Department of Planning, Housing and Infrastructure

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Restart of Redbank Power Station

State Significant Development Assessment Report (SSD-56284960)

July 2025

Acknowledgement of Country

The Department of Planning, Housing and Infrastructure acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Published: July 2025

Cover image: View of existing Redbank Power Station (Source: Environmental Impact Statement)

Preface

This assessment report provides a record of the Department of Planning, Housing and Infrastructure's (the Department) assessment and evaluation of the State significant development (SSD) application for the Restart of Redbank Power Station located at 112 Long Point Road West, Warkworth, lodged by Verdant Earth Technologies Limited (Verdant Earth). The report includes:

- an explanation of why the project is considered SSD and who the consent authority is;
- an assessment of the project against government policy and statutory requirements, including mandatory considerations;
- a demonstration of how matters raised by the community and other stakeholders have been considered;
- an explanation of any changes made to the project during the assessment process;
- an assessment of the likely environmental, social and economic impacts of the project;
- an evaluation which weighs up the likely impacts and benefits of the project, having regard to the proposed mitigations, offsets, community views and expert advice;
- provides a view on whether the impacts are on balance, acceptable; and
- an opinion on whether the project is approvable or not, along with the reasons, to assist the Independent Planning Commission in making an informed decision about whether development consent for the project can be granted and any conditions that should be imposed.

Executive Summary

This report details the Department's assessment of the State significant development (SSD) application SSD-56284960 for the Restart of Redbank Power Station and will be provided to the Independent Planning Commission (the IPC) for their consideration when deciding whether to grant consent to the SSD.

Redbank Power Station is an existing power station that was granted development consent in 1994 to generate power from the combustion of up to 700,000 tonnes per year of coal tailings supplied from the adjacent Warkworth and Lemington coal mines. The power station went into care and maintenance in October 2014 due to the unavailability of coal tailings from Warkworth mine.

Verdant Earth Technologies Limited (Verdant Earth) (the applicant) proposes to restart the existing Redbank Power Station with the use of up to 700,000 dry tonnes per year of biomass as a fuel to generate electricity. The power station has a capacity of up to 151 MW and would operate 24 hours per day, seven days a week.

The project site is located at 112 Long Point Road West, Warkworth in the Singleton local government area (LGA) and Wanaruah land, within the Hunter Valley region of NSW.

Construction activities would be required to modify the power station to enable the use of biomass as a fuel source. The project has a capital investment value of over $70 million and would create approximately 330 construction jobs and up to 60 operational jobs. If approved, construction would be carried out over a period of up to around 10 months.

The project is classified as SSD under the *Environmental Planning and Assessment Act 1979* (EP&A Act). The IPC is the consent authority for the project as the project has received more than 50 unique public submissions by way of objection.

The Department publicly exhibited the environmental impact statement (EIS) for the project from 8 March 2024 until 11 April 2024 and received 416 submissions (of which 377 were considered unique) during the public exhibition period of the EIS. Of the unique submissions, 215 submissions objected to the project and 162 submissions supported the project. Key reasons for objection from the community include greenhouse gas emissions, offsite biodiversity impacts to source biomass for fuel and air quality and human health impacts from the operation of the power station.

The Department engaged with relevant government agencies including the NSW Environment Protection Authority (EPA) on key issues and they each recommended the implementation of appropriate mitigation and management measures.

The project involves the use of existing infrastructure within an area zoned for industry, close to existing supporting infrastructure and heavy vehicle transport routes, and with buffers to sensitive receivers. The location of the project significantly reduces many environmental risks and impacts.

The key assessment considerations for the project are the use of eligible waste fuels (EWFs) and air quality impacts from the thermal treatment of the fuels. The Department has also undertaken a comprehensive assessment of the full range of other potential impacts and recommended a range of detailed conditions, developed in conjunction with NSW government agencies and Singleton Council (Council), to ensure all potential impacts are effectively minimised, managed or offset.

The Department has considered the ability of the project to comply with the regulatory framework for the thermal treatment of waste to generate energy. This was undertaken in close consultation with the EPA as the lead regulator of these matters and the independent energy from waste expert that was engaged during the assessment of the project.

The Department considers that Verdant has demonstrated that compliance with the regulatory framework is achievable. Compliance with the regulatory framework would be enforced during the operation of the project by the EPA in addition to compliance undertaken by the Department in accordance with the consent. The Department has recommended conditions to ensure that all fuels used for the project would present a low risk to human health and the environment.

The air quality assessment for the project demonstrated the power station can operate with acceptable impacts to air quality with negligible risks to human health. Air emissions from the power station would be regulated by the strict limits and monitoring requirements that would be prescribed in the revised environment protection licence (EPL) for the project in accordance with the *Protection of the Environment Operations (Clean Air) Regulation 2022*.

The Department considers the greenhouse gas emissions would represent a small (0.07% by 2050) contribution to NSW emissions and would be offset in line with the emissions reduction trajectory for NSW and is therefore consistent with the NSW strategic policy framework for actions to address climate change.

The Department considers the project would not result in any significant impacts on the local community or the environment, is located on a suitable site for a power station, and any residual impacts can be managed through the implementation of the recommended conditions.

If approved, it is expected the project would contribute to energy security and reliability for NSW by providing up to 151 MW of dispatchable electricity supply. The project would create around 330 FTE jobs during construction and up to 60 FTE jobs during operation and has a NPV of $901 million to the NSW economy across the first 25 years of construction and operation.

Overall, the Department's assessment concludes that the project would result in benefits to the State of NSW and considers the project is in the public interest. As such the Department concludes that the project is approvable subject to conditions.

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1 Introduction

1. Verdant Earth Technologies Limited (Verdant Earth) (the applicant) proposes to restart the existing Redbank Power Station using biomass as a fuel source. The power station is located at 112 Long Point Road West, Warkworth in the Singleton local government area (LGA) and Wanaruah land, within the Hunter Valley region of NSW (see **Figure 1** and **Figure 2**).

