety to construction and operation staff, as well as the community.

5.7 Soils and contamination

Issue 28	**The site contamination investigations within the EIS are insufficient. The baseline conditions at the site need to be understood in order to assess potential impacts of the Proposal**
Submission ID	SE-20726701, SE-20726712, SE-20726718, SE-20726737, SE-20726809, SE-20726837, SE-20726855
Response 28	As detailed in Chapter 11 of the EIS, the Kurri Kurri aluminium smelter site, inclusive of the Proposal Site, has been subject to extensive assessment and remediation activities. The Kurri Kurri smelter site was declared State significant, requiring a Remedial Action Plan (RAP) be prepared. The RAP must be accompanied by a Site Audit Statement from an EPA accredited site auditor and be prepared in accordance with the contaminated land planning guidelines under Section 145C of the EP&A Act and relevant guidelines under Section 105 of the *Contaminated Land Management Act 1997* (CLM Act). The Site Audit Statement prepared by a site auditor in accordance with Part 4 of the CLM Act must state that the land to which the statement applies is suitable for the proposed use in accordance with the proposed Rezoning Master Plan for ReGrowth Kurri Kurri.

Snowy Hydro will only take possession of the Proposal Site (which comprises a small portion of the Kurri Kurri smelter site) after the Site Audit Statement has confirmed that from a contamination perspective, the land is suitable for IN3 Heavy Industrial zoning. This means that prior to any construction works associated with the Proposal, the Proposal Site is required to be remediated, and validated, by others. Therefore, no detailed investigations of existing water or soil contamination or any remediation measures are required as part of this Proposal. It is therefore not necessary for the EIS to describe baseline conditions or assess impacts associated with pre-existing contamination or remediation.

The remaining potential impacts upon topography, soil and geology considered as having potential to occur during construction of the Proposal are detailed in Section 11.3.1 and operation risks due to accidental leakage and spills is detailed in Section 11.3.2 of the EIS. Mitigation measures are provided in Section 11.4 of the EIS.

Issue 29	**The EIS does not address how the proposed construction timeframe will/may be affected by the remediation project currently underway on the Kurri Kurri aluminium smelter site and any associated risks to the Proposal Site as a result of the remediation**
Submission ID	SE-20726701, SE-20726809, SE-20726817
Response 29	As detailed in Section 1.4 and Chapter 11 of the EIS, extensive remediation works have already taken place, including Stage 1 of a two-stage program. Prior to any construction commencing for the Proposal, the demolition and remediation works will have been completed to a standard suitable for subsequent industrial use. This includes Stage 2 demolition works, further remediation and the demolition of below ground infrastructure in accordance with conditions of approval issued by the Minister for Planning. Details of the remediation are contained on DPIE's website: https://www.planningportal.nsw.gov.au/major-projects/project/11486 Snowy Hydro will not take possession of the Proposal Site until the completion of a site audit statement, prepared by an EPA accredited site auditor, stating that the land is suitable for Heavy Industrial use in accordance with the proposed Rezoning Master Plan by ReGrowth Kurri Kurri. This means that prior to any construction, the Proposal Site is required to be remediated and validated. The only area of the former smelter site which will require ongoing remediation, until 2023, is the eastern half of the former smelter site which lies outside of the Proposal footprint. As stated in Section 2.4.8 of the EIS, remediation works involve movement by truck of large volumes of material from the eastern half of the former smelter site (outside the Proposal Site), along a haul road to a containment cell located to the west of the Proposal Site. In consideration of the current construction/remediation scheduling, it is likely that the construction traffic for the Proposal would overlap with remediation traffic. To minimise any disturbance or interruption to site works for either project, construction traffic for the two simultaneous activities would be managed through a Construction Traffic Management Plan, which would be prepared in consultation with Hydro Aluminium, to ensure the safety of workers and free flow of construction traffic. Based on this, the Proposal would give rise to negligible risk to human health or the environment and would not affect the timeframe of either project.

Issue 30	**The potential cumulative impact from the remediation of the Proposal Site, including uncontrolled water discharges, have not been considered. Mitigation measures and a monitoring program should be implemented to avoid impacts to groundwater and Wentworth Swamp**
Submission ID	SE-20726701
Response 30	Cumulative impacts resulting from the demolition and remediation of the Hydro Aluminium smelter are discussed in Section 21.2 of the EIS. The potential impacts for uncontrolled release of process water or contaminated stormwater, potential spills or leaks and overflows will be managed by the Proposal design, Construction Environmental Management Plan, and Operational Environmental Management Plan. The Proposal footprint will have a standalone system to manage water discharges from the site, and a discharge point which only receives discharges from the power station. The overall footprint of the industrial estate, including the power station and neighbouring industrial uses that were previously the Hydro aluminium smelter, has only minimally been increased by the power station development. That being for the stormwater detention basin and switchyard. The Proposal design would incorporate features such as impervious bunded areas for all storage and handling of fuels, oil, or chemicals, and to contain leaks of oil and fuel from machinery or refuelling activities. Areas of the Proposal Site that are sealed, as well as the stormwater capture and treatment system, would significantly reduce these impacts. Proposed stormwater treatment (subject to detailed design) includes an oil water separator and stormwater detention basin to further improve the quality of all stormwater discharged from the Proposal Site. Use of a stormwater detention basin may result in minor localised groundwater recharge which would reduce over time and is not expected to result in contamination of the groundwater. Recommendations to mitigate potential impacts to soil and groundwater during the construction and operation of the Proposal are outlined in Table 11.1 and Table 12.3 of the EIS. Furthermore, a surface water quality monitoring program has been recommended (Section 13.4 of the EIS) which would include the collection of baseline data for comparison to construction and operational monitoring data where applicable.

5.8 Groundwater

Issue 31	**The EIS states that 'excavations are unlikely to intercept the ground water table'. That is not a sufficient assessment of the potential risks**
Submission ID	SE-20726678
Response 31	Impacts to groundwater may arise due to excavation during construction. A diagram showing the interpreted groundwater depths beneath an approximate west-east section through the Proposal Site are shown in Figure 3 of the Groundwater Assessment Addendum (see Appendix E). The diagram indicates that most of the proposed excavations are unlikely to intercept the groundwater table. It is likely that some of the proposed excavations in the eastern portion of the Proposal Site may intersect the groundwater table, or shallow perched features within the fill material. In the case of intersecting the groundwater table in natural formations, significant inflow or requirement for substantial dewatering is not anticipated to be required due

to the limited depth of excavation below the water table and the generally low permeability of the alluvium. Where perched groundwater features are encountered within fill material, some short-term management of inflows may be required. Any resulting groundwater drawdown would be very shallow and localised. No material impacts are anticipated for other groundwater users or environmental values. The level one minimal impact considerations of the *NSW Aquifer Interference Policy* (DPI, 2012) are met as summarised in Table 6 of Appendix E.

Some additional groundwater modelling has been undertaken to quantify the possible groundwater ingress into excavations (see Appendix E). This has demonstrated that even the controls stated in the EIS, that the effect on groundwater would be negligible.

Issue 32	**The operation of the plant would cause soil and groundwater contamination**
Submission ID	SE-20726641
Response 32	During the operational phase, no significant soil or groundwater contamination impacts are anticipated. As detailed in Section 12.3.2 of the EIS and the Groundwater Assessment Addendum provided in Appendix E, the Proposal meets the level one minimal impact considerations of the *NSW Aquifer Interference Policy* (DPI, 2012). The risk of groundwater contamination is mitigated and practically eliminated through design of assets in accordance with EPA requirements, specific management systems where hazardous materials are used, sealing and pavement, and wastewater capture and treatment systems being in place. Recommendations to mitigate and manage identified potential groundwater impacts during construction and operation of the Proposal include a range of management plans and maintenance and inspection regimes. Specifically, the preparation and implementation of a Spill Response Plan as part of the Operational Environment Management Plan which addresses storage and handling of fuels, oils and chemicals, including a Spill Response Plan would be implemented to mitigate and manage identified potential groundwater impacts during operation of the Proposal.

5.9 Surface water and aquatic ecology

Issue 33	**Concern about impacts to proximate waterways which would further degrade surrounding habitat**
Submission ID	SE-20726724, SE-20726759, SE-20726879
Response 33	Chapter 13 and Appendix I of the EIS assess potential surface water quality and aquatic ecology impacts arising from the Proposal. The study area for the assessment was comprised of the Proposal Site, a 500 m buffer and Black Waterholes Creek and Swamp Creek (which form part of Wentworth Swamp) to include important downstream waterways with potential to be impacted by Proposal activities. The aquatic habitat condition at field assessment sites was assessed against criteria outlined in the NSW policy and guidelines. Aquatic habitat features and habitat condition at field assessment sites are detailed Table 13.2. of the EIS. An assessment of potential impacts to aquatic habitats and downstream waterways during construction and operation of the Proposal are detailed in Section 13.3 and environmental management and mitigation measures are provided in Table 13.3 of the EIS. Potential impacts to aquatic ecology and downstream waterways resulting from the Proposal were considered unlikely to result

in a significant impact as no channel works (other than the detention pond outlet structure to the unnamed tributary of Black Waterholes Creek) are proposed and as no significant impacts to water quality or hydrology are predicted.

5.10 Hydrology and flooding

Issue 34	**Concern the assessment of flood risk uses old data and excludes the consideration of climate change**
Submission ID	SE-20726701
Response 34	A range of publicly available desktop sources have been used to understand and validate the flood conditions at the Proposal Site. The sources of data used to inform the Hydrology and Flooding study are summarised in Section 3.3 of Appendix J of the EIS, and are listed below: ▪ Hunter River: Branxton to Green Rocks Flood Study (WMAwater, 2010) ▪ Wallis and Swamp Fishery Creek Flood Study (WMAwater, 2019) ▪ Cessnock City Council online flood mapping ▪ Environmental Impact Statement – Former Hydro Aluminium Kurri Kurri Smelter Demolition and Remediation (Ramboll Environ, 2016) ▪ Hydro Aluminium Kurri Kurri Stormwater Management Report - Flood Modelling and Hydrology Review (PCB, 2018) ▪ LiDAR ground level data As stated in the Hydrology and Flooding Study (Section 4.5, Appendix J of the EIS): Peak flood levels and depths at the Proposal Site in the 1% AEP event and larger are dictated by Hunter River backwater flooding, rather than flooding from local watercourses (WMAwater, 2019). As the modelling undertaken for this study does not analysis flooding from the Hunter River, peak and 1 per cent AEP flood levels were derived from WMAwater (2010), and this is considered appropriate based on the data available. The EIS includes consideration of climate change impacts on flooding (refer to Section 14.3.2), concluding that the site's existing and proposed low points are above both the future predicted 1% AEP Hunter River Flood level and PMF during its design life under climate change conditions.

5.11 Air quality

Issue 35	**Air quality standards and guidelines applied are inadequate and not appropriate**
Submission ID	SE-20726664, SE-20726694, SE-20726747, SE-20726829, SE-20726847
Response 35	The Air Quality Impact Assessment (AQIA) has adopted the current standards and criteria from the relevant regulatory framework, specifically the Protection of the Environment Operations Act 1997 and the Protection of the Environment Operations (Clean Air) Regulation 2010. This is consistent with the requirements of the SEARS. It is noted that new National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM) standards were registered on 26 May 2021; see https://www.legislation.gov.au/Details/F2021C00475. While the new (national) NEPM standards are not assessment criteria, the air quality model results for the Proposal have been reviewed considering these new standards

which include tightening of the NO_2 and SO_2 NEPM standards for ambient air quality. Refer to Appendix F for the updated AQIA.

Issue 36 **Degradation in air quality as a result of increased noxious gases and particulate emissions will negatively impact the health of surrounding receivers, residents, and the Hunter Valley**

Submission ID SE-20726655, SE-20726656, SE-20726657, SE-20726660, SE-20726661, SE-20726664, SE-20726666, SE-20726668, SE-20726673, SE-20726674, SE-20726675, SE-20726679, SE-20726680, SE-20726681, SE-20726682, SE-20726686, SE-20726687, SE-20726691, SE-20726694, SE-20726695, SE-20726700, SE-20726704, SE-20726708, SE-20726715, SE-20726718, SE-20726724, SE-20726745, SE-20726749, SE-20726763, SE-20726765, SE-20726782, SE-20726789, SE-20726792, SE-20726809, SE-20726817, SE-20726819, SE-20726821, SE-20726829, SE-20726833, , SE-20726834, SE-20726837, SE-20726840, SE-20726843, SE-20726847, SE-20726853, SE-20726859, SE-20726863, SE-20726867, SE-20726871, SE-20726872, SE-20726873, SE-20726876

Response 36 The potential impacts to air quality during construction and operation of the Proposal is described in Section 15.3 of the EIS and the updated AQIA is included as Appendix F of this report.

As described in Section 15.3.1 of the EIS, fugitive emissions from construction can be effectively controlled through environmental management measures and have been assessed as insignificant and temporary. Given the distance between the Proposal Site and sensitive receivers, impacts have been assessed as negligible.

Of greater concern in the submissions were potential air quality and health impacts from operation of the facility.

The AQIA identifies that the key air pollutants associated with the Proposal are: carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), particulate matter as $PM_{2.5}$ and the hydrocarbons or Volatile Organic Compounds (VOCs): formaldehyde and acrolein when the power station is fuelled by natural gas, and formaldehyde and Benzo(a)pyrene when fuelled by diesel. The key air quality issues identified by the AQIA for the Proposal were due to existing high background levels of $PM_{2.5}$ and O_3.

The Proposal would implement 'best practice' gas turbine engineering technology, such as DLE combustion system to minimise NOx emissions and minimise air quality impacts. This technology would also minimise atmospheric O_3 production.

The facility will be designed and operated to minimise its emissions to air. During operation, there would be minor exceedances of $PM_{2.5}$ when compared to the NSW EPA air quality impact assessment criteria. However, this needs to be considered in the context of existing elevated background levels (refer to Section 15.2 of the EIS for description of existing air quality). The modelling results indicate contributions from the Proposal are small (maximum 24-hour average) and very small (annual averages).

The maximum background 24-hour average $PM_{2.5}$ level is just less than its criterion (25 $\mu g/m^3$), so small additions at any point may lead to the criterion being just exceeded. The annual average $PM_{2.5}$ level already exceeds the criterion (8 $\mu g/m^3$); the Proposal contributions represent very small additions to this quantity.

Historical analysis shows concentrations of $PM_{2.5}$, including with potential contributions from the Proposal, would continue to be within the range of historically

measured fluctuations in maximum concentrations for the region. The updated AQIA included as Appendix F of this Report shows the contribution of the Proposal relative to the background levels under the worst case scenario at the worst affected receptor.

With respect to O_3, the updated AQIA includes an ozone assessment which has been completed in accordance with EPA (2011) ozone assessment guideline as far as practicable. The updated AQIA shows a time series of ozone monitoring data at Beresfield and how the worst case increase in O_3 due to the Proposal will cause insignificant increases of the ozone assessment criteria, and the air quality impacts on human health due to Proposal emissions have been assessed as undetectable.

The AQIA concludes that the Proposal's operations, whether fuelled by natural gas or diesel, are not expected to cause adverse air quality impacts in the vicinity of the Proposal Site nor in the wider Lower Hunter region. The modelling undertaken conservatively assumed that the power station would be operating continuously, so again represents a worst-case scenario.

Further, once operational the Proposal would be subject to an Environment Protection Licence, which is expected to require equipment to be operated and maintained to minimise air emissions. As identified in Section 2.5.1 of the EIS, the Proposal would be fitted with a Continuous Emission Monitoring System to demonstrate ongoing regulatory compliance, confirm the operation of pollution control equipment, and evaluate operating and emission variability.

Issue 37 **Diesel results in more air pollution than gas and if diesel is going to be used further pollution control technologies are required to be implemented**

Submission ID SE-19602878, SE-20726637, SE-20726638, SE-20726645, SE-20726653, SE-20726658, SE-20726663, SE-20726679, SE-20726680, SE-20726686, SE-20726689, SE-20726696, SE-20726698, SE-20726710, SE-20726711, SE-20726712, SE-20726715, SE-20726718, SE-20726737, SE-20726794, SE-20726795, SE-20726809, SE-20726821, SE-20726837, SE-20726845, SE-20726852, SE-20726854, SE-20726855, SE-20726862

Response 37 Natural gas is the preferred fuel for the facility, and diesel is provided for extra security for times where natural gas is not available or is constrained. For diesel use, a capacity factor of 2 per cent is being sought under the EIS (out of a total of 12 per cent), however the expected operation of the Proposal would result in a capacity factor of two per cent.

When operating on diesel specific pollution control technology will be used. On diesel it is proposed to utilise water injection control technology to reduce NOx emissions. This is considered best available technology in the gas turbine industry when operating on diesel fuel. The other control technologies can also reduce NOx emissions, however, are typically not technically and commercially practical for open cycle gas turbine plants. Similar conclusions were also drawn by the proponents for the Newcastle Power Station and the Tallawarra Stage B Gas Turbine Power Station. Please refer to Response 5 in Section 4.7 for further details.

The Air Quality Impact Assessment provided in Appendix F provides the predicted emissions using this control technology.

Issue 38	**The EIS does not consider potential impacts to nearby vineyards and grape crops**
Submission ID	SE-20680606, SE-20726637, SE-20726642, SE-20726645, SE-20726653, SE-20726679, SE-20726687
Response 38	The primary pollutant of concern about impacts to vineyards raised in the submissions is nitrous pollutants. It is assumed that NOx emissions are of interest for this Proposal because of the potential to contribute to regional ozone formation. It is acknowledged that elevated ambient SO_2, NO_2 and O_3 can affect some physiological parameters of the grapevine. Deposited dust on grape vine leaves also has the potential to inhibit photosynthesis by blocking sunlight or by blocking stomata. Research on the effects of air pollution on vineyards is complex and limited (Pambianchi, 2009). The research has typically considered high pollutant loadings and tolerance is species dependent (Weinstein, 1984 and Fumagalli et al, 2019). The predicted maximum ground level concentrations associated with the Proposal have been modelled as part of the AQIA (refer to updated AQIA attached as Appendix F), and it has been shown that the Proposal's contribution to existing ambient levels for all parameters is small. Given that no significant changes to existing air quality are predicted, impacts to surrounding vineyards are not expected to occur.
Issue 39	**The EIS does not provide detailed information on the emission estimates used to assess model-predicted air quality impacts**
Submission ID	SE-20726710, SE-20726776 SE-20726789,
Response 39	The air emissions used for modelling for both natural gas and diesel fuel are contained in Table 2.2 and Table 2.3 of the Air Quality Impact Assessment (AQIA) (Appendix K of the EIS). Additional information on the air emissions used in the air quality dispersion modelling are provided in Response 5 of Section 4.7.
Issue 40	**The EIS does not provide detailed information on the application of specific emissions controls or mechanisms to offset the pollution caused by the operation of the Proposal (I.e. load-based fees under the NSW Load Based Licensing (LBL) Scheme)**
Submission ID	SE-20726656, SE-20726710, SE-20726711
Response 40	The LBL Scheme would be included in any Environmental Protection Licence issued by NSW EPA. This will only be progressed after the EIS has been determined by the Minister for Planning and Public Spaces. Information on emission controls is provide in Response 5 of Section 4.7 and in the updated Air Quality Assessment report provided in Appendix F
Issue 41	**The cumulative concentration of emissions and their impact to air quality are unclear**
Submission ID	SE-20726641, SE-20726698, SE-20726710, SE-20726711

Response 41	Cumulative impacts were considered in detail in the EIS and AQIA. Further clarification is contained in the updated Air Quality Assessment attached as Appendix F.
Issue 42	**The air quality assessment uses inadequate data to inform the assessment results**
Submission ID	SE-20726696, SE-20726689
Response 42	The AQIA uses the best available ambient data to inform the assessment of cumulative impacts.
Issue 43	**Concern the Proposal may be exempt from the concentration standards under the Clean Air Regulation during start-up and shutdown. The air quality modelling should be revised to include an assessment of emissions and impacts from plant start-up and shutdowns**
Submission ID	SE-20726685, SE-20726792, SE-20726829
Response 43	A more detailed assessment of potential impacts during start up and shutdown has been included in the updated Air Quality Impact Assessment Appendix F. While the prescribed licence limits may not apply during periods of start up or shut down, the operator is still subject to the requirements of section 128(2) of the Protection of the Environment Operations Act 1997, which requires practicable means must still be used to prevent and minimise air pollution.
Issue 44	**The basis of several arguments specifically related to air quality rely on the assertion that surrounding urban areas are small and relatively isolated and fail to consider potential population growth**
Submission ID	SE-20726637, SE-20726645, SE-20726687, SE-20726689, SE-20726696
Response 44	Each of the technical studies used to inform the EIS apply a study area relevant to the specific assessment. For air quality, the local setting is described in Section 4.1 and the study area shown in Figure 4.1 of Appendix K which has a radius of over 10km from the site. The assessment used in the AQIA is consistent with the NSW EPA Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (2016). All assessments in the EIS are based on the existing conditions/ environment, but where applicable also consider likely future changes such as the proposed Regrowth Kurri Kurri rezoning. The sensitive receptors were considered to be representative of locations potentially experiencing the worst-cast air quality impacts due to the Proposal. Future potential population growth is unlikely to affect the selection of sensitive receptors or conclusions of the air quality assessment.
Issue 45	**The Proposal contradicts the NSW Clean Air Strategy 2021-30. The Proposal does not support private sector investment in new clean energy generation**
Submission ID	SE-20726657, SE-20726658, SE-20726660, SE-20726664 SE-20726715, SE-20726829

Response 45	As identified in submissions, the NSW Clean Air Strategy 2021-30 proposes the following government action to support cleaner industry: Support private sector investment in new clean energy generation, under the NSW Electricity Roadmap, to replace ageing fossil fuel powered generators as they retire in coming decades. It is contended that the Proposal aligns with the NSW Clean Air Strategy. As stated in Section 1.5 of the EIS, the key objective of the Proposal is to provide firming capacity to the NEM which will support future renewable energy projects. See response to key issue numbers 16 and 17 in Section 5.2. Further, on page 30, the strategy states that: Reports by the CSIRO and other independent bodies have found that the cheapest, most reliable form of new-build energy generation is a mix of wind, solar, storage, gas, and transmission.

5.12 Noise and vibration

Issue 46	**The noise report contains inadequate background noise level assessment**
Submission ID	SE-20726711, SE-20726710
Response 46	Additional attended and unattended noise monitoring has been undertaken to ensure full compliance with the draft Industrial Noise Policy. The monitoring and associated changes in intrusive noise thresholds are contained in the updated Noise and Vibration Report (Appendix G).
Issue 47	**An assessment of existing traffic noise levels in proposed residential areas adjacent the Hunter Expressway is required to determine/assess the amenity noise level**
Submission ID	SE-20726711, SE-20726710
Response 47	The NPI notes that under circumstances where noise from heavy traffic may be high enough to effectively render industrial noise sources inaudible, an alternative approach to deriving the Project Amenity Noise Level can be considered. The revised report provided in Appendix G describes why this alternative approach is not applicable to the Hunter Power Project.
Issue 48	**The Noise Impact Assessment does not state the 1/3 octave band sound power levels and justified whether tonal noise weightings are applicable**
Submission ID	SE-20726711, SE-20726710
Response 48	The sound power levels obtained from potential suppliers are confidential and some suppliers did not provide 1/3 octave band input data. The equipment supplier ultimately selected will be required to provide a noise guarantee for the facility and as part of that guarantee will be assessing the tonal characteristics of their equipment and applying the necessary attenuation as required.
Issue 49	**Noise emissions from the proposal would impact local amenity for residents and proposed residential areas as the project trigger noise levels are not accepted**
Submission ID	SE-20726673, SE-20726704, SE-20726788, SE-20726843, SE-20726867, SE-20726871

Response 49	The revised noise report contained in Appendix G contains revised noise criteria in accordance with the NPI. Noise modelling of operational noise using the Proposal design with identified attenuation, demonstrated compliance with the Noise Policy for Industry 2017 (NPI) project noise trigger levels at each of the nearest receivers within the five Noise Catchment Areas (NCAs), as well as at the industrial lots nearest to the Proposal Site. Low frequency emissions were also accounted for with a 2 dB correction to operational noise levels as per guidance from the NPI. No exceedances were predicted as a result of this correction.

5.13 Traffic and transport

Issue 50	**Environmental impacts from additional transportation vehicles for diesel deliveries during that period of operation require further consideration**
Submission ID	SE-20726696, SE-20726689
Response 50	This issue is derived from the potential to run the power station on diesel for up to its initial six months of operations. Given that the diesel will be transported by road, there is concern potential environmental effects of transportation vehicles has not been addressed in the EIS. The environmental effects of transportation vehicles have been addressed in the EIS as follows: ▪ The noise resulting from operational traffic associated with diesel fuel replacement has been considered in Section 17.3 of the EIS (refer to Section 6.6 of Appendix L for the detailed assessment) ▪ The Greenhouse Gas calculations for the Proposal includes Scope 1, 2 and 3 emissions for a year one operating scenario that assumes six months of operation only on diesel fuel (i.e. all direct and indirect emissions resulting from operation of the facility).

5.14 Landscape character and visual amenity

Issue 51	**The EIS is misleading, it uses inaccurate and conflicting descriptors to describe the landscape character and setting (industrial, semi-rural and forested). Emphasis should be placed on the visibility of the plumes and stacks to surrounding populated areas**
Submission ID	SE-20726687, SE-20726679, SE-20726653, SE-20726645, SE-20726638, SE-20726637
Response 51	The reference to "existing industrial landscape character" in the EIS is referencing the character of the Proposal Site itself. This describes the former use of the site as an aluminium smelter (refer to EIS Section 18.3.2, pg 262), and current nature of the site. It should also be noted that the operational area of the former aluminium smelter is proposed for a combination of heavy industrial and industrial zoning as part of Regrowth Kurri Kurri. The conclusion that the overall impact of the Proposal is low-negligible is based on a Landscape Character and Visual Amenity Assessment (Chapter 18 and Appendix N of the EIS) which should be read in its entirety for context and clarity. The assessment has taken into consideration the category of the viewer, the approximate distance to project elements and the sensitivity of the landscape to change.

The Landscape Character and Visual Amenity Impact Assessment acknowledges the Proposal's gas turbine exhaust stacks may be visible from some locations in Kurri Kurri and surrounding suburbs and includes photomontages to illustrate the change to the landscape. However, it also points out that these views would likely be from locations that had visibility of the former aluminium smelter's higher stacks and water towers. While the tallest of the former stacks (at 140 m and 70 m) were visible from many locations, the Proposal's gas turbine exhaust stacks would sit much lower in the landscape.

The emissions from the exhaust stacks will not be visible and therefore have not been considered in the EIS.

5.15 Socio-economic

Issue 52	**The effect of the Proposal Site on the adjacent proposed environmental conservation zone has not been considered**
Submission ID	SE-20726701
Response 52	The Minister for Planning and Public Spaces declared the Proposal as CSSI. The project will be assessed and determined under Division 5.2 of the EP&A Act. Schedule 5 of the SRD SEPP (see Section 3.5.1 of the EIS) overrides the Cessnock LEP 2011 and the land use and permissibility requirements under the LEP do not apply to the Proposal. As discussed in Chapter 4 of the EIS, a separate proposal "ReGrowth Kurri Kurri" is currently before the DPIE to rezone the former smelter operational areas and some of the former buffer land to a combination of residential, industrial, business, rural, recreation, special purpose, and environmental zones. At the time of preparing the EIS, a decision by DPIE on the proposed rezoning had not been made. However, because of the CSSI declaration, the rezoning proposal will have no effect on the Proposal's statutory planning framework or its approvals pathway. If the proposed rezoning is approved, it is expected that the future zoning for the Proposal Site would be IN3 – Heavy Industrial, which is consistent with its proposed use for a power station. The direct, indirect and cumulative biodiversity impacts of the Proposal were considered in the BDAR (Appendix B of the EIS). The proposed ReGrowth Kurri Kurri conservation zoning has no influence or relevance to the Proposal's biodiversity offsets.
Issue 53	**There is a low return on long term jobs associated with the Proposal**
Submission ID	SE-20009914, SE-20680606, SE-20726646, SE-20726655, SE-20726658, SE-20726659, SE-20726663, SE-20726664, SE-20726674, SE-20726680, SE-20726681, SE-20726686, SE-20726691, SE-20726693, SE-20726695, SE-20726709, SE-20726716, SE-20726718, SE-20726720, SE-20726743, SE-20726751, SE-20726765, SE-20726766, SE-20726776, SE-20726788, SE-20726803, SE-20726818, SE-20726829, SE-20726832, SE-20726834, SE-20726840, SE-20726841, SE-20726842, SE-20726847, SE-20726853, SE-20726854, SE-20726855, SE-20726859, SE-20726861, SE-20726863, SE-20726868, SE-20726871, SE-20726873

Response 53	The EIS identifies local and regional benefits to include direct and indirect boost to local employment including approximately 250 full time equivalent positions at the peak of construction and about 10 permanent full-time equivalent jobs during operation. While not providing for a large workforce during operation, the power station footprint is relatively small. The Proposal is considered to be consistent and compatible with likely future land uses surrounding the Proposal Site, under the proposed rezoning master plan by ReGrowth Kurri Kurri (see Section 4.4.4 of the EIS). This master plan would result in the Proposal Site and adjacent land being part of an industrial estate which would further facilitate employment for the local area and the Hunter region.
Issue 54	**Pollution from the Proposal will impact on local land values and deter future investment**
Submission ID	SE-20726637, SE-20726638, SE-20726645, SE-20726653, SE-20726679, SE-20726687, SE-20726689, SE-20726696, SE-20726824, SE-20726834, SE-20726843, SE-20726867, SE-20726871
Response 54	As discussed in Section 1.4 and 23.1 of the EIS, selection of the site for the Proposal was based on due diligence surveys of all practical options and a decision based on the preferred option having the ability to reuse former industrial land, utilise existing infrastructure (transmission lines and road access in particular) to the Proposal Site, a relatively low overall cost, and good environmental and social outcomes compared with the other options. Redevelopment of the Proposal Site for power station use is consistent with the former and planned future land use in the area and will not preclude or affect future land uses in the area. Operational emissions to air and noise from the Proposal would be managed within limits prescribed by the NSW EPA and subject to detailed assessments and compliance monitoring. Operation of the Proposal would be effectively managed with the implementation of attenuation measures for air quality and noise within the Proposal design (see Chapters 15 and Chapter 16 of the EIS).
Issue 55	**The Proposal is not consistent with the Hunter Regional Plan 2036 as is it is not sustainable in the long term and is not diversifying the energy sector**
Submission ID	SE-20726787, SE-20726685, SE-20726809
Response 55	The overarching vision of the Hunter Regional Plan 2036 is for the region is to be the leading regional economy in Australia with a vibrant new metropolitan city at its heart (NSW Government & DPE, 2016). This vision is supported by a range of goals, directions and actions. As detailed in Section 4.3.4 of the EIS, the Proposal is consistent with Direction 12 to diversify and grow the energy sector by promoting new opportunities arising from the closure of coal fired power stations that enable long term sustainable economic and employment growth in the region. With the imminent closure of Liddell Power Station, significant local energy generation will be withdrawn from the Hunter Region. The Proposal is one of Snowy Hydro's responses aimed at offsetting this loss of generating capacity in the region by providing additional dispatchable energy and firming of renewable generation projects. The Proposal fundamentally supports diversification of the energy sector by providing firming dispatchable that supports all forms of intermittent generation,

notably renewables. It does not preclude large scale batteries or distributed storage systems, but rather supports the capability of the National Electricity Market and electricity network when diversified energy generation systems are developed.

Issue 56	**The land is zoned 'Agriculture' and this use should be retained given population growth in the area**
Submission ID	SE-20726678
Response 56	As discussed in the EIS, the former operational area of the aluminium smelter, of which the Proposal Site forms a small portion, is zoned RU2 Rural Landscape under the Cessnock LEP. This comment refers to ReGrowth Kurri Kurri, rather than to the Proposal. Section 21.4 of the EIS details the future proposed rezoning, subdivision and industrial development of land by ReGrowth Kurri Kurri.

5.16 Cumulative impacts

Issue 57	**The Proposal is dependent on the development and approval of gas fields and pipeline infrastructure. The Proposal should be assessed in conjunction with the Pipeline Proposal, given that it is required for the power station to operate**
Submission ID	SE-19602878, SE-20726659, SE-20726685, SE-20726693, SE-20726698, SE-20726699, SE-20726702, SE-20726703, SE-20726710, SE-20726715, SE-20726718, SE-20726724, SE-20726737, SE-20726758, SE-20726759, SE-20726776, SE-20726780, SE-20726809, SE-20726818, SE-20726824, SE-20726832, SE-20726837, SE-20726843, SE-20726845, SE-20726854, SE-20726856, SE-20726862, SE-20726863, SE-20726871, SE-20726877, SE-20726882
Response 57	The gas lateral pipeline forms part of the CSSI declaration for the power station Proposal, but construction and operation of the pipeline and associated gas receival station (GRS) to supply the Proposal are subject to a separate third party assessment (by APA) and environmental approval process (see Chapter 2 of the EIS). Details of the Lateral Pipeline Project can be found https://www.planningportal.nsw.gov.au/major-projects/project/42096. Section 1.1 of the EIS states that gas would be supplied to the power station from Australia's existing gas fields that feed Sydney and Newcastle via the existing Jemena Gas Networks (JGN) gas transmission pipeline which is in reasonably close proximity (approximately 17 km). Any new gas field or pipeline projects would be independent of the Proposal and would need to be justified by their own business case and would be subject to the environmental approval's requirements of the relevant jurisdiction. The gas being supplied for the power station will end up coming from a combination of supply sources, gas contracts from producers with existing gas fields or pure NSW spot gas market purchases. One difficulty with supplying gas to a peaking power station, such as Kurri Kurri, is that typical gas supply contracts are flat in nature, allowing gas producers to run continuous and predictable gas production output. This in itself does not lend itself well to a peaking power station to be underpinning any new greenfield gas-field developments. The difficulty is significant enough, that

Snowy Hydro has had to make sure there is sufficient storage capacity in the associated gas lateral for use during peak electricity market conditions.

The power station will not consume a significant amount of gas due to its peaking nature. At capacity factors of 2% to 10%, the power station could end up consuming between 1-6 PJ of gas per annum. For context, according to AEMO, NSW currently consumes about 117 PJ per annum . Development of the Proposal is therefore unlikely to be a significant factor in the promotion or development of coal seam gas projects or pipelines in NSW.