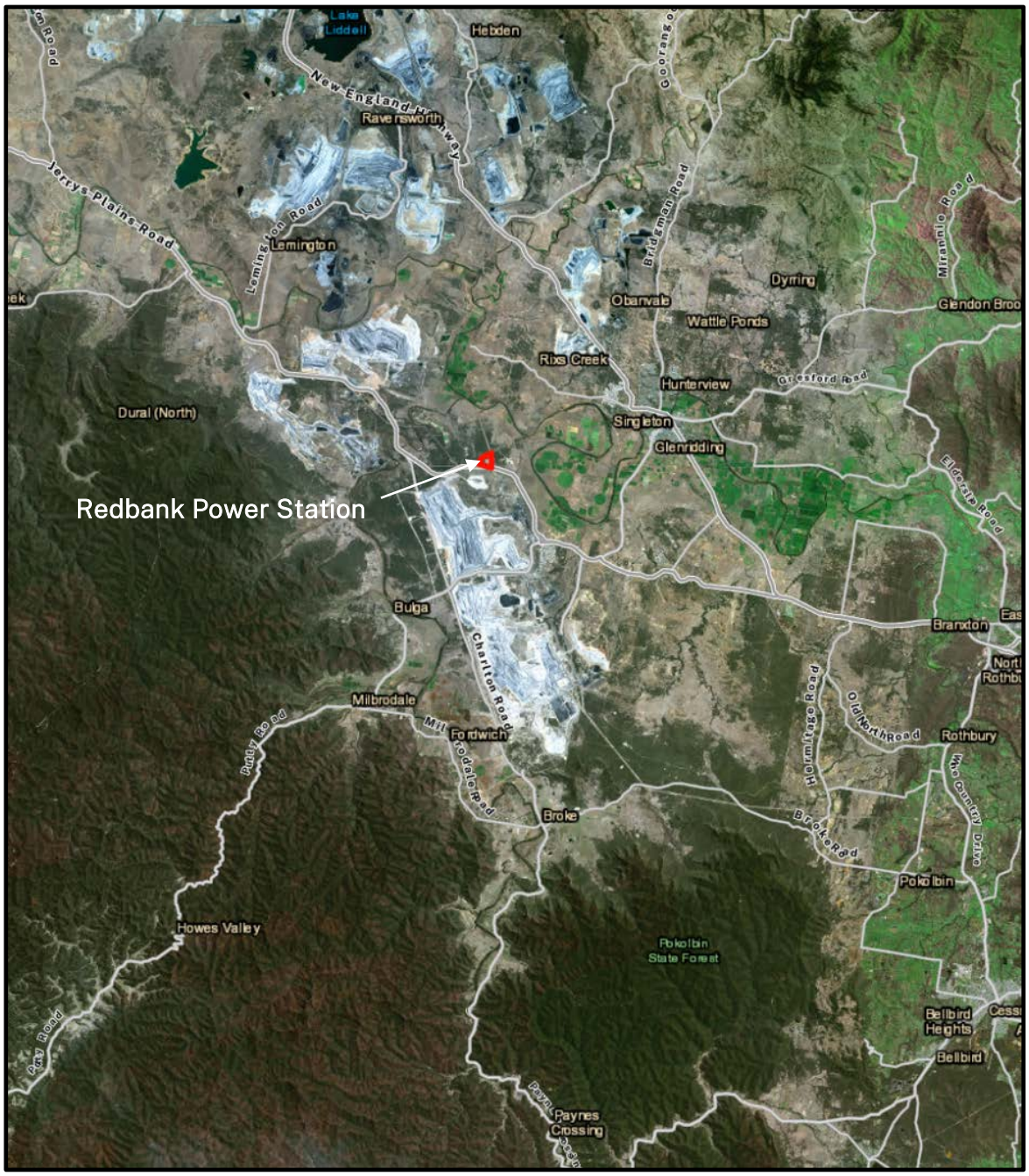

Figure 1 | Regional context map

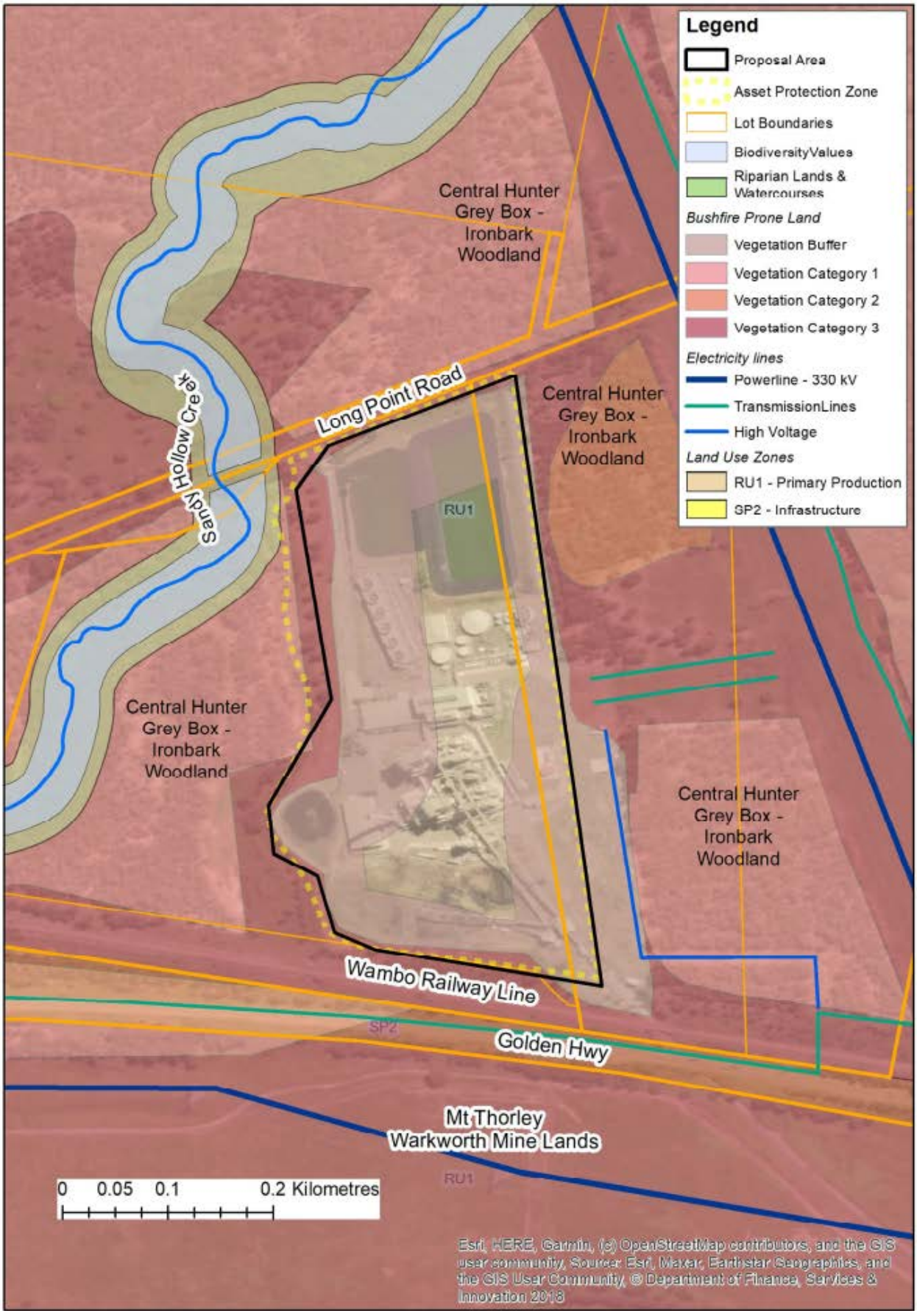

Figure 2 | Local context and site constraints

1.1 Background

2. Development consent for Redbank Power Station (DA 183/93) was granted by Singleton Council on 23 March 1994 and was subsequently amended by orders of the NSW Land and Environment Court (NSW LEC) on 10 November 1994 following a merit appeal.

3. Redbank Power Station was constructed and operated by Redbank Power Company Pty Ltd with approval to burn up to 700,000 tonnes per annum (tpa) of coal tailings supplied via pipeline from the adjacent Warkworth and Lemington mines.

4. A modification to DA 183/93 was granted by the NSW LEC on 27 March 1997 which removed the pipeline supplying coal tailings from the Lemington Mine and permitted the construction of an overland conveyor connecting to the Warkworth Mine.

5. Redbank Power Station went into care and maintenance in October 2014 due to the unavailability of coal tailings from Warkworth mine due to preference for the export of tailings. Verdant Earth purchased the power station in 2018 with the intent to restart operations with the use of biomass (i.e. organic matter) as a fuel.

6. In November 2020, a modification application was submitted to Singleton Council to enable the use of biomass to fuel the power station, however this application was refused as it was not considered to be substantially the same as the original development. An appeal against the refusal was lodged by Verdant Earth but was dismissed by the NSW LEC.

2 Project

2.1 Project overview

7. On 20 February 2023, Verdant Earth lodged a State significant development (SSD) application under section 4.36 of the EP&A Act. The application seeks to restart the existing power station with the use of biomass as a fuel to generate electricity.

8. The project would provide 151 megawatts (MW) of dispatchable energy to contribute to energy security in NSW.

9. The key aspects of the project are provided in detail in the environmental impact statement (EIS) (see **Appendix A**), outlined in **Table 1** and shown in **Figure 3**.