5.17 ESD

Issue 58	**The EIS does not demonstrate the principles of ESD have been achieved in respect to the precautionary principle, inter-generational equity, or improved valuation**
Submission ID	SE-20726724, SE-20726809,
Response 58	This issue is based on views that that the Proposal's contribution to climate change is unacceptable, the proposal does not support the long-term transition to renewable energy and that the full life cycle of costs should consider the gas supply chain. Section 23.3 of the EIS outlines how the principles of ecologically sustainable development have been considered during the design and development of the Proposal. Further discussion is provided below. *Precautionary Principle* - Section 4.4 of the EIS has considered the alternatives of the Proposal, based on their ability to meet a specific need. This need is to provide dispatchable capacity to the NEM when the needs are highest and provide firming of renewable generation projects' intermittent supply. As outlined in Section 4.4.3 of the EIS, alternative locations have been investigated, with the Proposal Site being selected based on its environmental attributes, brownfield nature, accessibility, and proximity to existing infrastructure. The impacts of the Proposal have been assessed and shown to comply with relevant standards. Where design elements remain uncertain, the maximum probable parameters have been used to provide a conservative assessment. Mitigations and management measures have been recommended in Chapter 22 of the EIS to ensure residual impacts remain low. The Proposal design is continuing to be refined taking into consideration social, economic, and environmental factors. *Inter-generational equity* - While the Proposal will emit greenhouse gases, it will support variable renewables sources to largely replace the capacity lost with closure of the Liddell Power Station by provided firming capacity. As addressed in Section 23.3.2 of the EIS, the Proposal will continue to provide stability to the NEM as more coal-fired power stations are retired. In this way, the Proposal is key to supporting a transition to renewable energy sources. Refer to Response 3 and response 5. *Improved Valuation* - As addressed in Section 23.3.4, environmental factors have been included in the valuation of assets and services for the lifecycle of the Proposal; being construction through to remediation. It is not considered appropriate to extend this assessment to the gas transmission supply chain over which Snowy Hydro has no control or influence. Gas for the Proposal would be supplied to the power station from Australia's existing gas fields that feed Sydney and Newcastle via the existing JGN gas transmission pipeline which is in reasonably close proximity. The gas fields that service the pipeline have already been subject to environmental assessment. Similarly, the gas pipeline connecting to the facility will be required to

demonstrate the principles of ESD have been met. The business case for the Proposal is predicated on the current available gas in the existing transmission system and not reliant on development to new upstream gas resources. Also refer to Responses 4, 5, 12 and 60.

5.18 Climate change and greenhouse gas

Issue 59	**The International Energy Agency recently published a report calling for an end to gas projects if the world is to meet the world target of non-zero emissions by 2050**
Submission ID	SE-20726638, SE-20726642, SE-20726644, SE-20726653, SE-20726655, SE-20726659, SE-20726671, SE-20726675, SE-20726696, SE-20726702, SE-20726706, SE-20726707, SE-20726713, SE-20726719, SE-20726728, SE-20726737, SE-20726739, SE-20726741, SE-20726753, SE-20726754, SE-20726756, SE-20726763, SE-20726784, SE-20726787, SE-20726788, SE-20726793, SE-20726805, SE-20726808, SE-20726809, SE-20726811, SE-20726813, SE-20726816, SE-20726832, SE-20726846, SE-20726859, SE-20726862, SE-20726877
Response 59	The International Energy Agency Report, Net Zero by 2050, A Roadmap for the Global Energy Sector (the Roadmap), sits outside the specific legislative and strategic policy context applicable the Proposal. The Roadmap is global in scope and acknowledges that each county needs to design its own strategy considering its specific circumstances. However, it is acknowledged that a high number of submissions have cited the roadmap as a basis for objecting to the Proposal for its contribution to climate change. In relation to the Energy Industry (Oil and Gas), Section 4.3 of the Roadmap does identify the following implication of achieving net-zero emissions: No fossil fuel exploration is required as no new oil and natural gas fields are required beyond those that have already been approved for development. The Proposal does not involve, nor is likely to encourage, exploration or new gas development. In describing the sectoral pathways to net-zero emissions by 2050, the Roadmap also specifically looks at the electricity sector (refer to Section 3.4). Points of relevance to the Proposal are outlined below: ▪ Pg 113: Net-zero emissions involves both a significant increase in electricity demand (approximately tripling in emerging economics between 2020 and 2050, and in the case of advanced economies nearly doubling between 2020 and 2050) as the result of end-use electrification (including electric vehicles) and hydrogen production by electrolysis ▪ Pg 114: The transformation of the electricity sector is central to achieving net-zero emissions in 2050. Electricity generation is the single largest source of energy related CO2 emissions today, accounting for 36% of total energy related emissions. CO2 emissions from electricity generation worldwide totalled 12.3Gt in 2020 ▪ Pg 114: Renewables contribute most to decarbonising electricity in the net-zero emissions: global generation from renewables nearly triples by 2030 and grows eightfold by 2050 ▪ Pg 178: Dispatchable power is essential to the secure transition of electricity systems, and in the net-zero emissions this comes increasingly from low emissions sources. Hydropower provides a significant part of flexibility in many

electricity systems today, and this continues in the future, with particular emphasis on expanding pumped hydro facilities.

It is considered that the Proposal supports the electricity sector's pathway to net-zero emissions in 2050 presented under the Roadmap. While it is acknowledged the Roadmap identifies the continued emphasis on hydropower for dispatchable power into the future, the EIS (Section 4.4) outlines why hydro-electric and pumped hydro storage facilities are not considered viable in this circumstance.

As stated in the EIS, the Proposal will facilitate the generation of dispatchable electricity and network services identified as critical to energy security within the NEM. This supports the transition to a low carbon energy future by allowing increased renewable energy generation. The Proposal is also being designed as hydrogen ready, to support the further reduction of emissions into the future.

In addition, the Proposal will connect into the existing Sydney-New Castle pipeline and does not require new gas exploration or gas fields.

Issue 60	**The Proposal is contrary to the legal precedent established that our governments have a duty of care to consider the climate change impacts on future generations**
Submission ID	SE-20726093, SE-20726655, SE-20726657, SE-20726658, SE-20726664, SE-20726666, SE-20726674, SE-20726675, SE-20726681, SE-20726686, SE-20726691, SE-20726694, SE-20726699, SE-20726702, SE-20726703, SE-20726713, SE-20726714, SE-20726718, SE-20726746, SE-20726748, SE-20726749, SE-20726793, SE-20726806, SE-20726809, SE-20726814, SE-20726818, SE-20726824, SE-20726829, SE-20726831, SE-20726836, SE-20726840, SE-20726847
Response 60	This issue refers to a recent decision by the Federal Court of Australia that the Environment Minister, has a duty of care to protect young people from climate change. The decision was made in the context of a coal-mine extension and what constitutes a breach of this duty is yet to be determined by the courts. Regardless, if Sharma v Minister for the Environment [2021] FCA 560 (Sharma) is upheld on appeal, commentary (Jones Day 2021) on the case suggests that government decision-makers are likely to be increasingly mindful of the emissions contributions of projects when deciding whether or not to approve them. The coal mine extension considered by the Federal Court, if approved would cause an estimated 389 million tonnes of Scope 1, 2 and 3 carbon dioxide equivalents to be emitted into the atmosphere over 25 years as the extracted coal is shipped overseas and burned to make steel and generate electricity (Ramboll, 2018). By comparison, the total GHG emissions calculated for the life of the Proposal is 14.8 million tonnes of carbon dioxide equivalent. As stated in Section 1.5 of the EIS, the key objective of the Proposal is to provide firming capacity to the NEM which will support future renewable energy projects and achieve a reduction in GHG emissions. In addition, Gloucester Resources v Minister for Planning (NSWLEC 2019) is cited in submissions to support the proposition that the Proposal's contribution to climate change is unacceptable. The case concerned the denial of the company's application to construct an open cut coal mine in New South Wales, which proposed to produce 21 million tonnes of coal over a period of 16 years.

The court found that the project was not in the public interest after weighing costs and benefits of the project, including the climate change impacts of the mine's direct and indirect GHG emissions (Sabin Centre for Climate Change Law, 2021).

Public interest considerations relevant to this Proposal are also outlined in Section 21.3.5 of the EIS. While the operation of the Proposal will result in GHG emissions, the Proposal is fulfilling a genuine need for longer duration firming capacity for which there are no current alternatives. This firming capacity will support increased variable renewable energy sources, supporting the transition to a future of reduced thermal generation sources and lower greenhouse gas emissions. The Proposal is considered to be in the public interest.

Issue 61	**Increased GHG emissions negatively accelerate climate change and global warming, causing more frequent and extreme weather events**
Submission ID	SE-19464879, SE-19464915, SE-19559971, SE-20007898, SE-20009914, SE-20064244, SE-20680606, SE-20726637, SE-20726638, SE-20726640, SE-20726641, SE-20726645, SE-20726646, SE-20726654, SE-20726657, SE-20726660, SE-20726663, SE-20726664, SE-20726666, SE-20726667, SE-20726670, SE-20726674, SE-20726676, SE-20726677, SE-20726681, SE-20726684, SE-20726689, SE-20726691, SE-20726693, SE-20726694, SE-20726695, SE-20726696, SE-20726697, SE-20726700, SE-20726704, SE-20726705, SE-20726707, SE-20726708, SE-20726710, SE-20726712, SE-20726713, SE-20726715, SE-20726718, SE-20726719, SE-20726720, SE-20726725, SE-20726728, SE-20726729, SE-20726742, SE-20726748, SE-20726749, SE-20726750, SE-20726751, SE-20726758, SE-20726759, SE-20726765, SE-20726766, SE-20726771, SE-20726772, SE-20726775, SE-20726776, SE-20726778, SE-20726779, SE-20726780, SE-20726782, SE-20726783, SE-20726787, SE-20726788, SE-20726789, SE-20726791, SE-20726793, SE-20726796, SE-20726797, SE-20726799, SE-20726806, SE-20726809, SE-20726812, SE-20726817, SE-20726819, SE-20726821, SE-20726822, SE-20726825, SE-20726831, SE-20726832, SE-20726833, SE-20726835, SE-20726836, SE-20726837, SE-20726838, SE-20726840, SE-20726841, SE-20726843, SE-20726846, SE-20726852, SE-20726854, SE-20726859, SE-20726861, SE-20726864, SE-20726865, SE-20726867, SE-20726868, SE-20726870, SE-20726871, SE-20726872, SE-20726873, SE-20726876, SE-20726878, SE-20726880
Response 61	The link between increased emissions of GHG's, climate change and extreme weather is widely acknowledged. The Proposal has been planned and designed to provide the necessary firming capacity in the NEM to support the development and use of other renewable energy projects.

Issue 62	**Concern that the drilling and extraction of natural gas from wells and the transportation in pipelines leads to methane leakage, with methane being a potent GHG and having more warming potential than CO_2**
Submission ID	SE-19559242, SE-20726693, SE-20726702, SE-20726703, SE-20726718, SE-20726720, SE-20726722, SE-20726743, SE-20726759, SE-20726761, SE-20726762, SE-20726763, SE-20726765, SE-20726800, SE-20726803, SE-20726819, SE-20726833, SE-20726840, SE-20726857, SE-20726863

Response 62	The drilling and extraction of natural gas are outside of the scope of the Proposal. The operators of gas extraction and transport infrastructure in Australia report emissions under the National Greenhouse and Energy Reporting (NGER) Scheme using the Methods available under that Scheme for each specific industry. This includes specified or calculated emissions factors that account for potential leakage from infrastructure. While the gas lateral pipeline forms part of the CSSI declaration for the power station the construction and operation of the pipeline and the associated gas receival station are subject to a separate third-party assessment and approval process being undertaken by APA (see Chapter 2 of the EIS). It is expected that the gas lateral pipeline will utilise emissions factors provided under the NGERS Scheme.
Issue 63	**The Proposal contravenes NSW climate targets and Australia's commitment to the Paris Climate Agreement**
Submission ID	SE-19602878, SE-20726646, SE-20726649, SE-20726655, SE-20726656, SE-20726657, SE-20726658, SE-20726660, SE-20726661, SE-20726662, SE-20726664, SE-20726666, SE-20726674, SE-20726675, SE-20726680, SE-20726681, SE-20726684, SE-20726685, SE-20726686, SE-20726691, SE-20726694, SE-20726699, SE-20726703, SE-20726708, SE-20726712, SE-20726714, SE-20726715, SE-20726718, SE-20726720, SE-20726721, SE-20726727, SE-20726730, SE-20726733, SE-20726734, SE-20726736, SE-20726737, SE-20726738, SE-20726740, SE-20726741, SE-20726742, SE-20726743, SE-20726748, SE-20726749, SE-20726750, SE-20726751, SE-20726754, SE-20726755, SE-20726757, SE-20726764, SE-20726767, SE-20726768, SE-20726769, SE-20726773, SE-20726775, SE-20726780, SE-20726784, SE-20726790, SE-20726792, SE-20726800, SE-20726801, SE-20726804, SE-20726809, SE-20726817, SE-20726818, SE-20726821, SE-20726822, SE-20726823, SE-20726824, SE-20726829, SE-20726836, SE-20726837, SE-20726838, SE-20726840, SE-20726847, , SE-20726850, SE-20726853, SE-20726855, SE-20726861, , SE-20726865, SE-20726866, SE-20726870, SE-20726872, SE-20726875, SE-20726876
Response 63	The Proposal supports Federal and State government renewable energy and climate policies by providing reliable, dispatchable capacity and other network services to the NEM, and therefore the development and use of renewable energy projects. Australia's target under the Paris Agreement is to reduce emissions by 26-28% below 2005 levels by the year 2030, progressing the levels of reduction required to meet the Kyoto Protocol targets (Commonwealth of Australia, 2021). This will be achieved through a credible policy suite that is already reducing emissions, supporting Australia's renewable energy sector and encouraging ongoing technological innovation. The Proposal would be consistent with the objectives of the Paris Agreement as it supports the transition to renewables by providing firming capacity for grid security when renewables are not generating energy, during periods of high demand, in the event of transmission line or other system failure, while releasing lower emissions than coal fired generation. The Proposal would be an important component in the long-term transition to renewable energy by facilitating the displacement of carbon-based electricity generation. The Proposal is therefore considered to support Federal

and State government renewable energy and climate policies and be consistent with the objectives of the Paris Agreement.

Issue 64	**The EIS understates the quantity of GHG emissions and will potentially emit up to 60% more GHG than the Liddell coal fired station**
Submission ID	SE-20726834
Response 64	One of the submissions received states that 'the Proposal will have a GHG intensity more than 60% that of Liddell, the coal-fired station it is allegedly replacing'. It is unclear where the 60% figure has been sourced. However, the Liddell Power Station GHG emissions reporting for 2019-2020 details the power station's annual operational Scope 1 and 2 GHG emissions output of 10,011,434 t CO_2-e and an emission intensity of 0.95 t CO_2e/MWh (Australian Gov't CER, 2021). The Proposal's annual operational Scope 1 and 2 GHG emissions have a projected output of 406,727 t CO_2e, and an expected emission intensity of 0.52 t CO_2e/MWh. The Proposal is projected to have a lower GHG emission output and emission intensity than Liddell and other grid connected fossil fuel powered power stations, including the average for other natural gas power stations (see Table 15.15 of the EIS).

6. Project clarification

Since submission of the EIS additional detail has become available in connection with the potential use of hydrogen. This is set out below.

The Proposal is being designed to accept a 10% mix of hydrogen in natural gas, with the potential to be upgraded to higher hydrogen mixes. The 10% is premised on the expected capability of the Jemena Gas Networks Northern Trunk transmission pipeline to store and transport the hydrogen and gas blend, this being the transmission pipeline from which the gas lateral to the Proposal would connect into and draw gas, and the gas/hydrogen specification for the transmission pipeline. If the gas network specification increased to 15% hydrogen, we expect that the power station will be capable of accepting this mix.

The turbines' being considered for the Proposal have the potential to be extended to a 30% hydrogen mix with changes to the internal equipment of the turbines, including the fuel gas burners and fuel supply valves and piping.

To enable any hydrogen mix capability, additional costs would also be incurred for equipment outside the power station, particularly to the gas lateral piping and compressor station being installed by the pipeline owner and operator. Changes to the gas lateral design to achieve performance over and above this capability would be significant and may prove to be uneconomic.

7. Conclusion

This Submissions Report addresses the submissions received by DPIE on the Hunter Power Project EIS and will be considered by the Minister for Planning and Public Spaces in determining whether to approve the Proposal. The content of the Submissions Report includes:

- An update of stakeholder consultation activities undertaken during public exhibition and planned future consultation activities
- Summary of all submissions received
- Snowy Hydro's response to the submissions
- Updated technical studies or addenda to support the response to submissions.

A total of 261 submissions were provided to the DPIE from the public, organisations and public authorities (government organisations). An additional 47 representations were received after the exhibition period, no new issues were raised. All 261 submissions have been considered in this Submissions Report.

A number of common themes emerged from the public and organisation submissions, which have been addressed in this report. These key themes have been identified as follows:

- Project justification is inadequate
- The Proposal contravenes State, national and international climate targets
- Use of fossil fuel generation rather than renewable energy
- GHG emissions contributing to climate change.

Snowy Hydro has continued to engage with government organisations during the preparation of this Submissions Report to understand the key issues raised and confirm Snowy Hydro's approach to responding to issues aligns with expectations. The updated technical studies undertaken by Snowy Hydro to support the Submissions Report include:

- Biodiversity Development Assessment Report Addendum
- Aboriginal Cultural Heritage Assessment Addendum
- Surface Water Quality and Aquatic Ecology Addendum
- Groundwater Impact Assessment Addendum
- Updated Air Quality Impact Assessment
- Updated Noise and Vibration Impact Assessment.

These updated assessments have been undertaken to clarify and respond to specific issues raised in the Submissions. There has been one revision to the environmental management measures from the EIS arising from the response process which relates to Aboriginal Cultural Heritage. No changes to the Proposal description have been nominated as a result of the Submissions phase.

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WMAwater 2019, Wallis and Swamp Fishery Creek Flood Study. Maitland and Cessnock City Councils.

Appendix A. **Submissions received**

All submissions, were received electronically through the DPIE Major Project's website, where they are available for viewing: https://www.planningportal.nsw.gov.au/major-projects/project/40951.

Details on submissions by respondent type, have been split into two tables below (organisation and public). To identify where a submission has been addressed in this report and the key issue(s) the submission has been grouped with:

1. Locate the organisation or public name associated with the submission in the correct table. Organisations and names are in alphabetical order
2. Each name has a corresponding submission ID, which is unique to each submission. If an anonymous submission has been made – the submission ID is available on the DPIE website
3. The number of submissions per submission ID have been grouped into key issues
4. The section of this report where the key issue can be located has been provided per submission ID

Table A.1: Organisation submissions received

Organisation name	Submission ID	Section where issue is addressed	Issue and response number
350.org	SE-20726754	5.1	5
		5.2	6, 10, 14, 15
		5.18	59, 63
Australian Centre for Corporate Responsibility	SE-20726857	5.2	11, 12, 15
		5.18	62
Australian Energy Council	SE-20726851	5.18	Supportive
Australian Parents for Climate Action	SE-20726847	5.2	6, 12
		5.4	21
		5.11	35, 36
		5.15	53
		5.18	60, 63
Bathurst Community Climate Action Network	SE-20726864	5.2	11
		5.18	61
Centre for Air Pollution Energy and Health Research	SE-20726782	5.11	36
		5.18	61
Climate Action Newcastle	SE-20726823	5.18	63
	SE-20726819	5.2	6, 10, 11, 12, 16

Organisation name	Submission ID	Section where issue is addressed	Issue and response number
Climate Change Balmain-Rozelle		5.11	36
		5.18	61, 62
Climate Council of Australia	SE-20726821	5.2	6, 8, 9, 10, 11
		5.11	36, 37
		5.18	61, 63
Darebin Climate Action Now	SE-20726765	5.2	6, 12
		5.11	36
		5.15	53
		5.18	61, 62
Doctors for the Environment Australia	SE-20726833	5.2	6
		5.3	19
		5.11	36
		5.18	61, 62, 63
Gas Free Hunter Alliance	SE-20726873	5.2	6, 11, 12
		5.3	18
		5.11	36
		5.15	53
		5.18	61
Gloucester Knitting Nannas Against Gas & Greed	SE-20726854	5.2	10, 11, 17
		5.11	37
		5.15	53
		5.16	57
		5.18	61
Hornsby Shire Climate Action Group	SE-20726703	5.2	11, 12
		5.16	57
		5.18	60, 62, 63
Hunter Community Environment Centre	SE-20726879	5.4	22
		5.9	33
Hunter Environmental Lobby	SE-20726871	5.2	6, 8, 9, 11, 15
		5.11	36

Organisation name	Submission ID	Section where issue is addressed	Issue and response number
		5.12	49
		5.15	53, 54
		5.16	57
		5.18	61
Hunter Loop Knitting Nannas	SE-20726843	5.2	6, 8, 10, 11, 12
		5.11	36
		5.12	49
		5.15	54
		5.16	57
		5.18	61
Lane Cove coal and gas watch group	SE-20726862	5.1	2
		5.2	8, 10, 11
		5.11	37
		5.16	57
		5.18	59
Lock the Gate Alliance	SE-20726809	5.1	5
		5.2	6, 9, 10, 11, 12, 15
		5.4	20
		5.6	26
		5.7	28, 29
		5.11	36, 37
		5.15	55
		5.16	57
		5.17	58
		5.18	59, 60, 61, 63
Nature Conservation Council	SE-20726870	5.1	4
		5.2	6, 16
		5.18	61, 63
Northern Beaches Climate Action Network	SE-20726718	5.1	5
		5.2	6, 8, 9, 10, 11, 12, 15

Organisation name	Submission ID	Section where issue is addressed	Issue and response number
		5.7	28
		5.11	36, 37
		5.15	53
		5.16	57
		5.18	60, 60, 62, 63
People for the Plains	SE-20726737	5.1	5
		5.2	8, 10, 15
		5.7	28
		5.11	37
		5.16	57
		5.18	59, 63
Sutherland Shire Environment Centre	SE-20726741	5.18	59, 63
The Australia Institute	SE-20726874	5.2	6, 16
Veterinarians for climate action	SE-20726748	5.2	6, 11, 12, 17
		5.18	60, 61, 63
Workfast Marketplace	SE-20726665	5.15	Supportive

Table A.2: Public submissions received

Public name	Submission ID	Section where issue is addressed	Issue and response number
Abela, Deborah	SE-20726658	5.2	11, 12, 17
		5.11	37, 45
		5.15	53
		5.18	60, 63
Ablett, Effie	SE-20726789	5.11	36, 39
		5.18	61
Adams, Sophie	SE-20726672	5.2	11, 15
Aisbett, Katherine	SE-20726820	5.2	12, 15
Anderson, Roderick	SE-20726781	5.2	11
Ang, Hui	SE-20726693	5.15	53
		5.16	57
		5.18	61, 62
Arthur, David	SE-20726785	5.2	11, 12, 17
B, Lock	SE-19464915	5.2	8, 11
		5.18	61
Ballin, Liora	SE-20726719	5.2	12
		5.18	59, 61
Benn, Lynn	SE-20726824	5.2	6, 12
		5.15	54
		5.16	57
		5.18	60, 63
Bennett, Angela	SE-20726844	5.2	10, 11, 12, 17
Bessell, Suzanne	SE-20726861	5.2	6, 8, 11, 12
		5.15	53
		5.18	61, 63
Bird, Robyn	SE-20726832	5.2	6, 12
		5.15	53
		5.16	57
		5.18	59, 61
Blain, Amy	SE-20726655	5.2	11, 12
		5.4	22

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.11	36
		5.15	53
		5.18	59, 60, 63
Blakey, Cath	SE-20726676	5.2	8, 16
		5.18	61
Blumkaitis, Petra	SE-20726744	5.2	11
Boaz-Cole, Mirinda	SE-20726727	5.2	11
		5.18	63
Bolza, Miklos	SE-20726694	5.2	6, 11
		5.4	21
		5.11	35, 36
		5.18	60, 61, 63
Boyle, John	SE-20726825	5.2	11
		5.18	61
Bremer, Anette	SE-20726875	5.18	63
Burke, Patrick	SE-20726639	5.2	11, 12
Burrows, Angela	SE-20726763	5.1	3
		5.2	12
		5.11	36
		5.18	59, 62
Caley, John	SE-20726762	5.18	62
Carr, April	SE-20726656	5.2	15
		5.11	36, 40
		5.18	63
Carroll, Sara	SE-20726760	5.2	12
Cavicchioli, Rick	SE-20726736	5.2	11, 12, 13
		5.18	63
Chandler, Katrina	SE-20726872	5.2	8, 17
		5.11	36
		5.18	61, 63
Chenery, Joanne	SE-20726787	5.2	6, 8
		5.15	55

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.18	59, 61
Chidgey, Greg	SE-20726739	5.18	59
Clarke, Dick	SE-20726796	5.2	10, 15, 17
		5.18	61
Clutterbuck, Charlotte	SE-20726738	5.2	11
		5.18	63
Clyde, Nic	SE-20726777	5.2	6
Conigrave, Arthur	SE-20726684	5.1	5
		5.18	61, 63
Coorey, Suraya	SE-20726712	5.2	8, 10
		5.7	28
		5.11	37
		5.18	61, 63
Corkish, Richard	SE-20726839	5.2	6
Cowlishaw, Nicholas	SE-20726662	5.2	10, 11, 12
		5.18	63
Cox, Elizabeth	SE-20726686	5.2	6, 11, 12
		5.11	36, 37
		5.15	53
		5.18	60, 63
Crossman, Carolyn	SE-20726093	5.18	60
Curry, Chris	SE-20726810	5.2	11
Dalman, Andreas	SE-20726822	5.2	11, 17
		5.18	61, 63
Dance, Ian	SE-20726697	5.2	11, 12
		5.18	61
Dollfus-Gates, Estelle	SE-20726876	5.2	12
		5.11	36
		5.18	61, 63
Dowsett, Brigid	SE-20726764	5.2	11, 12
		5.18	63
Edwards, Emily	SE-20726848	5.2	6, 11, 12

Public name	Submission ID	Section where issue is addressed	Issue and response number
Ellwood, Steven	SE-20726702	5.2	8, 12
		5.16	57
		5.18	59, 60, 62
Evans, Allan	SE-19602878	5.2	11
		5.11	37
		5.16	57
		5.18	63
Evans, Bronwen	SE-20726755	5.2	12
		5.18	63
Evans, Kym	SE-20726699	5.2	6, 17
		5.16	57
		5.18	60, 63
Evans, Pamela	SE-20726761	5.2	15
		5.18	62
Ewald, Ben	SE-20726710	5.1	5
		5.2	6, 16, 17
		5.11	37, 39, 40, 41
		5.12	46, 47, 48
		5.16	57
		5.18	61
Finter, Derek	SE-20726842	5.2	10, 12, 15
		5.15	53
		5.18	61
Fisher, Peggy	SE-20726845	5.2	6, 16
		5.11	37
		5.16	57
Flynn, Ann	SE-20726867	5.1	5
		5.2	11, 12, 17
		5.11	36
		5.12	49
		5.15	54
		5.18	61

Public name	Submission ID	Section where issue is addressed	Issue and response number
Gait, Rebecca	SE-20726837	5.2	11, 12, 15
		5.6	26
		5.7	28
		5.11	36, 37
		5.16	57
		5.18	61, 63
Garbutt, Dale	SE-20726646	5.2	6, 10, 11, 12
		5.15	53
		5.18	61, 63
Garnsey, Robert	SE-20726742	5.2	6, 12
		5.18	61, 63
Garnsey, Robert	SE-20726750	5.2	11
		5.18	61, 63
Gibson, Therese	SE-20726772	5.18	61
Greenlees, Christine	SE-20726794	5.2	12
		5.11	37
Grierson, Kim	SE-20726776	5.2	8, 11, 12
		5.11	39
		5.15	53
		5.16	57
		5.18	61
Grufas, Laura	SE-20726664	5.2	8, 11, 12
		5.4	21
		5.11	35, 36, 45
		5.15	53
		5.18	60, 61, 63
Gu, Ying	SE-20726708	5.2	13
		5.11	36
		5.18	61, 63
Hawthorne, Wendy	SE-20726638	5.1	1, 2, 4
		5.2	6, 10, 12, 14
		5.6	27

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.11	37
		5.14	51
		5.15	54
		5.18	59, 61
Hayes, John L	SE-20726673	5.2	10, 12
		5.11	36
		5.12	49
Heard, Geoff	SE-20726740	5.2	12
		5.18	63
Hodges, Lesley	SE-20726775	5.2	7, 17
		5.18	61, 63
Horsley, Lee	SE-20726705	5.18	61
Horsley, Peter	SE-20726666	5.1	2
		5.2	6, 12, 17
		5.11	36
		5.18	60, 61, 63
Hurley, Leanne	SE-20726681	5.2	11, 17
		5.11	36
		5.15	53
		5.18	60, 61, 63
Hurley, Robyn	SE-20726749	5.2	11
		5.11	36
		5.18	60, 61, 63
Hussein, Samir	SE-20726704	5.2	6, 12
		5.11	36
		5.12	49
		5.18	61
Jacka, Katherine	SE-20726713	5.18	59, 60, 61
Jeffries, Alanah	SE-20726771	5.18	61
Jessup, Graeme	SE-20726882	5.2	6, 12
		5.16	57
Jinga, Christine	SE-20726866	5.2	11

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.18	63
Johnston, Les	SE-20726711	5.11	37, 40, 41
		5.12	46, 47, 48
Jowers Blain, Daniel	SE-20726868	5.2	17
		5.15	53
		5.18	61
Katz, Daniel (objection to the Proposal – no issue raised)	SE-20726798	-	-
Katz, Mary Lois	SE-20726816	5.2	11
		5.18	59
King, Tom	SE-20726743	5.2	6, 8, 12
		5.15	53
		5.18	62, 63
Kinnison, Sharon	SE-20726855	5.1	5
		5.2	8, 10, 11, 12, 15
		5.3	18
		5.7	28
		5.11	37
		5.15	53
		5.18	63
Laing, Barry	SE-20726804	5.2	11, 14
		5.18	63
Lam, Keelah	SE-20726780	5.2	11
		5.16	57
		5.18	61, 63
Lane, Patricia	SE-20726726	5.2	12
Lee, Chris	SE-20726779	5.2	10
		5.18	61
Lee, Fiona	SE-20726836	5.2	6, 8, 11
		5.18	60, 61, 63
Lee, Julie	SE-20726811	5.2	11

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.18	59
Lewin, Rosalind	SE-20726640	5.18	61
Llewelyn, Pat	SE-20726645	5.1	1, 2, 4, 5
		5.2	8, 10, 11, 14
		5.6	27
		5.11	37, 38, 44
		5.14	51
		5.15	54
		5.18	61
Lockyer, G & C	SE-20726791	5.18	61
Loo, Kim	SE-20726720	5.2	10, 11, 12, 17
		5.15	53
		5.18	61, 62, 63
Madigan, Rick	SE-20726723	5.2	10, 12, 17
Mansell, Elizabeth	SE-20726653	5.1	1, 2, 4
		5.2	6, 8, 10, 11, 12, 14
		5.6	27
		5.11	37, 38
		5.14	51
		5.15	54
		5.18	59
Mansell, James	SE-20726696	5.11	37, 42, 44
		5.13	50
		5.15	54
		5.18	59, 61
Manwaring, Andrew	SE-20726801	5.2	11
		5.18	63
Martin, Marjorie	SE-20726698	5.11	37, 41
		5.16	57
McCool, Lida	SE-20726728	5.2	12
		5.18	59, 61
McDaid, Caroline	SE-20726675	5.2	6, 15

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.11	36
		5.18	59, 60, 63
McEwen, David	SE-20726814	5.2	6, 14
		5.18	60
McGrath, Stephen	SE-20726689	5.2	11
		5.3	18
		5.11	37, 42, 44
		5.13	50
		5.15	54
		5.18	61
McKenzie, Kathy	SE-20726706	5.2	8, 12, 14, 16, 17
		5.18	59
Meade, Janet	SE-20726642	5.2	12, 15
		5.11	38
		5.18	59
Merchant, Cathy	SE-20726880	5.1	3
		5.18	61
Mercier, George	SE-20726802	5.2	11
Michaelis, Angela	SE-20726817	5.2	11, 12
		5.7	29
		5.11	36
		5.18	61, 63
Mooney, Laura	SE-20726790	5.2	12
		5.18	63
Morehead, Josephine	SE-20726678	5.2	11, 12
		5.8	31
		5.15	56
Modi, Pooja (objection to the Proposal – no issue raised)	SE-20726826	-	-
Motbey, Phillip	SE-20726774	5.2	12
Murray, Janet	SE-20726788	5.2	6, 8, 11, 17

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.3	18
		5.12	49
		5.15	53
		5.18	59, 61
Nairn, Llynda	SE-20726716	5.2	6, 11, 15
		5.15	53
Nay, Michael	SE-20726808	5.18	59
Newell, Ben	SE-20726667	5.2	12
		5.18	61
O'Byrne, Mary	SE-20726800	5.2	11
		5.18	62, 63
O'Hara, Elizabeth	SE-20726841	5.2	6, 8
		5.15	53
		5.18	61
O'Leary, Janis	SE-20726649	5.1	5
		5.2	8, 11
		5.18	63
O'Leary, SA	SE-20726840	5.2	6, 12
		5.11	36
		5.15	53
		5.18	60, 61, 62, 63
Osiander, Daniela	SE-20726813	5.2	10, 12, 14
		5.18	59
Parker, Sharon	SE-20726858	5.2	11, 12
Paterson, Denise	SE-20726637	5.1	1, 2, 4
		5.2	6, 10, 11, 14
		5.6	27
		5.11	37, 38, 44
		5.14	51
		5.15	54
		5.18	61
Phillips, Carly	SE-20726829	5.1	3

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.2	6, 10, 17
		5.3	18
		5.11	35, 36, 43, 45
		5.15	53
		5.18	60, 63
Radford, Kate	SE-20726688	5.2	11
Rainbird, Tessa	SE-20726859	5.11	36
		5.15	53
		5.18	59, 61
Regazzo, Ewan	SE-20726707	5.1	3
		5.2	6, 8
		5.18	59, 61
Rendall, Vanessa	SE-20726691	5.2	11
		5.11	36
		5.15	53
		5.18	60, 61, 63
Rimes, Fiona	SE-20726734	5.2	11, 12
		5.18	63
Robinson, Dorothy	SE-20726690	5.2	8, 10, 11, 12
Rothwell, Denis	SE-20726803	5.2	6, 8
		5.15	53
		5.18	62
Sadler, Hannah	SE-20726793	5.18	59, 60, 61
Sage, Norman	SE-20726714	5.2	6, 12
		5.18	60, 63
Sargeant, Paul	SE-20726815	5.2	11
Scott, Jan	SE-20726674	5.2	11, 12, 15
		5.11	36
		5.15	53
		5.18	60, 61, 63
Scott, Nicholas	SE-20726766	5.1	3
		5.2	6