Table 1 | Key aspects of the project

Aspect	Approved project (DA 183/93)	Proposed project
Project life	• Approximately 30 years • Project currently in care and maintenance	• Approximately 30 years
Power generation	• 151 MW steam turbine	• No change
Operation hours	• 24 hours per day, 7 days per week	• No change
Fuel type	• Coal washery tailings supplied from the Warkworth mine, augmented as required with existing tailing dams and supplementary fuel (run-of-mine coal)	• Biomass including standard fuels and eligible waste fuels (EWFs) (refer to **Section 2.2**) • Diesel to be used upon plant startup for a maximum of 40 hours per year
Fuel moisture content	• Original consent: dry basis • Modified consent: 25%	• Design moisture content: 25% • Moisture content range: 10-50%
Fuel storage	• Beneficiated dewatered coal tailings receival system maximum storage capacity of 96 hours supply • Supplementary fuel storage area with maximum storage capacity of 35,000 to 40,000 t	• Biomass would be stockpiled in an open-air stockpile area • The stockpile area accommodates a maximum of three days of storage capacity
Annual fuel requirements	• 700,000 tonnes	• 700,000 dry tonnes; or • 850,000 tonnes at 25% moisture content
Fuel transport	• Overland conveyor with supplemental trucking as needed	• Trucking via existing road network
Ash management	• Ash collection system, storage silo and conditioning station	• No change
Infrastructure	• Multiple buildings including offices, warehouses, and turbine hall • Road access and carparks • Stockpile area and conveyor belts	• Continued use and modification of existing infrastructure including the existing conveyors, fuel silos, fire suppression systems and internal refurbishment

Aspect	Approved project (DA 183/93)	Proposed project
	• Sediment basin, detention basin and wastewater storage basin • Two separate existing access points to the site from Long Point Road West • Power generation infrastructure (Boiler, cooling tower, stack and turbo generator)	• No change to existing access points to the site from Long Point Road West • Construction and operation of additional ancillary infrastructure including: – two weighbridges; – sealed asphalt access; – fuel delivery area; – various unloading equipment; and – other ancillary infrastructure and works including landscaping and connection to the grid.
Electricity transmission	• Connection to the grid via a 132 kV electrical interconnect line	• No change
Site access	• Long Point Road	• No change
Employment	• 39 full time equivalent (FTE) jobs at time of closure	• Approximately 330 FTE construction jobs • Up to 60 FTE operational jobs
Development consent	• DA 183/93 as modified	• DA 183/93 would be surrendered and the project would operate under the new consent
Construction	• Not specified	• From 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm on Saturdays • Carried out over a period of up to around 10 months
Capital Investment Value	• Not specified	• $70,718,379

10. Construction activities would be required to modify the power station to enable the use of biomass as a fuel source. Construction activities would include site mobilisation, road works, maintenance, repair and recommissioning of the power station infrastructure including the boilers and construction of ancillary infrastructure.

2.2 Fuel types and feedstock strategy

11. The power station would be fuelled with biomass using standard[1] and Eligible Waste Fuels[2] (EWFs) as defined under the NSW Environment Protection Authority (EPA) *Eligible Waste Fuel Guidelines 2022* (refer to **Section 3.3.5**).

12. Standard fuels proposed to be used include purpose grown energy plantations, perennial grasses and energy crops. EWFs proposed to be used may include biomass with no higher order uses arising from:

    - invasive native species (INS) control on agricultural land;
    - approved land clearing activities such as major infrastructure developments for approved civil infrastructure, road clearing works, right of ways and related approved projects; and
    - agricultural waste products (e.g. manure, crops) or residues.

13. Verdant have also proposed to use end of life woody waste (wood waste from construction and demolition (C&D) and commercial and industrial (C&I) activities) manufactured and produced into a fuel to specification known as domestic biomass fuel (DBF) if the fuel is prescribed as an EWF in the future.

14. Verdant Earth propose to recommission the power station in two stages, subject to market conditions, including:

    - stage 1 (Years 1 to 3) – predominant use of EWFs; and
    - stage 2 (Year 4 and onwards) - transition to primarily use of standard fuels including purpose grown plantations.

15. The indicative feedstock quantities over the first six years are shown in **Table 2**.

[1] Per the *Protection of the Environment Operations (Clean Air) Regulation 2022,* standard fuel means an unused and uncontaminated solid, liquid or gaseous fuel that is a coal or coal-derived fuel, other than tar or tar residues; a liquid or gaseous petroleum-derived fuel; a wood or wood-derived fuel; or bagasse.

[2] Per the NSW Energy from Waste Policy Statement, eligible waste fuel means a waste or waste-derived materials considered by the EPA to pose a low risk of harm to the environment and human health due to their origin, low levels of contaminants and consistency over time.

Table 2 | Waste fuel feedstock quantities (dry tonnes) and % of feedstock

Waste fuel	Classification	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6 and >
Purpose grown fuel crops	Standard fuel	50,000	100,000	200,000	400,000	490,000	490,000
		7 %	14 %	29 %	57 %	70 %	70%
Biomass from INS	EWF	500,000	450,000	350,000	180,000	90,000	90,000
		71 %	64 %	50 %	26 %	13 %	13 %
Biomass from agricultural wastes	EWF	-	50,000	50,000	50,000	50,000	50,000
		-	7 %	7 %	7 %	7 %	7 %
Biomass from approved land clearing	EWF	150,000	100,000	50,000	20,000	20,000	20,000
		21 %	14 %	7 %	3 %	3 %	3 %
Domestic biomass fuel[3]	Not classified	-	-	50,000	50,000	50,000	50,000
		-	-	7 %	7 %	7 %	7 %

[3] Domestic Biomass Fuel (DBF) currently meets the definition of a waste derived fuel as per Clause 6(1)(b) of the Waste Regulation but is not currently prescribed as an 'eligible waste fuel' under the Eligible Waste Fuels Guidelines.