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.15	53
		5.18	61
Seccull, Alison	SE-20726680	5.2	6, 8, 11
		5.11	36, 37
		5.15	53
		5.18	63
Serhan, Brad	SE-20726795	5.2	12
		5.11	37
Sharp, Pam	SE-20726661	5.2	17
		5.11	36
		5.18	63
Skinner, Samantha	SE-19559971	5.18	61
Smallman, Ian	SE-20726805	5.2	11
		5.18	59
Stanford, Richard	SE-20726725	5.18	61
Stevens, Ben	SE-20009914	5.2	15
		5.15	53
		5.18	61
Stevens, Leah	SE-20007898	5.18	61
Stokoe-Miller, Violet	SE-20726865	5.18	61, 63
Suggars, Meike	SE-20726659	5.2	12
		5.15	53
		5.16	57
		5.18	59
Suwald, Roman	SE-20726668	5.2	12
		5.11	36
Szery, Yolande	SE-20726663	5.2	11
		5.11	37
		5.15	53
		5.18	61
Taylor, Silas	SE-20726677	5.2	6, 17
		5.18	61

Public name	Submission ID	Section where issue is addressed	Issue and response number
Thomas, Toby	SE-20726830	5.15	0
Thompson, Janet	SE-20726641	5.1	5
		5.2	10, 15
		5.8	32
		5.11	41
		5.18	61
Thompson, Ruth	SE-20726732	5.2	11
Underhill, Christine	SE-20726729	5.2	11
		5.18	61
Validzic, Simon	SE-20726863	5.2	11, 12
		5.5	25
		5.11	36
		5.15	53
		5.16	57
		5.18	62
Vaughan, Hugh	SE-20726730	5.2	12, 15
		5.18	63
Vickers, Daniel	SE-20726786	5.4	22
Von Staerck, Anthea	SE-20726770	5.2	11
Vost, Bronwyn	SE-20726758	5.2	12, 17
		5.16	57
		5.18	61
Walker, Bronwyn	SE-20726799	5.2	6, 12
		5.18	61
Walker, Lesley	SE-20726715	5.11	36, 37, 45
		5.16	57
		5.18	61, 63
Walsh, Adele	SE-20726869	5.2	11
Watson, Jan and Warren	SE-20726807	5.2	11
Watson, Mary	SE-20726769	5.2	17
		5.18	63

Public name	Submission ID	Section where issue is addressed	Issue and response number
Wawn, Prudence	SE-20726818	5.2	6, 8, 9, 15, 16
		5.15	53
		5.16	57
		5.18	60, 63
Westcott, Kim	SE-20726792	5.2	12
		5.11	36, 43
		5.18	63
Whittaker, Jess	SE-20726682	5.2	11, 15
		5.11	36
Wills, Peter	SE-20726856	5.16	57
Wilmot, Christopher	SE-20726685	5.2	10, 11, 12
		5.11	43
		5.15	55
		5.16	57
		5.18	63
Withheld	SE-19464879	5.18	61
Withheld	SE-19559242	5.18	62
Withheld	SE-20064244	5.18	61
Withheld	SE-20680606	5.1	2
		5.2	10, 12, 15
		5.11	38
		5.15	53
		5.18	61
Withheld	SE-20726071	5.1	3
Withheld	SE-20726644	5.2	11, 12, 17
		5.18	59
Withheld	SE-20726651	5.2	11, 12
Withheld	SE-20726654	5.2	11, 12, 16, 17
		5.18	61
Withheld	SE-20726657	5.2	11, 12
		5.11	36, 46
		5.18	60, 61, 63

Public name	Submission ID	Section where issue is addressed	Issue and response number
Withheld	SE-20726660	5.11	36, 45
		5.18	61, 63
Withheld	SE-20726670	5.2	11
		5.18	61
Withheld	SE-20726671	5.2	10, 14, 15
		5.18	59
Withheld	SE-20726679	5.1	1, 2, 4
		5.2	6, 10, 11, 14
		5.6	27
		5.11	36, 37, 38
		5.14	51
		5.15	54
Withheld	SE-20726687	5.1	1, 2, 4
		5.2	6, 10, 11, 14, 15
		5.6	27
		5.11	36, 38, 44
		5.14	51
		5.15	54
Withheld	SE-20726692	5.1	2
		5.2	9, 10, 11
Withheld	SE-20726701	5.4	23, 24
		5.6	26
		5.7	28, 29, 30
		5.10	34
		5.15	52
Withheld	SE-20726709	5.2	8, 10, 11, 17
		5.15	53
Withheld	SE-20726717	5.2	11
Withheld	SE-20726721	5.2	11, 12
		5.18	63
Withheld	SE-20726722	5.2	11, 17
		5.18	62

Public name	Submission ID	Section where issue is addressed	Issue and response number
Withheld	SE-20726724	5.1	3
		5.2	16
		5.4	24
		5.9	33
		5.11	36
		5.16	57
		5.17	58
Withheld	SE-20726731	5.2	12, 17
Withheld	SE-20726733	5.2	12
		5.18	63
Withheld	SE-20726735	5.2	11
Withheld	SE-20726745	5.11	36
Withheld	SE-20726746	5.2	12
		5.18	60
Withheld	SE-20726747	5.11	35
Withheld	SE-20726751	5.2	6, 15
		5.3	19
		5.15	53
		5.18	61, 63
Withheld	SE-20726752	5.2	12
Withheld	SE-20726753	5.2	11, 13
		5.18	59
Withheld	SE-20726756	5.2	11
		5.18	59
Withheld	SE-20726757	5.2	8, 11, 12
		5.18	63
Withheld	SE-20726759	5.2	11, 17
		5.9	33
		5.16	57
		5.18	61, 62
Withheld	SE-20726767	5.2	11
		5.18	63

Public name	Submission ID	Section where issue is addressed	Issue and response number
Withheld	SE-20726768	5.2	11
		5.18	63
Withheld	SE-20726773	5.18	63
Withheld	SE-20726778	5.2	17
		5.18	61
Withheld	SE-20726783	5.18	61
Withheld	SE-20726784	5.18	59, 63
Withheld	SE-20726797	5.18	61
Withheld	SE-20726806	5.2	11
		5.18	60, 61
Withheld	SE-20726812	5.18	61
Withheld	SE-20726827	5.2	11
Withheld	SE-20726831	5.2	12, 17
		5.18	60, 61
Withheld	SE-20726835	5.2	6
		5.18	61
Withheld	SE-20726838	5.18	61, 63
Withheld	SE-20726846	5.2	17
		5.18	59, 61
Withheld	SE-20726850	5.18	63
Withheld	SE-20726852	5.1	5
		5.2	6, 11, 16
		5.11	37
		5.18	61
Withheld	SE-20726853	5.2	8, 12
		5.11	36
		5.15	53
		5.18	63
Withheld	SE-20726877	5.2	11, 12, 15
		5.16	57
		5.18	59
Withheld	SE-20726878	5.2	11

Public name	Submission ID	Section where issue is addressed	Issue and response number
		5.18	61
Woodley, Ted	SE-20726834	5.1	2
		5.2	6, 7, 8, 9, 10, 11, 12, 17
		5.11	36
		5.15	53, 54
		5.18	64
Wysser - Martin, Colleen	SE-20726700	5.11	36
		5.18	61
Wysser, Stephanie	SE-20726695	5.2	12
		5.11	36
		5.15	53
		5.18	61
Yildiz, Baran	SE-20726683	5.2	11

Appendix B. **Biodiversity Development Assessment Addendum**

Hunter Power Project Response to Submissions

Biodiversity Development Assessment Report Addendum

30 July 2021

Hunter Power Project Response to Submissions

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Contents

1. Introduction

Snowy Hydro Limited (Snow Hydro) propose to develop an open cycle gas fired power station near Kurri Kurri, NSW (the Proposal). The Proposal involves the construction and operation of a power station, electrical switchyard and associated supporting infrastructure. The Proposal will operate as a "peak load" generation facility supplying electricity at short notice when there is a requirement in the National Electricity Market (NEM).

A Submissions Report has been prepared to address submissions made on the Environmental Impact Statement (EIS) prepared for the Proposal. This report provides a response to submissions related to the biodiversity assessment for the Hunter Power Project – Kurri Kurri Power Station and also serves as an addendum to the Hunter Power Project *Biodiversity Development Assessment Report* (BDAR) (Jacobs, 2021), Appendix B to the main EIS report, on which the submissions are based.

1.1 Submissions

The Biodiversity and Conservation Division (BCD) of the NSW Department of Planning, Industry and Environment (DPIE) have requested further clarification to adequately assess the potential impacts of the Proposal on biodiversity. The key issues are presented on Table 1.

Table 1: Biodiversity agency submissions

Item /Issue	Where addressed
1) Commentary and results are provided for all species except bush stone curlew, eastern pygmy possum, koala, and pale headed snake. BCD assumes that these were not recorded given that there is no 'species' credit obligations for these species. BCD recommends the accredited assessor update Section 5.2.6 of the BDAR to include the results of all the targeted threatened fauna surveys to ensure continuity of the results section. *Recommendation - BCD recommends the accredited assessor update Section 5.2.6 of the Biodiversity Development Assessment Report to include the results of all the targeted threatened fauna surveys.*	Section 2.1.1
2) BCD does not clearly understand why the proposal could not be moved 100 – 150 meters south to avoid most impacts associated with the mapped important habitat areas and biodiversity in general, unless the land to the south is too far from the connection to gas lateral pipeline, is not appropriately remediated or is required as part of another development. This area does not appear to contain significant biodiversity values and would easily avoid areas of mapped important habitat, and thus not trigger SAII. BCD recommends the accredited assessor justify why the proposal cannot avoid areas of mapped important habitat for the regent honeyeater, and thus not trigger SAII. *Recommendation - BCD recommends the accredited assessor justify why the proposal cannot avoid areas of mapped important habitat for the regent honeyeater, and thus not trigger serious and irreversible impacts.*	Section 2.2

Item /Issue	Where addressed
3) BCD recommends the accredited assessor submits the credit calculator via the NSW Biodiversity Accredited Assessor System prior to the submission of response to submissions report to finalize BCD's assessment of the BDAR. *Recommendation - BCD recommends the accredited assessor submits the credit calculator via the NSW Biodiversity Accredited Assessor System prior to the submission of response to submissions report.*	Section 2.3
4) BCD recommends BCD recommends the accredited assessor include the plot field data sheets in the BDAR to ensure consistency between the data sheets, the BDAR and the credit calculator. *Recommendation - BCD recommends the accredited assessor includes the plot field data sheets in the BDAR.*	Section 2.4

1.2 Methodology overview

To address the comments and recommendations associated with the biodiversity assessment, the following tasks have been undertaken:

- The Section 5.2.6 of the BDAR has been updated to include the results of all the targeted threatened fauna surveys
- Communication with the BCD regarding the submission of the credit calculator and the plot field sheet data.

No additional survey or assessment was required to clarify any of the issues requested by the BCD.

2. Issue clarifications

2.1 Targeted threatened fauna surveys

Targeted surveys were undertaken in December 2020, results were provided for all species except bush stone curlew, eastern pygmy possum, koala, and pale headed snake. All species were not recorded and therefore have no 'species' credit obligations. Section 5.2.6 of the BDAR (Appendix B of the EIS) has been updated to include the results of all the targeted threatened fauna surveys to ensure continuity of the results section. The details of the update are provided below.

2.1.1 Fauna survey results

The Bush Stone Curlew (*Burhinus grallarius*) was not detected from the targeted survey conducted at the Study Area. As per the description in Table 5.7 of the BDAR, the species was targeted using call playback and spotlighting. Given the range of techniques and survey effort deployed for the size of the site, the Bush Stone Curlew is considered absent from the Study Area, and a species polygon has not been prepared.

The Eastern Pygmy Possum (*Cercartetus nanus*) was not detected from the targeted survey conducted at the Study Area. As per description in Table 5.7 of the BDAR, the species was targeted using baited ground-based and tree-based Elliott traps, camera trapping and spotlighting. Given the range of techniques and survey effort deployed the size of the site, the Eastern Pygmy Possum is considered absent from the Study Area, and a species polygon has not been prepared.

The Koala (*Phascolarctos cinereus*) was not detected from the targeted survey conducted at the Study Area. As per the description in Table 5.7of the BDAR, the species was targeted from scat searches and spotlighting. The small size of the study area allowed for good coverage of survey effort across the entire habitat area and from these results, the species is considered absent from the Study Area, and a species polygon has not been prepared.

The Pale-headed Snake (*Hoplocephalus bitorquatus*) was not detected from the targeted survey conducted at the Study Area. As per Table 5.7 of the BDAR, the species was targeted from spotlighting, which focused on the Proposal area, where tree canopy occurred, and immediately adjoining habitats. Tree hollows are lacking in the Proposal area, and the habitat is considered only marginal for this species. The species is considered absent from the Study Area, and a species polygon has not been prepared.

2.2 Justify why the proposal cannot avoid areas of mapped important habitat for the Regent Honeyeater, and thus not trigger SAII

The Proposal site adopted for the EIS was informed by the proposed subdivision of land and is located almost entirely on previously disturbed industrial land. The Proposal site represents the maximum area realistically required for the construction and operation of the project. The northern portion of the proposal site contains the switchyard which is influenced by the alignment of the existing north-south and east-west powerlines. The proposal site includes the requisite asset protection zone and some additional land to the south of the power station itself for construction laydown and maintenance activities, which also acts to help with meeting the Industrial Noise Policy requirements for surrounding land.

During detailed design consideration will be given to adjusting the northern section of the proposal site to minimize impacts on biodiversity values. However, at this stage consistent with all other specialist studies and sections of the EIS, the assessment of biodiversity impacts and associated offsets are based on the realistic worst-case disturbance area.

Section 7.3.2 of the BDAR explains that the Proposal would directly impact approximately 0.40 ha of intact woodland of PCT1633 which is mapped as important habitat for the Regent Honeyeater. The Recovery Plan for the Regent Honeyeater identifies 9 key foraging species, none of which are found in PCT 1633 or confirmed in the Proposal site. In addition to this, the plan also describes the ecological community and other tree species which may be regionally important, for example the Lower Hunter Spotted Gum Ironbark forest (not present on the Proposal site), as well as flowering of species such as *Eucalyptus eugenoides* (thin-leaved stringybark) and other stringybark species and *Eucalyptus fibrosa* (Broad-leaved Ironbark).

Based on available literature and current knowledge of habitat preferences for this species in the Hunter Valley, the habitat on the Proposal site would not be considered important, despite overlaying a portion of the important habitat mapping, as it contains no key foraging species, with the exception of low numbers of stringybark. There are no significant impacts predicted to foraging habitat for the Regent Honeyeater because of the minor clearing required for this Proposal. Section 9.1 of the BDAR includes a detailed assessment of SAII as per the BAM and concluded that the Proposal is unlikely to result in a significant impact, reduce the population size or decrease the reproductive success of the Regent Honeyeater. Indirect impacts are considered in Section 9.2 and were considered minimal.

2.3 Credit calculator

Jacobs accredited assessor submitted the credit calculator via the NSW Biodiversity Accredited Assessor System prior to the submission of Response to Submissions Report. The credit calculator was submitted online and confirmation from the BCD was sought via email (22 June 2021).

2.4 Plot data

Jacobs accredited assessor submitted the plot field data sheets in the BDAR to ensure consistency between the data sheets, the BDAR and the credit calculator. The plot field data sheets were submitted online and confirmation from the BCD was sought via email (22 June 2021).

3. References

Jacobs (2021). *Biodiversity Development Assessment Report.* Prepared for Snowy Hydro Limited. Reference IS354500, Revision 0, 13 April 2021.

Appendix C. Surface Water and Aquatic Ecology Addendum

Hunter Power Project Response to Submissions

Surface Water and Aquatic Ecology Assessment Addendum

30 July 2021

Hunter Power Project Response to Submissions

Project No:	IA354500
Document Title:	Surface Water and Aquatic Ecology Assessment Addendum
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Client Name:	Snowy Hydro Limited
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Contents

1. Introduction

Snowy Hydro Limited (Snow Hydro) propose to develop an open cycle gas fired power station near Kurri Kurri, NSW (the Proposal). The Proposal involves the construction and operation of a power station, electrical switchyard and associated supporting infrastructure. The Proposal will operate as a "peak load" generation facility supplying electricity at short notice when there is a requirement in the National Electricity Market (NEM).

A Submissions Report has been prepared to address submissions made on the Environmental Impact Statement (EIS) prepared for the Proposal. This report provides a response to submissions related to surface water and aquatic ecology for the Hunter Power Project – Kurri Kurri Power Station and also serves as an addendum to the Hunter Power Project *Surface Water and Aquatic Ecology* (Jacobs, 2021), Appendix I to the main EIS report, on which the submissions are based.

1.1 Submissions

The Biodiversity and Conservation Division (BCD) of the NSW Department of Planning, Industry and Environment (DPIE) have requested further clarification to adequately assess the potential impacts of the Proposal on surface water quality (Issue 9 from the BCD response). The key water quality issues and recommendations are presented in Table 1.

Table 1: Surface water and aquatic ecology agency submissions

Item/Issue raised by BCD	Where addressed in this report
9a) The proposed stormwater pollution control for the site is via a permanent pond located within the base of the on-site detention pond. All flows from the development are proposed to be routed through the basin (high and low). Best practice is currently to locate pollution controls offline so that they treat low flows well and pollutants are not remobilised by high flows. It is unclear how the proposed pond will treat stormwater flows apart from allowing for some settling of suspended solids. Music water quality modelling provided with the EIS indicates a small reduction in pollutant load will be achieved through this approach, although this result is much lower than would generally be required for a development in areas where water quality targets are established through the planning system.	Section 2.1
9b) The modelled reduction in pollutant loads are stated as 36% reduction in Total Suspended Solids (TSS), 29.8% Total Phosphorus (TP), 5.1% Total Nitrogen (TN). Cessnock City Council has not established pollutant reduction targets in its Development Control Plan (DCP), however; commonly adopted targets for other local government areas are 85% TSS, 65% TP and 45% TN. The level of pollutant reduction proposed does is not sufficient for discharge to a waterway. BCD also considers that the predicted reductions in pollution loads are unlikely be achieved when the pond is located on-line and receives all flows.	Section 2.2
9c) The low level of treatment proposed for the development has been justified by comparison to the existing land use (as an aluminium smelter) rather than the stormwater quality objectives which would have been required for a rehabilitated site.	Section 2.3

Item/Issue raised by BCD	Where addressed in this report
Recommendation - Stormwater pollution controls should be made offline and provided separately to the on-site detention pond. A higher standard of pollution control should be provided and the existing poor quality of water downstream of a site undergoing rehabilitation should not be used to justify a low level of stormwater treatment.	

1.2 Methodology overview

To address BCD's comments and recommendation associated with surface water and aquatic ecology, the following tasks have been undertaken:

- Refinement of the Music model parameters and additional Music water quality modelling
- Proposed increase in pond volume to achieve higher pollution percentage reductions
- Additional clarifications of issues raised.

2. Issue clarifications

2.1 Stormwater pollution control

At the end of construction, the 3,100m^3 sediment basin would be converted to an operational basin.

The operational phase basin has a dual function of providing peak stormwater flow attenuation and water quality treatment. The basin will only receive clean stormwater runoff from the site.

The basin needs to be an on-line structure to be able to receive the higher peak flows that would be reduced through the detention component of the basin. Captured sediment in the basin would be stored at the base of the basin at a depth in excess of 2m and would are not prone to any significant resuspension during high inflows.

The size of the basin that would provide pollutant load reductions that are mentioned on the previous page in item 9 of the submission has been derived to determine if the space for a larger basin is available on site. This water volume that can meet the pollutant load reductions is 2,350m^3 as shown in Section 2.3.

2.2 Music water quality monitoring

The water quality model (eWater Music) has been used to provide the required basin size. The model has also been updated to include revised information that has been obtained from recent geotechnical and groundwater investigations on the rate of subsoil infiltration rates. An updated rate of 50mm/hr has been adopted based on the below information to align with the recent groundwater modelling.

Hydraulic conductivities have been derived from the three geotechnical boreholes closest to the basin. The hydraulic conductivities for the soil textural class and grainsize have been derived from the *USDA Soil Water Characteristics* software (Saxton and Rawls, 2006).

- BH201
  - Sample results for 1.50 – 2.00 m depth
  - Described as clayey sand, with 16% fines, 65% sand and 19% gravel
  - Indicative hydraulic conductivity for this textural class (sandy loam) is approximately 1.48 m/day
- BH202
  - Sample results for 1.00 – 1.50 m depth
  - Described as sand, with 27% fines, 70% sand and 3% gravel
  - Indicative hydraulic conductivity for this textural class (sandy loam) is approximately 2.17 m/day
- BH204
  - Sample results for 1.50 – 2.00 m depth
  - Described as clayey sand, with 26% fines and 74% sand
  - Indicative hydraulic conductivity for this textural class (loamy sand) is approximately 2.18 m/day

For the purposes of this assessment, including the assessment of dewatering rates and associated groundwater impacts, the geometric mean of the indicative hydraulic conductivity values derived from the geotechnical soil samples (1.9 m/day) have been adopted. This is the equivalent of 79mm/hr.

Hydraulic testing has been undertaken on a number of monitoring bores and the formations tested interpreted to have a hydraulic conductivity of between $2e^{-5}$ and $8e^{-6}$ m/s. This is the equivalent of 28 mm/hr to 72mm/hr, which is representative of sand and silty sand expected of a similar aquifer.

In summary, the lower and upper ranges are 28mm/hr and 72 mm/hr and therefore a mid-range value of 50 mm/hr has been adopted for the water quality model as being representative of the site's sub-soils.

Another input parameter that has been updated in the water quality model is the proposed percentage imperviousness for the developed conditions which are summarised in Table 2 below. These are aligned with the imperviousness percentages used in the hydrological assessment.

Table 2: Percentage imperviousness for the proposed conditions

Proposed conditions	Total area (ha)	Updated percentage imperviousness
Switchyard	1.29	20
Plant	6.81	75
Buffer	3.73	10
Total	11.83	

The percentage imperviousness for the existing conditions is 10% as per the Table 3 below.

Table 2: Key assumptions used in the hydrology assessment

Aspect	Existing case	Proposed case
Proposal Site area	Cleared, practically flat, graded former smelter site raised pad 11.83 ha	11.83 ha comprised of three sub areas: ▪ Switchyard – 1.29 ha ▪ Plant (incl. landscaping) – 6.81 ha ▪ Buffer – 3.73 ha
Drainage summary	100% of site gravity drainage to unnamed tributary of Black Waterholes Creek to reflect natural site drainage conditions (without the smelter site retention ponds)	100% of site gravity drains to new stormwater detention basin located in the north of the Proposal Site
Slope	Approximately 0.7% based on current LiDAR	Assumed similar 0.7 % is adopted for Proposal Site, but this is subject to detailed design
Land use surface	Compacted gravel	▪ Switchyard – compacted gravel ▪ Proposed Plant – compacted gravel and road base, buildings with roofs, and concrete slabs ▪ Buffer – grassed/compacted gravel and grass

Aspect	Existing case	Proposed case
Fraction Impervious	Assumed 10%	▪ Switchyard – 20% ▪ Proposed Plant – 75% ▪ Buffer – 10%
Stormwater detention	Nil	▪ Estimated stormwater detention basin capacity of 2,240 m^3 (nominal 2,000 m^2 at a maximum pond depth of 1.12 m) ▪ Estimated 1,200 mm diameter piped outlet (or equivalent) and 15 m long high flow weir

2.3 Results

The updated water quality modelling results indicate that increasing the volume of proposed wet basin from 950m^3 to 2,350m^3 provides annual average pollutant loads significantly improves the existing water quality discharges from the site. It also exceeds the percentage improvements of proposed conditions without water quality controls compared to proposed conditions with water quality controls suggested by BCD for desirable annual average pollutant load reductions. The critical parameters are TSS as shown in the below table which means that if TSS is met then the other two parameters would also be met.

The detail design should review these results and the most relevant and applicable design criteria should be adopted.

Table 4: Annual average pollutant loads and percent improvements with 2,350m^3 basin

Parameter	Proposed conditions without water quality controls	Proposed conditions with water quality controls	Desirable design criteria reductions	Percentage improvements achieved from developed conditions	Meets design criteria Y/N?	Percentage improvements achieved from existing conditions
Total Suspended Solids (TSS)	10,000	1,460	85%	85.4%	Y	68%
Total Phosphorus (TP)	16.9	2.61	65%	84.6%	Y	72%
Total Nitrogen (TN)	125	19.6	45%	84.3%	Y	65%

3. Reference

Jacobs (202)1. *Surface Water and Aquatic Ecology Assessment.* Prepared for Snowy Hydro Limited. Reference IS354500, Revision 0, 23 April 2021.

Saxton. K and Rawls. W (2006). *Soil Water Characteristics Hydraulic Properties Calculator*. Available at: Soil Water Characteristics: Hydraulic Properties Calculator (usda.gov).

Appendix D. Aboriginal Heritage Addendum

Hunter Power Project Response to Submissions

Aboriginal Heritage Assessment Addendum

30 July 2021

Hunter Power Project Response to Submissions

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Contents

1. Introduction

Snowy Hydro Limited (Snow Hydro) propose to develop an open cycle gas fired power station near Kurri Kurri, NSW (the Proposal). The Proposal involves the construction and operation of a power station, electrical switchyard and associated supporting infrastructure. The Proposal will operate as a "peak load" generation facility supplying electricity at short notice when there is a requirement in the National Electricity Market (NEM).

A Submissions Report has been prepared to address submissions made on the Environmental Impact Statement (EIS) prepared for the Proposal. This report provides a response to submissions related to Aboriginal cultural heritage for the Hunter Power Project and also serves as an addendum to the Hunter Power Project *Aboriginal Cultural Heritage Assessment* (Jacobs, 2021), Appendix C to the main EIS report, on which the submissions are based.

1.1 Submissions

Heritage NSW stated in their submission that that Aboriginal Cultural Heritage Report (ACHAR) was complete and complies with the SEARs. Heritage NSW requested further clarification in relation to the management and mitigation measures included in the ACHAR as well as some other clarifications related to the assessment and monitoring program. The key issues are presented in Table 1.

Table 1: Heritage NSW agency comments

Item /Issue	Where addressed
1) The ACHAR must outline procedures for the monitoring program, including but not limited to: a) The number of Registered Aboriginal Parities (RAPs) that will be on site each day b) A list of the artefact attributes that will be recorded on all recovered artefactual material c) Methodology for the monitoring of bulk excavations, including: i) Method of fill and sediment removal (i.e., bulk or spit) d) A hand excavation procedure that includes details on if removal of surrounding fill material is required and the requirements for commencement and termination of excavations	Section 2.1
2) The predictive model outlined in Section 4.3 of the Archaeological Assessment Report (Appendix B of ACHAR) requires explication of the assumptions of the model, supporting evidence, and a detailed assessment of other predictive models used in the region	Section 2.2
3) The significance assessment must assess the potential for sub-surface deposit based the findings from archaeological excavations throughout the surrounding region and be updated accordingly	Section 2.3.1
4) The significance assessment must consider the significance statements provided by the RAPs during the consultation process	Section 2.3.2.1
5) Must include an Unexpected Finds Protocol (non-skeletal remains)	Section 2.4
6) Correction of in-text referencing throughout the ACHAR, with specific mention to Section 5.	Section 2.5

1.2 Methodology overview

To address the Heritage NSW's comments, the following tasks have been undertaken:

- Provision of the proposed draft procedures for an archaeological monitoring program
- Statement of Significance by the Awabakal and Guringai Peoples
- Unexpected Finds Protocol (non-skeletal remains)
- Updated reference list.

2. Issue clarifications

2.1 Archaeological monitoring program

It is proposed that the procedures for archaeological monitoring would be developed in consultation with the Registered Aboriginal Parties (RAPs) during the post approval phase and be incorporated into a Cultural Heritage Management Plan (CHMP) to be submitted to DPIE for approval. To address the comments supplied by Heritage NSW a provisional procedure has been drafted and included in the sections below.

2.1.1 Personnel

In the areas where the deep alluvium will be impacted through piling, and bulk excavation works in particular, it will be monitored by at least one archaeologist and one representative of the RAPs.

2.1.2 Procedure for archaeological monitoring of site works

Works must not commence until the monitoring team have arrived on site and have signaled workers that they are prepared to commencement works. The monitoring team would visually observe all ground disturbing works from a suitable and safe vantage point (not immediately in front of machinery or behind, and at a distance at least two lengths of the excavator's arm). Where the monitoring team require a closer inspection, site workers would be signaled to stop work, and a closer inspection would only take place once a return signal has been issued. At no point would the monitoring team enter an excavation pit which has not been benched, battered, or shored.

All fill material will be machine excavated under archaeological supervision. Where deposits considered to be of archaeological potential (intact alluvial deposits) are identified, hand excavations will be completed in accordance with Requirement 16 of the *Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales*. However, where it is unsafe to enter the works area, material will be bulk excavated mechanically and sieved. Archaeological monitoring will cease when the maximum depth of impacts has been reached or an archaeological sterile layer has been encountered (bedrock).

Any Aboriginal objects uncovered during these activities will be collected and their location recorded on AHIMS, in accordance with s89a of the *National Parks and Wildlife Act 1974* (NP&W Act).

2.1.3 Artefact attribute recording

It is anticipated that most, if not all, of the objects recovered during the monitoring program will be stone artefacts. These will be analyzed by a suitably qualified archaeologist. Several standard attributes will be recorded for every artefact (following requirements of DECCW, 2010):

- Heat damage
- Post-depositional weathering
- Presence/absence of fresh damage
- Material type
- Artefact type
- Platform surface type
- Platform type
- Termination type
- Cross sectional angle (spine angle) of dorsal surface (flakes only)

- Length in mm
- Width in mm
- Thickness in mm.

Several additional attributes beyond those required by Heritage NSW (previously referred to as Office of Environment and Heritage) will also be recorded for each artefact, including:

- Flake fragment category (complete, proximal fragment, distal fragment etc.)
- Type of cortex and amount of cortex on dorsal surfaces of flakes
- On retouched flakes, various observations of the retouched edges, including retouch type, invasiveness, height of retouch scars
- On cores, various observations including number of core rotations, the orientation of different platforms to one another, whether the core is bipolar or not
- On ground artefacts such as axe/hatchet heads or grindstones, various observations such as size of the ground area, angle of ground edges.

Photographs will be taken of a representative sample of artefacts, to create a visual record of the general types of artefacts within the assemblage. Atypical artefacts or artefacts of high significance will also be photographed. Images will be taken from several orientations, following procedures for archival-quality artefact photography (Fisher, 2009; Prokop, 1985).

Further analytical techniques might be employed on a sub-sample of artefacts if it is judged that these techniques have the potential to yield information. Further techniques might include functional analysis through examination of residues or use-wear, for example. Any such analyses would be carried out by a suitably qualified specialist.

Any Aboriginal artefacts that are not made from stone will be analysed using appropriate techniques. Analysis would conform to the requirements of the *Code of Practice* (DECCW, 2010). Specific analysis procedures would be decided following excavation and would be made from an assessment of the types of artefacts recovered, the materials from which they are made, their condition of preservation, and the information that could be obtained from them.

No destructive analysis of any artefacts will be carried out. Only measurements and observations that have no effect on an artefact's condition will be undertaken.

2.2 Predictive model clarifications

The predictive model is based on background research described in Section 3.0 and Section 4.1 of the Archaeological Assessment Report (AAR) (Appendix C of the EIS). The predictive model is based on existing and publicly available environmental and archaeological information, and previous investigations of the Proposal Site. It did not include any independent verification of the results or interpretations of externally sourced reports (except where archaeological investigation indicated inconsistencies). The AHIMS data was provided to Jacobs by Heritage NSW. Information in the AAR reflects the scope and the accuracy of the AHIMS site data, which in some instances is limited.

2.3 Significance assessment

2.3.1 Potential for sub-surface deposit based the findings from archaeological excavations

Based on comments received from the Awabakal Traditional Owners Aboriginal Corporation (detailed below), any Aboriginal objects identified within the Proposal Site would be of high cultural value to Aboriginal people. No specific historic values pertaining to the Proposal Site were identified during the completion of the assessment. However, any recovered Aboriginal objects may hold historic value in relation to historic events outline in Section 5.4 of the ACHAR (Appendix C of the EIS).

The aesthetic significance of any recovered Aboriginal object cannot be determined until that object has been identified, assessed and consultation with the RAPs completed.

The review of existing archaeological assessments in the vicinity of the Proposal Site confirms that the Wentworth Swamp precinct contains varying amounts of Aboriginal archaeological material. As a result, it is not possible to assess the archaeological significance without additional investigations based on the results of the proposed monitoring program. There is potential to encounter deep alluvial deposits containing Aboriginal objects which would be considered of high archaeological value where densities are sufficient to identify assemblage sequences.

2.3.2 Significance statements provided by the RAPs

The assessment did not identify any Aboriginal objects or places within the Proposal Site. As a result, there are no Aboriginal objects or places to assess significance in the context of archaeological, social, aesthetic, or historic value.

Further, only one submission was received which included information on the significance of the Proposal Site. This submission did not include any information on the historic or aesthetic value of the Proposal Site or any Aboriginal objects that may potentially be present within the Proposal Site. The submission stated that Aboriginal sites are a tangible link that Aboriginal people have to their past and are therefore considered to be of "significant cultural and spiritual value". However, as previously stated, no Aboriginal objects were identified within the Proposal Site.

Under the requirements of the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* a significance assessment completed for an ACHAR would only consider Aboriginal objects.

The submission made by Kerrie Brauer of the Awabakal Traditional Owners Aboriginal Corporation has been included below (Section 2.3.2.1) for reference. Awabakal and Guringai is one of the 600 or more language groups or 'nations' that existed across Australia at the time of European contact and are part of the oldest and continuous living Culture in human history.

2.3.2.1 Significance statement

Our People were recorded within our Traditional Country and acknowledged in the first records ever made of the Aboriginal People of the wider Lake Macquarie, Newcastle, Maitland, Wollombi, Cessnock, Kurri Kurri, Central Coast, Hawkesbury, North Shore and various Sydney areas. Prominent people such as L.E. Threlkeld, Jonathon Warner and many others documented our Peoples Cultural Heritage and Language in detail going back to the very early 1800's.

Our people believe that all our sites and Traditional Culture that has existed for many thousands of years within our area are a tangible link to our Ancestors and our past. Surveys and assessments within our Traditional Country have identified Aboriginal Cultural Heritage Sites (the tangible evidence of occupation) and (the

intangible evidence) of landscape features of cultural value embedded within a landscape that provided physical and spiritual sustenance to the Awabakal and Guringai Peoples.