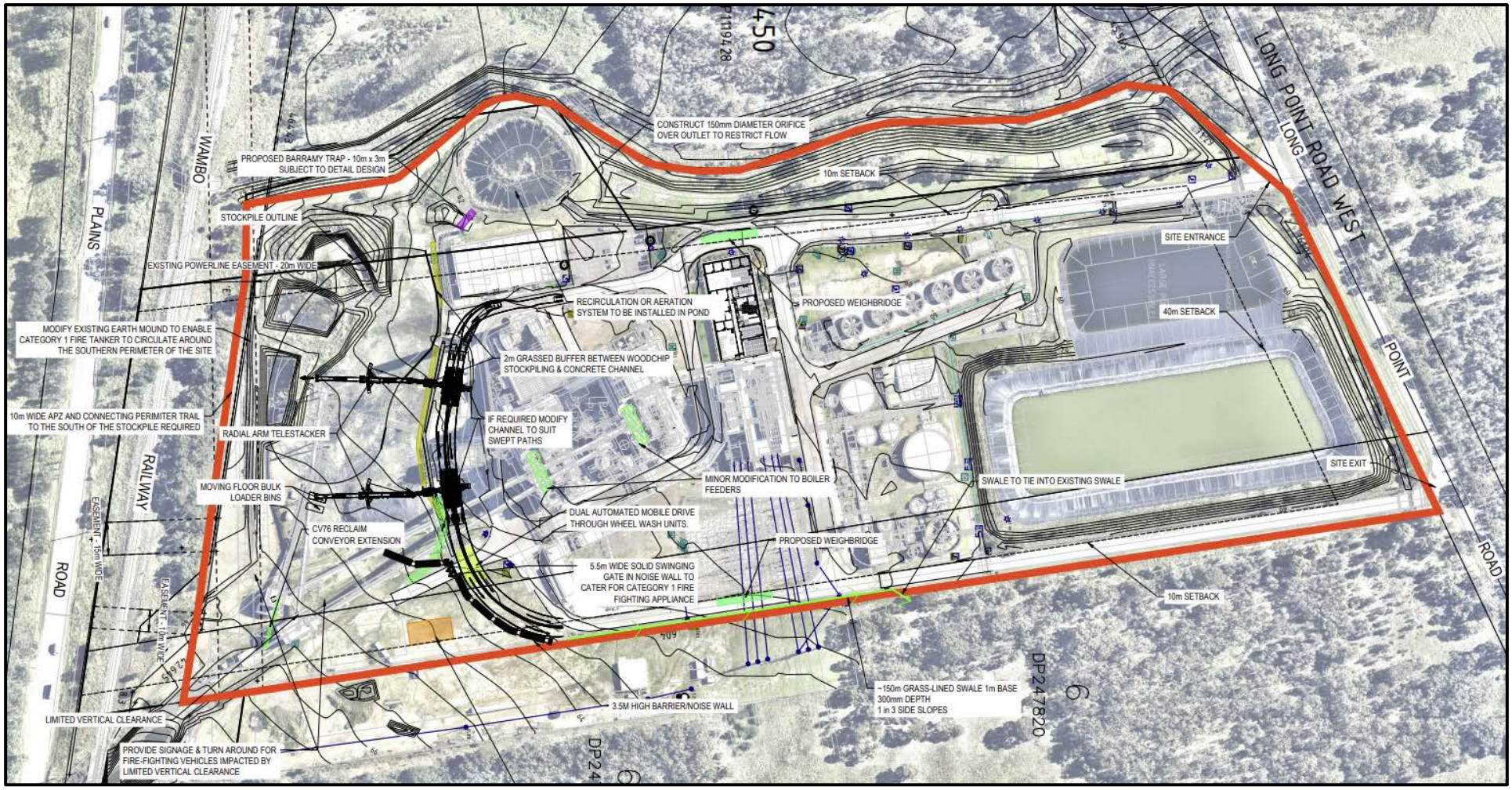

Figure 3 | Project layout plan

3 Strategic context

3.1 Project and Regional Setting

16. The site is located in the Hunter Valley within an area zoned for primary industry. Surrounding land uses include open cut mining to the south, a transmission line easement and industrial premises to the east and bushland to the north and west. These land uses are generally representative of the wider regional setting within the Hunter Valley which consists primarily of mining operations, agricultural properties and bushland.

17. The three nearest residential receivers are located approximately 1.5 kilometres (km) to the east and 1.8 km to the north-east of the project site.

3.2 Climate Change and NSW Energy Transition

18. The Commonwealth and State climate change and energy policies are summarised in **Table 3**.

Table 3 | Summary of key climate change and energy plans, policies and guidelines

Strategy, plan or policy	Comment
UNFCCC Paris Agreement 2015	Under the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement 2015 (Paris Agreement), each signatory must identify its own post-2020 climate actions to achieve a balance between anthropogenic emissions and removal by greenhouse gas (GHG) sinks. Australia adopted a target of net zero emissions by 2050 by committing to seven low emissions technology stretch goals. These include clean hydrogen production, ultra-low-cost solar, energy storage, low emissions steel production, low emissions aluminium production, carbon capture and storage and soil carbon measurements.
Australia's Long Term Emissions Reduction Plan 2021	The Commonwealth Government developed Australia's Long-Term Emissions Reduction Plan (the Emissions Reduction Plan) which includes a commitment to achieve net zero emissions by 2050. Australia's long-term strategy and domestic actions are underpinned by an emissions monitoring and accountability systems. This includes National Greenhouse and Energy Reporting Scheme (NGERS) and the associated Safeguard Mechanism.

Strategy, plan or policy	Comment
	The project would not trigger the NGER facility reporting requirements as maximum Scope 1 emissions (refer to Section 6.2) are estimated to be below the Safeguard Mechanism threshold.
Australian Energy Market Operator 2024 Integrated System Plan	The Integrated System Plan 2024 (ISP 2024) provides a comprehensive roadmap to Australia's energy transition to ensure the power generation meets demand as coal fired generators are retiring. The 2024 ISP identifies the importance of investment in firming technology and dispatchable sources of energy to support renewable energy. Biomass is defined by the 2024 ISP as a renewable energy that is dispatchable.
Climate Change Net Zero Future Act 2023	The Climate Change (Net Zero Future) Act 2023 (Net Zero Future Act), which commenced on 11 December 2023, aims to give effect to the international commitments established in the 2015 Paris Agreement to hold global average temperatures to below 2° Celsius (C) above preindustrial levels, to pursue efforts to limit temperature increases to 1.5°C, and to increase the ability of NSW to adapt to the adverse impacts of climate change. The Net Zero Future Act sets NSW GHG emissions reduction targets of at least 50% by 2030, 70% by 2035 and a target of net zero emissions by 2050.
Net Zero Plan Stage 1: 2020 – 2030	The *Net Zero Plan Stage 1: 2020-2030* outlines the NSW Government priorities to help achieve the State's objective to deliver a 50% reduction in carbon emissions by 2030 compared to 2005 levels. The plan has undergone two implementation updates in 2021 and 2022 that build on the priorities and targets. Priority 1 of the plan is to drive uptake of proven emissions reduction technologies which includes renewables supported by firming technologies.
NSW EPA's Climate Change Policy	In January 2023, the NSW EPA released its Climate Change Policy, along with the associated Climate Change Action Plan 2023-2026 (the Action Plan), which adopts, supports and builds on the NSW Government's overarching climate change objectives and provides a framework to support industry to decarbonise and build greater preparedness and resilience to climate change risks. To deliver on the objectives of the Action Plan, Climate change mitigation and adaptation plans (CCMAPs) are proposed by the EPA to be progressively required under existing and new EPLs for projects. CCMAPs would require licensees to demonstrate how they can minimise their greenhouse gas emissions and exposure to climate risk.

Strategy, plan or policy	Comment
NSW Electricity Strategy	The strategy sets out the NSW Government's intention to support the market to deliver reliable electricity at lower prices. It focuses on reducing household bills, encouraging new private investment in NSW's electricity system and maintaining the electricity system's reliability.
NSW Electricity Infrastructure Roadmap	The roadmap sets out a 20-year plan to transform the NSW electricity system, including the delivery of 12 gigawatts (GW) of new renewable electricity generation and 2 GW of long-duration storage in NSW by 2030. The roadmap also identifies Renewable Energy Zones (REZ) across NSW, including the Hunter-Central Coast REZ, aimed at encouraging investment in new electricity infrastructure and unlocking additional generation capacity in order to ensure secure and reliable energy in NSW.
Hunter Regional Plan 2041	The Department's Hunter Regional Plan 2041 (the Plan) sets out the strategic vision for the Hunter Region based on nine key objectives. These objectives are to be achieved by delivering on a range of directions and actions set out in the Plan, including reaching net zero and increasing resilience and sustainable infrastructure, and planning for renewable energy developments.

3.3 Waste Regulatory Framework

3.3.1 Guide to the NSW Energy from Waste framework

19. The Guide to the NSW Energy from Waste framework (2021, EPA) provides a summary of the requirements and regulatory assessment process for proposed energy from waste projects in NSW. The guide has been used to inform the Department's assessment of the project in Section 6 and the relevant regulatory requirements are summarised in the sections below.

3.3.2 Protection of the Environment Operations (Waste) Regulation 2014

20. The use of waste for electricity generation is an activity regulated under the *Protection of the Environment Operations Act 1997* (POEO Act) and associated *Protection of the Environment Operations (Waste) Regulation 2014* (the Waste Regulation).

21. EWFs meet the definition of 'waste' under this legislation and are therefore subject to a range of regulatory requirements, including licensing and tracking obligations and the payment of waste levies. The EPA can exempt a person from certain waste regulatory requirements. These

exemptions are known as resource recovery orders and exemptions. Resource recovery orders and exemptions include specifications, record-keeping, reporting and other requirements to supply waste and use waste as a fuel.

3.3.3 Protection of the Environment Operations (Clean Air) Regulation 2022

22. Pollutant emissions associated with electricity generation is regulated under the *Protection of the Environment Operations (Clean Air) Regulation 2022* (Clean Air Regulation). The regulation prescribes standards of concentration for air impurities when using a liquid or solid standard or non-standard fuels.

3.3.4 NSW Energy from Waste Policy Statement 2021

23. The NSW Energy from Waste Policy Statement (EfW Policy) outlines the policy framework and technical criteria that apply to facilities proposing to recover energy from waste in NSW through thermal treatment.

24. The policy establishes a two-tiered framework for assessment of energy from waste proposals, based on fuel type. This includes:

    - EWF – including (but not limited to) biomass from agriculture, forestry from sawmilling residues, uncontaminated wood waste, recovered waste oil, organic residues, landfill gas and biogas, source separated green waste and tyres. These fuels are considered to pose a low risk of harm to human health and the environment due to their origin, composition and consistency; and
    - Energy recovery facilities – facilities proposing to use any other waste material that is not listed as an EWF.

25. The EfW Policy states that the thermal treatment of waste provides an opportunity to recover the embodied energy from waste, offset the use of non-renewable energy sources, and avoid methane emissions from landfill.

26. Under the EfW Policy, a project must meet current international best-practice techniques, including emissions controls use technologies that are proven, well understood and capable of handling the waste inputs.

3.3.5 NSW EPA Eligible Waste Fuel Guidelines 2022

27. The EWF Guidelines provides more detail on the definition and characteristics of EWFs and outlines the process to apply for a resource recovery order or exemption to use EWFs.

28. A waste must meet several criteria to be defined as an EWF including consistency with the waste hierarchy, consistency of chemical and physical characteristics, quality assurance and quality control, compliance with emission limits and changes to emissions standards requirements.

29. The project proposes to use four EWFs and DBF (i.e. end of life woody biomass) which is not listed as an EWF.

3.3.6 NSW Waste and Sustainable Materials Strategy 2041

30. The Waste and Sustainable Materials Strategy 2041 (the Waste Strategy) sets targets for transitioning NSW to a circular economy over the next 20 years. The key aims of the strategy are to minimise waste, reuse resources efficiently, reduce emissions and increase innovation in the waste sector.

31. The WSMS Strategy sets targets for waste reduction and landfill diversion to transition to a circular economy, including an 80% average recovery rate from all waste streams by 2030.

3.3.7 NSW Energy from Waste Infrastructure Plan 2041

32. The Energy from Waste Infrastructure Plan 2041 supports the Waste Strategy and guides strategic planning for future thermal energy from waste facilities to ensure infrastructure is located in areas that best address the waste management needs of NSW to 2041, and where it maximises efficiencies for waste innovation, management, and energy recovery.

4 Statutory context

4.1 Permissibility and assessment pathway

33. Details of the legal pathway under which consent is sought, and the permissibility of the project are provided in **Table 4** below.

Table 4 | Permissibility and assessment pathway

Consideration	Description
Assessment pathway	**State significant development** • The project is classified as SSD under section 4.36 of the EP&A Act because it meets the criteria under section 20 of Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021* as development for the purpose of electricity generating works with a capital investment value of more than $30 million.
Consent authority	**Independent Planning Commission (IPC)** • The IPC is the declared consent authority under section 4.5(a) of the EP&A Act and section 2.7(1) of the Planning Systems SEPP because there were more than 50 unique public objections to the project during the exhibition period.
Permissibility	**Permissible with consent** • The proposed development is on land zoned RU1 Primary Production under the *Singleton Local Environmental Plan 2013* (LEP). • Energy generating facilities are permissible with consent in RU1 zones under Clause 2.36(1) of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP). • The proposed development is located on land already used for energy generating facilities.

4.2 Other approvals and authorisations

34. The project would require an amendment to the EPL held currently by the site (EPL 11262) as issued by the NSW Environment Protection Authority under section 42 of the POEO Act.

35. Under section 4.41 of the EP&A Act, a number of other authorisations required under other Acts are not required to be separately obtained for SSD projects. This is because all relevant issues are considered during the assessment of the SSD application.

36. The project would require the purchase of a water access licence (WAL) under the *Water Management Act 2000* (WM Act) to extract up to 3,300 ML/year of raw water from the Hunter River.

37. Under section 4.42 of the EP&A Act, certain approvals cannot be refused if they are necessary to carry out the SSD. This includes an EPL under the POEO Act and consent for road works under section 138 of the *Roads Act 1993*. These authorisations must be substantially consistent with any SSD development consent for the project.

38. The Department has consulted with and considered the advice of the relevant government agencies responsible for these other authorisations in its assessment of the project (see **Section 5** and **Section 6**). Suitable conditions have been included in the recommended conditions of consent (see **Appendix E**).

4.3 Mandatory matters for consideration

4.3.1 Matters of consideration required by the EP&A Act

39. Section 4.15 of the EP&A Act sets out matters to be considered by a consent authority when determining a development application. The Department's consideration of these matters is shown in **Table 5** below.

Table 5 | Matters for consideration

Matter for consideration	Department's assessment
Environmental planning instruments, proposed instruments, development control plans & planning agreements	**Appendix D**
EP&A Regulation	**Appendix D**
Likely impacts	**Section 6** - Assessment
Suitability of the site	**Section 2** – Project, **Section 3** – Strategic Context, **Section 6** – Assessment and **Section 7** Evaluation
Public submissions	**Section 5** - Engagement & **Section 6** - Assessment
Public interest	**Section 5** - Engagement, **Section 6** - Assessment & **Section 7** - Evaluation

4.3.2 Objects of the EP&A Act

40. In determining the application, the consent authority should consider whether the project is consistent with the relevant objects of the EP&A Act (s 1.3) including the principles of ecologically sustainable development. Consideration of those factors is described in **Appendix D**.

41. As a result of the analyses in **Appendix D**, the Department considers that the development is consistent with the objectives of the EP&A Act and the principles of ecologically sustainable development (ESD).

4.3.3 Biodiversity development assessment report

42. Section 7.9(2) of the *Biodiversity Conservation Act 2016* (BC Act) requires all SSD applications to be accompanied by a Biodiversity Development Assessment Report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine that the project is not likely to have any significant impact on biodiversity values (as identified in the BC Act and in the *Biodiversity Conservation Regulation 2017*).

43. As the project would not result in any additional surface disturbance, Verdant Earth requested to waive the requirement to submit a BDAR. The Department of Climate Change, Energy, Environment and Water - Conservation Programs, Heritage and Regulation Group (DCCEEW CPHR) considered that it could not be sufficiently demonstrated that biodiversity values would not be significantly impacted and as such, issued requirements for the lodgement of a BDAR.

44. The EIS included a BDAR, which as subsequently updated in the Submissions Report to address advice from DCCEEW CPHR (see **Appendix B**). The Department's consideration of the project's impacts on biodiversity values is provided in **Section 6**.

5 Engagement

5.1 Preparation of SEARs

45. During the preparation of the Planning Secretary's environmental assessment requirements, the Department consulted with relevant state government agencies and Singleton Council (Council) who provided input into the assessment requirements.

5.2 Exhibition of the EIS

5.2.1 Public exhibition of the EIS

46. After accepting the EIS, the Department:

- publicly exhibited the EIS from 8 March 2024 until 11 April 2024 on the NSW Planning Portal;
- notified occupiers and landowners in the vicinity of the site about the public exhibition;
- notified and invited comment from relevant government agencies and Singleton Council; and
- attended a site visit on 4 August 2023.

5.2.2 Summary of advice received from government agencies and Singleton Council

47. The Department received advice from 12 government agencies on the EIS and comment from Singleton Council. A summary of the agency advice is provided in Table 6. A link to the full copy of the advice is provided in Appendix B.