The survival of these sites is significant to the continuation of the collective knowledge and inspiration for our young people and coming generations of Awabakal and Guringai Peoples, and those Aboriginal People that are invited into our Country. We acknowledge our Ancestors for passing on knowledge and also the legacy for us to continue what they put into place, to pass on our Cultural Heritage and Values to protect our sites for all those in the future.

The Awabakal and Guringai presence extend from the present day back many thousands of years and is reflected in both tangible and intangible aspects of Aboriginal Culture, Heritage, Value and history. As Awabakal and Guringai Peoples, we hold Cultural Knowledge that has been passed down from our Ancestors about our Traditional Country for thousands of years and a spiritual awareness, connectedness, presence, and value of place that connects us with the Land of our People. Therefore, the Awabakal and Guringai People have a continuing, contemporary history of obligation to protect and preserve the Cultural Heritage within our traditional cultural boundary areas.

We maintain concerns over Mining and Development licenses being approved within our Traditional Cultural Boundary, and the adverse impacts this has on our Cultural Heritage, Values, landscape and sea country features, and the footprints of our Ancestors which are being impacted through cumulative and overlapping development, mining and unmonitored and unmanaged human recreational activities. The mental, physical, and spiritual wellbeing of the Awabakal and Guringai Peoples and those Aboriginal Peoples that feel an association to this landscape is also a contemporary phenomenon and not just 'a thing of the past'.

The Awabakal and Guringai Aboriginal Cultural Heritage sites are identified as having significant Cultural and Spiritual Value and are numerous within our Traditional Cultural Boundary. These sites and landscape features link contemporary Awabakal and Guringai Peoples through generations of their Ancestors and are extremely important teaching places and places of spiritual renewal.

The custodial rights and obligations of our people Caring for Country underpin the principles of this statement of significance. It is highlighted, however, that the Awabakal and Guringai Peoples in no way support any impact to our sites, landscape features and cultural value or any aspect of the natural environment within our Awabakal and Guringai Traditional Boundary. Aboriginal people inherit the right and obligation to Care for Country and endorsing any form of harm in our view is assessed as culturally and ethically inappropriate (© Awabakal & Guringai 2013).

2.4 Unexpected finds protocol

This protocol is to be followed if a previously unrecorded or unanticipated Aboriginal object (including objects that are suspected to be Aboriginal objects) are encountered during project works. An Aboriginal object is defined by the NP&W Act as:

'*any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non Aboriginal extraction, and includes Aboriginal remains.*'

This definition includes stone artefacts, midden material, rock art, scarred and carved trees, and burials.

1. all ground-disturbing works in the Aboriginal object(s) cease immediately on discovery of the Aboriginal object. The discoverer of the object will notify machinery operators in the area to ensure work is halted

2. the Aboriginal object will not be removed from the area, or disturbed in any way

3. inform the site supervisor and the development proponent of the discovery

4. inform the project archaeologist of the discovery. The possibility of obtaining a qualified opinion within a short period of time (from the project archaeologist or similar qualified person) to confirm whether the object is of Aboriginal origin will be considered at this point. A swift assessment of the object can preclude further steps in the protocol being carried out, for objects that are identified as not being of Aboriginal origin. If identification of the object cannot be obtained within a short timeframe, or if the object is confirmed to be an Aboriginal object, proceed to the next step

5. notify the following organisations:

- Heritage NSW
- The RAPs associated with the project (where appropriate).

6. if feasible, leave excavations open so that the location where the Aboriginal object was found can be assessed by the project archaeologist (or another qualified professional)

7. organise the assessment and recording of the find by a suitably qualified heritage professional (such as the project archaeologist). This assessment will determine whether the Aboriginal object is from a new or previously recorded site. Following this assessment, site information will be lodged with Heritage NSW

8. clarify and comply with any legal constraints arising from the discovery. This will involve seeking and complying with advice from Heritage NSW. Unless advised otherwise by Heritage NSW, constraints will include halting of all works in the area until a management strategy has been developed and implemented

9. develop and implement an appropriate management strategy. This will be done in cooperation with the project archaeologist (or other suitably qualified professional) and RAPs. Input from Heritage NSW may also occur. The strategy developed will depend on variables that include the assessed significance of the Aboriginal object and the assessed likelihood of further Aboriginal objects being present in the area

10. the requirements of the management strategy must be complied with prior to the resumption of works in that area.

If human remains, or suspected human remains, are found during excavation, all work in the vicinity should cease immediately. The site should be secured, and the NSW Police and Heritage NSW notified.

2.5 Intext referencing corrections

It is understood that references were missing from the ACHARs list of references and that references have been included that have not been cited in text. Revised reference lists for the ACHAR report and the AAR are detailed below.

2.5.1 Revised ACHAR reference list

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Appendix E. Groundwater Addendum

Hunter Power Project Response to Submissions

Groundwater Impact Assessment Addendum

30 July 2021

Hunter Power Project Response to Submissions

Project No:	IS354500
Document Title:	Groundwater Impact Assessment Addendum
Revision:	Rev 0
Date:	30 July 2021
Client Name:	Snowy Hydro Limited
Client No:	IS354500
Project Manager:	K Ivanusic
Author:	Hunter Power Project Response to Submissions
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Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
Rev 0	30 Jul 21	Final	GS	AH	ML	KI

Contents

1. Introduction

Snowy Hydro Limited (Snow Hydro) propose to develop an open cycle gas fired power station near Kurri Kurri, NSW (the Proposal). The Proposal involves the construction and operation of a power station, electrical switchyard and associated supporting infrastructure. The Proposal will operate as a "peak load" generation facility supplying electricity at short notice when there is a requirement in the National Electricity Market (NEM).

A Submissions Report has been prepared to address submissions made on the Environmental Impact Statement (EIS) prepared for the Proposal. This report provides a response to submissions related to groundwater for the Hunter Power Project – Kurri Kurri Power Station and also serves as an addendum to the Hunter Power Project Groundwater Impact Assessment (Jacobs, 2021a), Appendix H to the main EIS report, on which the submissions are based.

1.1 Submissions

Key submissions from government agencies relating to groundwater included submissions from the Department of Planning, Industry and Environment (DPIE) Water and the Natural Resources Access Regulator (NRAR), and the Biodiversity and Conservation Division (BCD). The key issues and recommendations are presented on Table 1.

Table 1: Groundwater agency submissions

Item	Issue/ Recommendation	Where addressed
DPIE Water and NRAR		
1.0 Groundwater Take	Prior to Approval ▪ The proponent should demonstrate a reasonable quantified estimate of groundwater take for the proposed development. ▪ The proponent should refer to the *Sydney Basin-North Coast Groundwater Source* of the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016* in the Response to Submissions and any future documents.	Sections 2.3, 2.4 and 2.5 Section 2.9
2.0 Minimal impact considerations of the NSW Aquifer Interference Policy (AIP)	Prior to Approval ▪ After demonstrating a reasonable quantified estimate of groundwater take (as recommended in section 1.0 Groundwater Take above) provide additional evidence to support an assessment of the impacts of proposed take against the minimal impact considerations of the NSW AIP and rules of the relevant Water Sharing Plan.	Sections 2.6, 2.8, 2.9 and 2.10
BCD		
Flooding Items 6 and 6	▪ The impact of water table on infrastructure during construction and post construction has not been adequately assessed. In particular, how groundwater	Sections 2.1 to 2.8

Item	Issue/ Recommendation	Where addressed
	affects the construction and operation of the on-site detention pond requires greater consideration. ▪ The impact of proposed changes in hydrology on ground water dependent ecosystems should be considered.	Section 2.6.1

1.2 Methodology overview

To address the comments and recommendations associated with groundwater impacts, the following tasks have been undertaken:

- Dewatering assessment comprising:
  - Preliminary assessment of construction excavation activities that are likely to intersect the water table to identify excavation activities requiring further dewatering calculation
  - Review of representative formations and permeability in the area of proposed dewatering
  - Calculation of dewatering rates and volumes:
    - Using spreadsheet-based assessment of inflows and dewatering requirements where substantial drawdown is not expected (e.g. due to short duration or shallow dewatering required)
    - Applying analytic element modelling using the analytic element groundwater modelling software AnAqSim (Fitts, 2017) for deeper excavations.
- Assessment of groundwater drawdown associated with dewatering of the oil-water separator and neutralising tank excavations via the groundwater model used to assess excavation dewatering.
- Description of the surface water detention basin operation
- Confirmation of mitigation measures
- Assessment of the Proposal against the rules outlined in the *Sydney Basin-North Coast Groundwater Source of the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources* (2016) applying to the granting or amending of water supply work approvals
- Assessment of the Proposal against the NSW AIP Minimum Impacts Considerations Dewatering Assessment.

2. Assessment of excavations below water table

A preliminary assessment of construction excavation activities that are likely to intersect the water table has been undertaken. Excavation depths are assumed to be from the final surface elevation of the hardstand pad for the plant which is expected to have an elevation of approximately 14.2 m AHD to 13.0 m AHD and fall to north-northwest.

Indicative excavation depths presented in Table 2, and are compared to the inferred water table beneath the site (Jacobs, 2021a). Excavations subject to further assessment due to intersection with the water table are shaded grey.

Table 2: Indicative excavation depths compared to inferred water table (Jacobs, 2021a)

Excavation type	Excavation depth	Intersection with water table
Shallow excavation for concrete pad foundations	Up to 0.3m depth below final surface	Above standing water level
Shallow excavation for pedestal type footings inside the electrical switchyard	Up to 0.5 m depth below final surface	Above standing water level
Trench excavation for services installation	Nominally 0.8 m depth below final surface	Some intersection of water table is anticipated
Trench excavation for high voltage cabling	Nominally 1.2 m depth below final surface	Some intersection of water table is anticipated
Excavation for fuel oil storage tank and water storage tank foundations – Large Tanks	Up to 0.8 m depth below final surface	Some minor intersection of water table possible
Excavation for fuel oil storage tank and water storage tank foundations – Smaller Tanks	Up to 0.5 m depth below final surface	Above standing water level
Deep excavations for turbine foundations	Up to 1.8 m depth below final surface	Above standing water level
Deep excavations for oil-water separator tank and neutralising tank	Up to 2.0 m depth below final surface	Intersection of water table is anticipated
Deep excavations for surface water detention basin	To 9 m AHD invert	Intersection of water table is anticipated; however, it is not anticipated that dewatering will be required, the basin excavation will be wet

It is noted that, in addition to the excavations outlined above, it is expected that the turbine foundations will also comprise the installation of pile footings from the base of the excavation. The final piling arrangement is yet to be determined but the piling would typically be either driven or bored and constructed in-situ and will have no

significant impact on groundwater or groundwater take as no dewatering will be required and as they will have an insignificant impact on horizontal groundwater movement to due to their relatively small cross sectional area.

Selected significant indicative excavations are depicted on Figure 1. On Figure 2 the indicative excavations are superimposed on the water table showing the water table (blue opaque surface) daylighting in the deeper excavations (surface water detention basin and oil-water separator tank and neutralising tank).

The northern most fuel oil tank foundation excavation has potential to intersect water table in the northern half of the excavation; however, the depth below water table (<0.05 m) is not sufficient to warrant assessment of dewatering. The water tank foundations excavation also has potential to intersect the water table, with indicative average depth below water table of approximately 0.05 m.

It is noted that the water table is also inferred to daylight in the drainage line immediately northeast of the Proposal Site.

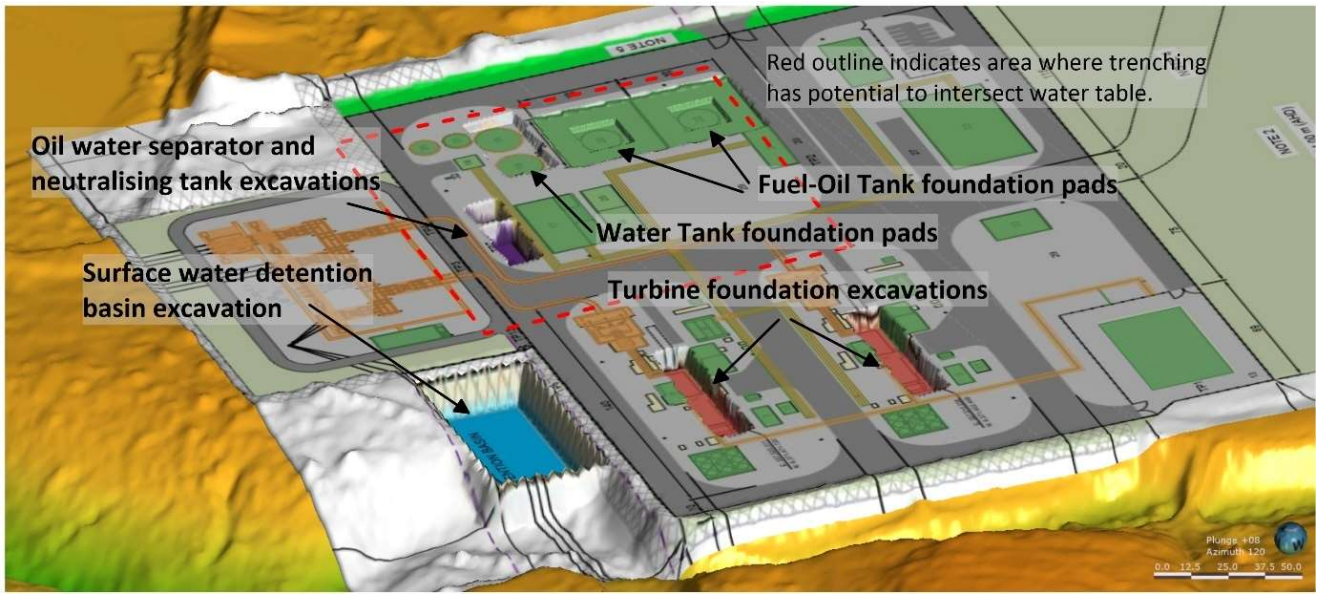

Figure 1: Significant excavation locations

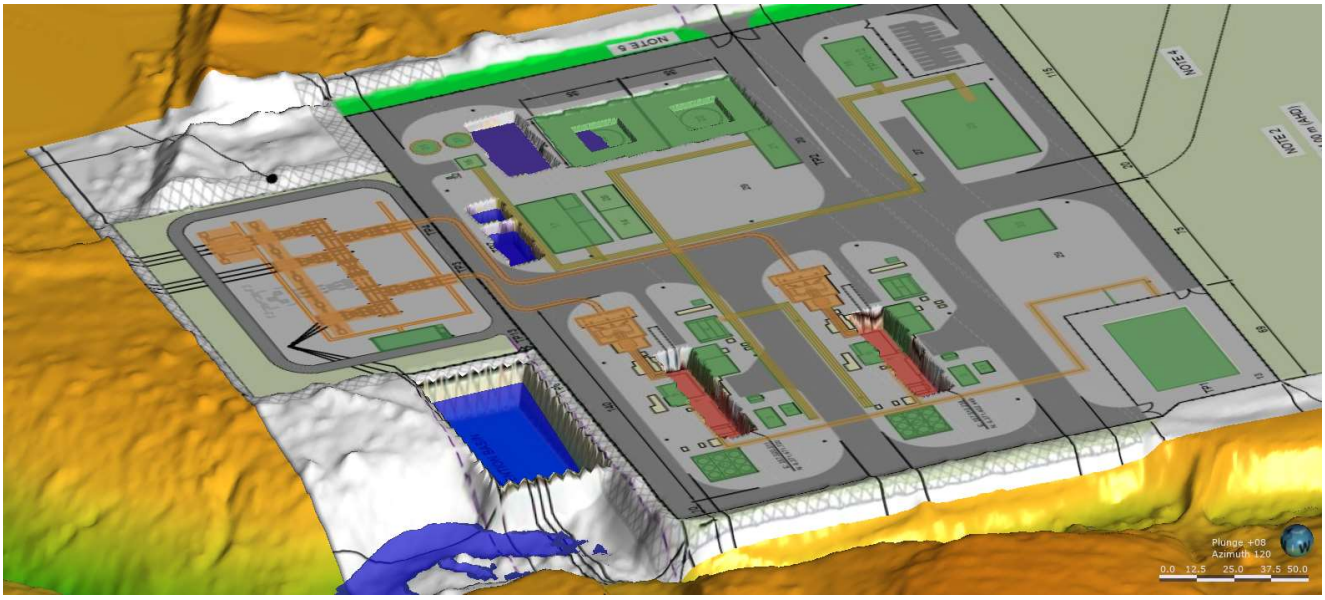

Figure 2: Excavation intersection with water table

2.1 Representative formations and permeability

The Hunter Power Project Groundwater Impact Assessment (Jacobs, 2021a) notes indicative hydraulic conductivities in the range 0.7 m/d to 1.7 m/d have been determined in the shallow alluvial aquifer and were considered representative of the sand and silty sand expected to be encountered at the Proposal Site.

The Hunter Power Project Development Geotechnical Report (Jacobs, 2021b), describes the results of geotechnical investigations, including a number boreholes drilled on and in the vicinity of the Proposal Site. The shallow sediments from the closest bores to the area of interest for dewatering are described below, indicative hydraulic conductivities for the soil textural class and grainsize have been derived from the USDA Soil Water Characteristics software (Saxton and Rawls, 2006).