Table 6 | Summary of agency advice

Agency	Advice summary and Verdant response
NSW Environment Protection Authority (EPA)	• Requested additional information: – to justify that the use of biomass would be consistent with the waste regulatory framework. – regarding the methodology to calculate greenhouse gas emissions. – to demonstrate that there is sufficient infrastructure to store ash prior to transport offsite.

Agency	Advice summary and Verdant response
	• Verdant provided an addendum greenhouse gas report in its Submissions Report and additional information regarding the process that would be implemented to ensure consistency with the waste regulatory framework. • The EPA accepted the additional information, but raised some residual issues including: – commercial risks in obtaining the required quantities of feedstock; and – that DBF does not qualify as an EWF due to contamination and inconsistency risks. • The EPA recommended conditions of consent regarding waste management, air quality, noise management and water quality. • The Department has considered the residual issues in **Section 6.1.**
DCCEEW CPHR	• Initially requested targeted surveys and consideration of serious and irreversible impacts (SAII) for threatened species and raised issues regarding potential impacts of asset protection zone (APZ) clearing and water quality. • Following additional information provided in the Submissions Report, CHPR advised that it had no residual issues regarding the BDAR (refer to **Section 4.3.3**).
DCCEEW Water Group	• Requested additional information regarding water take and water transfers. • Verdant provided the additional information to the satisfaction of DCCEEW Water Group. • DCCEEW Water Group provided recommended conditions of consent regarding water licencing.
DCCEEW Heritage NSW	• Requested information on the continuity of consultation with Registered Aboriginal Parties and clarification regarding a number of AHIMS sites identified within the boundary. • Verdant provided a response in the Submissions Report and in additional information. • Heritage NSW did not raise residual issues and recommended conditions of consent.

Agency	Advice summary and Verdant response
NSW Health - Hunter New England Local Health District	• Requested additional information regarding: – quality assurance processes for sourcing drinking water; – legionella controls associated with the cooling water system; – a mosquito risk assessment and management plan. • Verdant provided additional information in its Submissions Report and NSW Health raised no residual concerns. • NSW Health noted the requirements for third party providers of drinking water supplies to submit a quality assurance program in accordance with public health legislation.
Transport for NSW (TfNSW)	• Recommended the applicant prepare a strategic plan for the proposed upgrade of the Golden Highway/Long Point Road West intersection upgrade. • Verdant provided the strategic plan to the satisfaction of TfNSW. • TfNSW recommended conditions of consent regarding the upgrade the Golden Highway/Long Point Road intersection.
Department's Hazards Division	• Provided recommended conditions of consent relating to fire safety and operational hazards. • The Department's consideration of hazards is provided in **Section 6.3.**
Singleton Council	• Requested additional information regarding the existing consent and use of beneficiated dewatered coal tailings (BDT), the terms of a planning agreement and impacts to housing, amenity, emissions and air quality. • The following residual issues have been considered in the Department's assessment – concerns regarding impacts on housing (refer to **Section 6.3**) – noted regulatory requirements regarding heavy vehicles and road upgrades – clarification of greenhouse gas emissions (refer to **Section 6.2.2**) – acknowledged negotiations regarding a VPA (refer to **Section 6.3**) – commented regarding utility of comparing the emissions from biomass to BDT (refer to **Section 6.2.1**).

48. The following agencies raised no concerns about the project or provided no comment:

- Department of Primary Industries – Agriculture
- Department of Regional NSW – Mining, Exploration, and Geoscience;

- Forestry Corporation;
- NSW Rural Fire Service; and
- Fire and Rescue NSW.

5.3 Summary of public submissions

49. The Department received 416 submissions during the public exhibition period (of which 377 were considered unique[4]). A breakdown of the submissions is provided in **Table 7**. Issues raised in submissions are summarised below and a link to all submissions in full is provided in **Appendix B**.

50. The Department received one submission in objection from a submitter in the adjacent suburb of Gouldsville (around 2.5 km from the project site). The next closest submitters were located in and around Singleton (including Hunterview, McDougalls Hill and Singleton Heights) and Broke up to 15km from the project site including 13 submissions in support and three in objection. The majority of submitters in the Hunter Valley supported the project (22 submissions in support and seven in objection, refer to **Table 8**).

Table 7 | Summary of unique submissions

Submitter	Support	Object	Comment	Total
Special interest groups	12	25	-	37
Individual submissions	150	190	5	340
TOTAL	**162**	**215**	**5**	**377**

Table 8 | Location of individual submitters

Submitter	Within 15 km	Within the Hunter Valley	Outside of Hunter Valley
Support	13	22	128

[4] Each petition or submission that contains the same or substantially the same text is counted as one submission in accordance with section 2.7(6) of the Planning System SEPP.

Submitter	Within 15 km	Within the Hunter Valley	Outside of Hunter Valley
Object	4	7	183
Comment	-	-	5

5.3.1 Submissions in objection

51. Key issues (refer to **Figure 4** below) raised in submissions objecting to the project include:

- Greenhouse gas (GHG) emissions and climate change - including direct emissions from burning biomass and the release of stored carbon, emissions from the growth and transport of fuels, and inconsistency with Australian and NSW targets to reduce greenhouse gas emissions (see **Section 6.2.2**);
- Offsite biodiversity impacts - associated with clearing invasive native species and residues, including incentivising over-clearing, removal of potential foraging habitat for native fauna, and reduced biodiversity at purpose grown biomass locations (see **Section 6.3**);
- Air quality and impacts on human health – associated with the burning of biomass (see **Section 6.2.1**);
- Indirect impacts of the project - including diverting funds from renewable energy projects (see **Section 6.3**);
- Quality of information in the EIS - including limited detail on fuel processing and supply locations and agreements, exclusion of offsite activities for emission calculations, and disagreement with references to the project being 'near net zero emissions' (see **Section 6.1** and **Section 6.2.2**); and
- Transport - including the potential for fuel processing and supply locations to be very distant from the project which would increase truck movements and emissions (see **Section 6.3**).

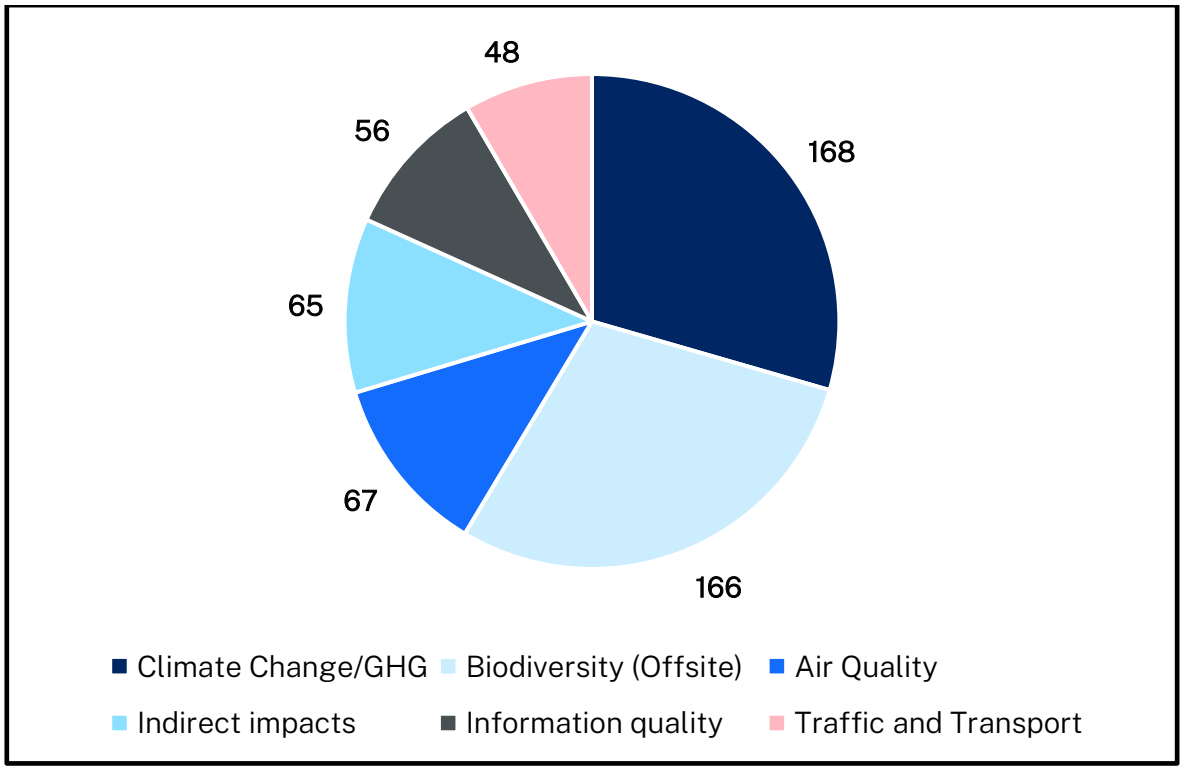

Figure 4 | Number of issues raised in public submissions

5.3.2 Submissions in support

52. Key benefits identified in supportive submissions include:

- efficiencies associated with the use of existing infrastructure;
- minimal impacts associated with the use of biomass that can be approved for clearing under existing NSW legislation;
- the creation of local jobs;
- a local source of renewable energy for the community;
- contribution to energy sustainability in NSW; and
- alignment with transitions away from fossil fuel powered energy to lower emissions generating technology.

5.4 Response to submissions and Additional Information

53. Following the public exhibition period, the Department requested Verdant Earth respond to the issues raised in submissions and the advice received from government agencies. Verdant Earth provided a Submissions Report to the Department on 5 July 2024 (see **Appendix A**).

54. The Department published the Submissions Report on the NSW Planning Portal and forwarded the Submissions Report to relevant government agencies and local council(s) for comment. These comments have been considered and addressed in **Sections 5** and **6** of this report.

55. The Department also requested additional information from Verdant Earth to resolve issues identified during the assessment, including from the Department's expert consultant (refer below). The additional information is summarised in **Appendix C**.

Independent review

56. Following review of the EIS and Submissions Report, the Department engaged an independent expert consultant, Arup Australia Pty Ltd (Arup), to undertake a comprehensive review of the EIS, including advice on:

    - feedstock availability;
    - processing capacity of the facility;
    - compliance with the EFW Policy and EWF Guidelines;
    - suitability of proposed technologies and handling capabilities for the feedstocks; and
    - emission control techniques and monitoring.

57. Verdant Earth provided a response to the review and Arup subsequently provided a final report that considered all information. Both reports, as well as Verdant Earth's response are available in **Appendix A**. The Department has carefully considered the outcomes of the review in **Section 6.1.**

6 Assessment

58. The project involves the use of existing infrastructure within an area zoned for primary industries, close to existing supporting infrastructure and heavy vehicle transport routes, and with buffers to sensitive receivers. The location of the project significantly reduces many environmental risks and impacts.

59. The Department considers that the key issues for the project relate to the use of EWFs and air quality impacts from the thermal treatment of the fuels.

60. The Department's consideration of these matters is addressed in **Sections 6.1** and **6.2** below. A summary of the Department's consideration of other issues is provided in **Section 6.3**.

6.1 Waste

61. Three categories of fuel are proposed for use in the power station including EWFs, standard fuels and DBFs. The Department has considered each of these fuel types in its assessment below.

62. The Department's assessment focuses on whether it is possible for the project to meet the criteria in the NSW Energy from Waste framework (see **Section 3.3**). Compliance with the NSW Energy from Waste framework would be regulated by the EPA if the project is approved.

63. The use of EWFs and DBFs have been assessed in accordance with requirements of the EfW Policy. Standard fuels have been considered in accordance with the requirements of the POEO Act.

64. The technological capability of the upgrades to the power station have been assessed in accordance with the requirements of the EfW Policy.

65. The Department has also assessed commercial risks, ash management and other waste streams that would be generated during construction and operation of the project.

66. To support this assessment, the Department consulted closely with the EPA and sought targeted independent advice from Arup (see **Section 5.4**). A summary of the advice provided by the EPA is provided in **Table 6**. All advice from the EPA and Arup is available in **Appendix A** and **Appendix C** respectively.

6.1.1 Assessment under EfW Policy

67. In accordance with the EfW Policy, proposed energy from waste plants must:

- *meet current international best-practice techniques, including emissions controls;*

- *use technologies that are proven, well understood and capable of handling the waste inputs. This must be demonstrated through reference to fully operational plants using the same technologies and treating similar waste streams to the proposed plant;*
- *meet technical, thermal efficiency and resource recovery criteria for plants proposing to thermally treat a waste or waste-derived material that is not a list EWF (i.e. a standard fuel); and*
- *undertake monitoring with real-time feedback.*

68. The EPA did not raise residual concerns regarding the suitability of the proposed technology and proposed monitoring. The EPA would have an ongoing role in ensuring compliance with the EfW Policy during the commissioning and operation of the project including through the EPL.

69. Arup concluded that overall, the proposed technology and operational strategy are considered capable of handling the proposed feedstock assuming the feedstock meets the required quality standards (refer to Section 6.1.2).

70. The Department considers it is possible for the project to meet the requirements of the EfW Policy and that these are primarily technical criteria. The Department has recommended a condition that Verdant provide an initial air emissions monitoring and verification report within three months of commencing operations to ensure adherence to the EfW Policy and Clean Air Regulation emissions standards, and ongoing compliance would be regulated through the EPL.

6.1.2 Assessment against EFW Guidelines

71. In accordance with the EfW Guidelines, facilities proposing to use EWFs must meet the following criteria:

    a) *ability to demonstrate to the EPA that the proposed waste consistently meets the definition of an EPA-approved eligible waste fuel;*

    b) *confirm there are no practical, higher order reuse opportunities for the waste;*

    c) *fully characterise the waste and/or undertake proof of performance; and*

    d) *meet the relevant emission standards as set out in the Clean Air Regulation.*

72. The Department has assessed the project against each of the criteria in the sections below.

Waste characteristics and definition - EWF Guidelines criteria a) and c)

Eligible waste fuels

73. Verdant propose to use a range of EWFs as outlined in **Section 2.2,** which would comprise around 90% of feedstock in the first year of operations, decreasing to around 30% of feedstock from Year 5 onwards as more is sourced from plantation feedstock. Verdant prepared a *Quality Assurance and Control Procedure for Receipt and Use of Biomass* in the EIS, which requires suppliers to only provide biomass fuel to the power station that meets strict regulatory requirements.

74. Verdant prepared a risk assessment as part of its response to the independent review to identify and evaluate risks and identify contingency measures if there is variability or inconsistency in biomass fuel delivered to the power station. Verdant considers it can meet the waste characteristics and definition requirements of the EWF Guidelines.

75. Following consultation with the EPA during the assessment process, the EPA did not raise residual concerns regarding feedstock quality and consistency and it recommended conditions of consent (refer to **Section 5.2.2**).

76. Arup concluded in its final report that Verdant demonstrates an understanding of and commitment to complying with the regulatory framework and noted that if the project is approved the resource recovery and exemption framework provides a stringent process for assessing and managing human health and environmental risks. Arup concluded that overall, the proposed controls are considered reasonable for this stage of development.

77. Arup identified the following residual matters in its final report:

    - recommended that Verdant's quality control procedure be further aligned with *EN 14778-1:2011 – Sampling of Solid Biofuels*;
    - risks related to fuel degradation once the feedstock is delivered and stored on site prior to combustion in the power station; and
    - risks related to managing the quality control process across variable feedstock sources in the initial years of the project.