Table 3: Indicative hydraulic conductivities for shallow sediments in the area of interest for dewatering

Bore Hole and Sample Depth	Soil Description	Indicative Hydraulic Conductivity
BH201 Sample results for 1.50 – 2.00 m depth	Clayey sand, with 16% fines, 65% sand and 19% gravel	Indicative hydraulic conductivity for this textural class (sandy loam) is approximately 1.48 m/day
BH202 Sample results for 1.00 – 1.50 m depth	Sand, with 27% fines, 70% sand and 3% gravel	Indicative hydraulic conductivity for this textural class (sandy loam) is approximately 2.17 m/day
BH204 Sample results for 1.50 – 2.00 m depth	Clayey sand, with 26% fines and 74% sand	Indicative hydraulic conductivity for this textural class (loamy sand) is approximately 2.18 m/day

For the purposes of this assessment, including the assessment of dewatering rates and associated impacts, the geometric mean of the indicative hydraulic conductivity values derived from the geotechnical soil samples (1.9 m/day) has been adopted.

2.2 Services and high voltage cabling trenches

Dewatering associated with excavations for service installation and high voltage trenches are likely to be of relatively short duration and without substantial drawdown or associated impacts. A spreadsheet-based assessment of inflows and dewatering requirements was therefore undertaken.

It is assumed that the trenches will be progressively excavated, services installed, and then backfilled, with only approximately 20 m of trenching open at any time and with an excavation, construction, and backfilling rate of 10 m per day.

2.2.1 Trench excavation for services installation

Approximately 100 m of service trenching in the eastern side of the site has been assessed as being below the water table, with an average depth below water table of approximately 0.1 m.

A dewatering calculation based on the equation for linear flow to a trench in an unconfined aquifer (Mansur and Kaufman, 1962; Equation [3-11]) was undertaken. The calculated inflow is 21.1 m^3/day per 20 m section of trench, equivalent to approximately 211 m^3 over the duration of trenching.

It is noted however, that with only approximately 0.1 m of trenching below water table, it will likely be possible to excavate and install services without the requirement for dewatering.

2.2.2 Trench excavation for high voltage cabling

Approximately 120 m of trenching for high voltage cabling has been assessed as being below the water table, with an average depth below water table of approximately 0.2 m.

A dewatering calculation using the equation for linear flow to a trench in an unconfined aquifer (Mansur and Kaufman, 1962; Equation [3-11]) was undertaken. The calculated inflow is 42 m^3/day per 20 m section of trench, equivalent to approximately 503 m^3 over the duration of trenching.

It is noted however, that with only approximately 0.2 m of trenching below water table, it will likely be possible to excavate and install services without the requirement for dewatering.

2.3 Excavation for large water tank foundations

The foundation excavations for the water tanks are assessed as being below the water table by an average depth of approximately 0.05 m. It is assumed that the foundation excavation will be open for up to 20 days prior to construction.

Given the very shallow dewatering required, associated drawdown propagation will be negligible, and a spreadsheet-based assessment of inflows and dewatering requirements has therefore been undertaken.

Two dewatering calculations have been applied to assess groundwater infiltration through the walls and base of the excavation.

The calculation of inflow through the walls of the excavation is based on the approach of Mansur and Kaufman (1962) for inflow to an approximately square excavation where the inflow to the excavation walls are estimated assuming radial flow to a large diameter well of equivalent area.

Vertical flow to the base of the excavation is assessed following the approach of Hvorslev (1951) [Case 4/C] for flow to the base of a circular excavation, where the foundation excavation is simulated as a circular excavation of equivalent area.

The calculated total inflow to the excavation base and walls is 9.2 m^3/day, equivalent to approximately 184 m^3 over the duration of open excavation, assumed to be 20 days.

2.4 Deeper excavations for oil-water separator tank and neutralising tank

It is expected that deeper excavations for an oil-water separator tank or system and neutralising tank will be required.

To assess potential dewatering requirements and associated groundwater drawdown associated with these excavations, analytic element modelling has been applied using the analytic element groundwater modelling software AnAqSim (Fitts, 2017).

The model was run in steady state, adopting the representative horizontal hydraulic conductivity value of 1.9 m/day.

Baseline groundwater conditions in the vicinity of the project were simulated to get a reasonable match to observed groundwater levels, particularly in proximity to the proposed excavations.

Simulated heads in the vicinity of the deeper excavation are as follows:

- oil-water separator tank and neutralising tank – 12.0 to 12.1 mAHD
- surface water detention basin – 10.8 to 11.5 mAHD.

2.4.1 Groundwater dewatering requirement for deeper excavations

For the assessment of dewatering requirements, the target dewatering depth was assumed to be 0.5 m below the depth of excavation. The assessment assumes open excavation with the excavation walls comprising the natural formation. The construction contractor may opt to use some sort of shoring system (such as sheet piling) that would also act to reduce horizontal groundwater inflow to the excavation. While the EIS stipulates that the contractor shall adopt measures to minimise groundwater ingress to all excavations, this groundwater assessment is based on a worst-case scenario of no controls.

A head specified line boundary, bordering the excavation and with head specified as 0.5 m below the base of excavation, was applied in the model. Due to the close proximity of the oil-water separator and neutralising tanks, one large excavation encompassing both installations were assumed. To assess the dewatering requirements for the oil-water separator and neutralising tanks, the model was run in steady state.

The simulated groundwater inflow rates to the oil-water separator and neutralising tank excavation, for a dewatering elevation of 10.7 mAHD, is 13.7 m^3/day. Based on an assumed duration of 30 days, the total dewatering volume is 411 m^3. Associated drawdown resulting from the dewatering is discussed in Section 2.6.

2.5 Dewatering Summary

A summary of the total project dewatering requirements, assuming no controls, is provided on Table 4 with a total predicted groundwater take during construction of 1.31 ML.

Table 4: Dewatering summary (without mitigation)

Dewatering Activity	Inflow Rate (m^3/day)	Volume (m^3)	Volume (ML)
Services trenching (120 m)	21 (per 20 m)	211	0.211
HV trenching (120 m)	42 (per 20 m)	503	0.503
Tank foundations	9.2	184	0.184
Oil-water separator and neutralising tanks	13.7	411	0.411
Surface water detention basin	-	-	-
Total dewatering		**1,309**	**1.31**

2.5.1 Water Access Licencing

Under the Water Management (General) Regulation 2018, there is an exemption from requiring a water access licence for construction dewatering. Under the exemption, a person can take up to 3 megalitres (3 ML) of groundwater through an aquifer interference activity per authorised project per water year (commencing on 1 July each year) without needing to obtain a water access licence or water use approval, provided:

a) the water is not taken primarily for consumption or supply

b) the person claiming the exemption keeps a record of the water taken under the exemption and provides this to the Minister within 28 days of the end of the water year

c) the records are kept for 5 years.

However, a water supply work approval is still required for any works that are to be constructed or used to drain or pump the water.

The total project dewatering requirement (without mitigation) of approximately 1.31 ML falls within the exemption criteria.

2.6 Groundwater drawdown

Groundwater drawdown associated with dewatering of the oil-water separator and neutralising tank excavations (without mitigation), has been assessed in the groundwater model used to assess excavation dewatering as described in Section 2.4.

It is noted that given the relatively short duration of the dewatering, dewatering drawdown is unlikely to reach steady state and the drawdown extent is therefore likely to be over-predicted.

Steady state groundwater drawdown contours are presented on Figure 3.

From Figure 3, the predicted cone of drawdown from dewatering for the oil-water separator and neutralising tank excavations falls predominantly within the Proposal Site. Drawdown propagation, as represented by the 0.2 m drawdown contour, is predicted approximately 170 m north of the excavation, and less than 50 m north of the

Proposal Site boundary. Drawdown attenuates to the west and north west due to the steep topography leading into the drainage line rather than the drainage line acting as a source of recharge.

Following the brief period of construction dewatering, water levels will recover with no long-term or residual drawdown anticipated.

The extent and magnitude of predicted drawdown outside of the Proposal Site is not considered to be significant.

2.6.1 Potential impacts

Jacobs (2021b) describes the existing groundwater features in the vicinity of the project, including groundwater dependant ecosystems (GDEs) and other groundwater users. There are no recorded groundwater users within 3 km of the Proposal Site and no mapped high priority GDEs in the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016*.

The Bureau of Meteorology Groundwater Dependant Ecosystem Atlas maps moderate to high potential terrestrial GDEs to the north and west of the Proposal Site associated with occurrence of Sydney Sand Flats Dry Sclerophyll Forests (Parramatta Red Gum/ Narrow-leaved Apple/ Prickly-leaved Paperbark shrubby woodland). Jacobs (2021c) describes these potential GDEs as being proportional facultative to high facultative GDEs, indicating that they are only likely to be reliant on groundwater during times of low-flow or drought. The predicted drawdown in the vicinity of these potential GDEs is typically less than 0.4 m over a limited area and of short duration and is unlikely to result in any significant impact.

There are no mapped acid sulphate soils within the area of predicted drawdown and the predicted drawdown is not expected to result in any significant water quality impacts. Controls for acid sulphate soils, should they be encountered, are contained in the EIS.

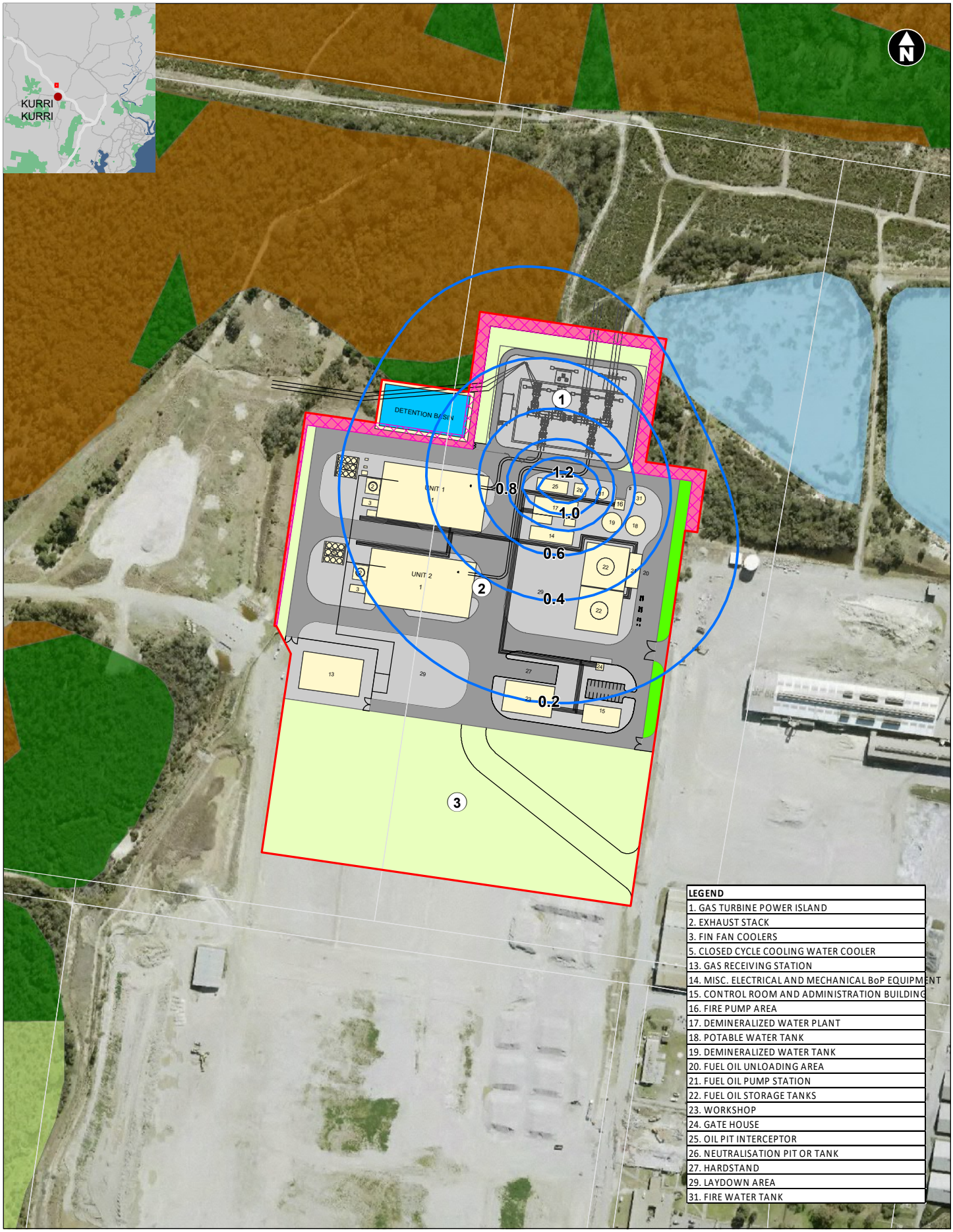

Figure 3 Groundwater Drawdown

2.7 Surface water detention basin operation

The surface water detention basin will operate as a wet pond and will be unlined other than the naturally accumulating sediments on the walls and base of the pond.

An initial shallower sedimentation pond will be excavated for the construction phase which would then be deepened for operation.

As the base of the operational pond is expected to be below the water table, the pond will act as a groundwater window with a minor element of groundwater through-flow. There will be sufficient capacity built into the detention basin to detain the design rainfall runoff above the standing water level within the pond.

Minor evaporative losses are likely to occur, but these would be compensated for by increased surface water recharge during rain events.

2.8 Mitigating measures

Despite that expected minor effects on groundwater predicted in Sections 2.5 and 2.6, in line with commitments made in the EIS the construction contractor would implement measures to minimise or prevent ingress of groundwater to excavations, such as the use of sheet piling cut-off walls, so that the predicted inflows and impacts are not exceeded. For reference, the mitigation measure from the EIS is replicated below.

Table 5: Mitigation measures (Jacobs, 2021a)

Reference	Mitigation Measure	Timing
GW2	Subject to the outcomes of further geotechnical and groundwater investigations across the site to during detailed design, a dewatering procedure is to be prepared and implemented in the event of excavations encountering perched or shallow groundwater. These detailed design investigations are to also inform the need for excavation methods to address groundwater inflows, if necessary.	Detailed design, construction

2.9 Alignment with the Water Sharing Plan

The relevant water source and water sharing plan for the project with respect to groundwater is the *Sydney Basin-North Coast Groundwater Source* of the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016*.

The Water Sharing Plan outlines rules for Granting of Access Licences, Managing Access Licences, and Water Supply Works Approvals. As outlined in Section 2.5.1, the project qualifies for the Water Access Licencing exemption for construction dewatering up to 3 ML per year and, as such, rules for granting and managing access licences do not apply.

An assessment of the Proposal against the rules applying to the granting or amending of water supply work approvals is provided in Table 6. The assessment indicates the Proposal meets the requirements of the applicable rules.

Table 6: Assessment of the Proposal against rules applying to granting or amending of water supply work approvals

Rules	Assessment outcome
40 - Rules to minimise interference between water supply works	Meets requirement – there are no existing water supply works in the vicinity of the Proposal
41 - Rules for water supply works located near contamination sources	Meets requirement – there are no contamination source(s) listed in Schedule 1 of the Water Sharing Plan in the vicinity of the Proposal
42 - Rules for water supply works located near groundwater-dependent ecosystems	Meets requirement – there are no high priority groundwater dependent ecosystems identified on the GDE Map of the Water Sharing Plan in the vicinity of the Proposal
43 - Rules for water supply works located near groundwater-dependent culturally significant sites	Meets requirement – the project is assessed as having no more than minimal impact on local groundwater sources and as such will not impact on any groundwater-dependent culturally significant sites. No groundwater-dependant culturally significant sites were identified in the Aboriginal cultural heritage assessment undertaken as part of the EIS

2.10 NSW Aquifer Interference Policy

An assessment of the Proposal has been undertaken against the NSW AIP Minimum Impacts Considerations and is presented on Table 7.

While the Proposal is located within the *Sydney Basin-North Coast Groundwater Source* of the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2011*, the assessment is undertaken for an alluvial water source as is present beneath the Proposal Site.

Given the typically elevated groundwater salinity and low permeability of the sediments at the Proposal Site, the alluvial water source is considered locally as a less productive water source based on the NSW Aquifer Interference Policy classification.

The Proposal is assessed as meeting the Level 1 minimum impact considerations for both construction and operational phases.

Table 7: NSW AIP Minimum Impacts Considerations – less productive alluvial water sources

Consideration	Construction	Operation
Water table	Meets Level 1 consideration with respect to drawdown at High Priority GDEs and water supply works. No significant drawdown propagation is expected away from the Proposal Site.	Meets Level 1 consideration with respect to drawdown at High Priority GDEs and water supply works. Operation of the Proposal will not result in water table drawdown.
Water pressure	Meets Level 1 consideration with respect to pressure head at water supply works.	Meets Level 1 consideration with respect to pressure head at water supply works.

Consideration	Construction	Operation
	There are no water supply works in the vicinity of the Proposal and the Proposal will not result in pressure decline in a confined aquifer.	Operation of the Proposal will not result in pressure decline in a confined aquifer.
Water Quality	Meets Level 1 consideration with respect to water quality. No reduction in beneficial use of the alluvial water source is anticipated to occur greater than 40 m from the Proposal Site. The Proposal construction will not result in an increase in the long-term average salinity of the alluvial water source.	Meets Level 1 consideration with respect to water quality. No reduction in beneficial use of the alluvial water source is anticipated to occur greater than 40 m from the Proposal Site. The Proposal operation will not result in an increase in the long-term average salinity of the alluvial water source.

3. References

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Appendix F. **Revised Air Quality Assessment**

Appendix G. **Revised Noise and Vibration Assessment**