78. The Department has required measures to address these residual issues as part of its recommended condition to prepare a Quality Control and Quality Assurance Plan for the project.

79. The Department has recommended conditions consistent with the advice of the EPA that require all EWFs to have resource recovery orders and exemptions prior to receipt on site and use in the power station. The strict sampling requirements for these orders and exemptions

would ensure the chemical characteristics of the fuels meet the requirements of the EFW Guidelines and would be regulated by the EPA.

Domestic biomass fuel

80. Verdant proposed that DBF would comprise up to 7% of the feedstock for the project.

81. DBF does not currently qualify as a EWF due to contamination and inconsistency risks, particularly with copper chrome arsenate timbers that are often difficult to identify and/or segregate from other clean timbers, and that can have a significant impact on heavy metal contaminants in air emissions.

82. Verdant indicated that it would seek to demonstrate that DBF is suitable for use via a resource recovery exemption. The EPA has advised this is not the appropriate pathway to enable DBF to be defined as an EWF.

83. Risks associated with the use of DBF were identified by the EPA and Arup during the assessment of the project. The EPA recommended a condition that only standard fuels and EWF are permitted to be used in the project, which effectively prohibits the use of DBF. The Department agrees this approach and has recommended conditions to this effect.

84. If DBF were to be defined as an EWF by the EPA in the future it could be used as a fuel for the project, provided its use is consistent with the strict requirements of the consent and the EWF Guidelines.

85. The Department does not consider that the exclusion of this fuel would materially impact the viability of the project. Verdant noted this in its response to the independent review and indicated it could be supplemented by other sources if it is not approved as an EWF.

86. With the recommended exclusion of DBF, all waste streams for the project are standard fuels or EWFs.

Higher order uses for waste – EWF Guidelines criteria b)

87. As part of the eligibility requirements for waste fuel under the EWF Guidelines, it must be demonstrated that there are no practical, higher order reuse opportunities for the waste. The higher order reuse waste hierarchy per the *Waste Avoidance and Resource Recovery Act 2001* details the management options from most to least preferable (see **Figure 5** below).

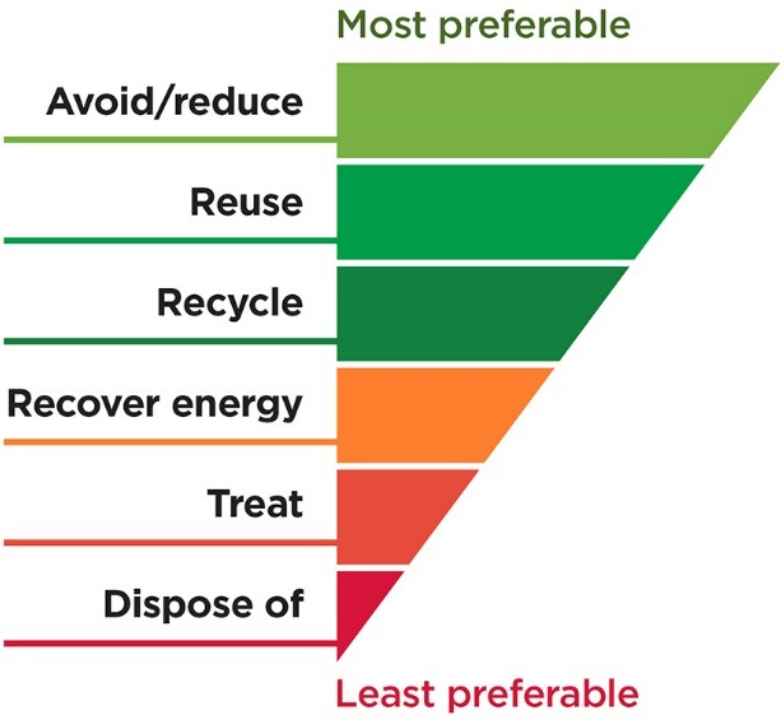

Figure 5 | Waste hierarchy

88. Verdant prepared a Higher Order Use Study as part of the Submissions Report following comment by the EPA to provide further information on higher order reuse opportunities for the proposed feedstock under the NSW waste regulatory framework. A summary of the study is provided in **Table 9**. Verdant concluded that there is an adequate supply of biomass for the project that has no higher order uses.

Table 9 | Higher order use assessment

Proposed EWF	Projected required in Year 1[5] (dry tonnes)	Estimated available (dry tonnes per year)	Current use	EWF existing practical uses with no higher order use
Biomass from INS	500,000	1,562,500	Less than 0.1% of INS has a higher order use such as firewood (1,562t/yr)	99.9% of INS waste is disposed and is assessed as having no higher order use (1,560,938t/yr)

[5] Projected required volumes are from Year 1 as they are the maximum volume required. From Year 6 of operation onwards, the project would source 70% of fuel stock from purpose grown fuels (standard fuels) and a maximum of 30% from EWFs.

Proposed EWF	Projected required in Year 1[5] (dry tonnes)	Estimated available (dry tonnes per year)	Current use	EWF existing practical uses with no higher order use
Biomass from waste from approved land clearing	150,000	125,700	20% of material has a higher order use such as timber milling (12,570 t/yr), re-use onsite (12,570 t/yr) and biodiversity retention (125 t/yr)	80% of waste from approved land clearing is disposed and is assessed as having no higher order use (100,430t/yr)
Biomass from agricultural residues	-	1,023,172	34% of material has a higher order use such as re-use for soil organic matter improvement (337,646 t/yr) and fodder for livestock (10,023 t/yr)	66% of agricultural residue is disposed and is assessed as having no higher order use (675,294t/yr)
Biomass from Uncontaminated Wood Waste (UWW)	-	120,000	66% of UWW recycled as animal bedding (79,200 t/yr)	34% of UWW is disposed and is assessed as having no higher order use (40,800t/yr)

89. Reliance on EWFs reduces from Year 6 of operation onwards, with 70% of fuel stock projected to be sourced from purpose grown fuels (standard fuels) and a maximum of 30% from EWFs (refer to **Table 2**).

90. The EPA did not raise residual concerns regarding potential higher order uses of biomass.

91. The sourcing and use of biomass would be closely regulated under the resource recovery order and exemption process by the EPA. The identification and approval of INS for clearing would be regulated under the *Local Land Services Act 2013* (LLS Act).

92. In the independent review, Arup did not identify material residual risks associated with potential higher order use of EWFs. Arup noted the ultimate use of feedstock would depend on the facility's compliance with framework under the EWF Guidelines and EfW Policy during the operation of the project.

Emission standards – EWF Guidelines criteria c)

93. The EIS included an Air Quality Impact Assessment which modelled the project's emissions against prescribed standards of the POEO Act. The EPA advised that the scenarios modelled in the AQIA predicted compliance with relevant assessment criteria based on the use of standard or EWFs only. The outcomes of this assessment are further detailed in Section 6.2.

6.1.3 Standard fuels

94. Verdant proposes the use of purpose grown energy plantations, perennial grasses and energy crops defined as wood or wood-derived standard fuels under the Clean Air Regulation. These fuels would be used during Stage 2 (Year 4 and onwards) of the project.

95. Standard fuels are not subject to the same requirements as EWFs to ensure the fuels meet relevant quality standards as they generally have a lower risk of contamination. Notwithstanding the fuels may be subject to agricultural chemicals and pesticides. Arup recommended that standard fuels be included in the quality assurance process for the project and the Department has adopted this recommendation in the recommended conditions of consent.

96. The Department considers that standard fuels can be used with a low risk to human health and the environment subject to the implementation of the Quality Control and Quality Assurance Plan required by the recommended conditions.

6.1.4 Commercial risks

97. The EPA and Arup both identified commercial risks which relate Verdant's ability to obtain the required quantities of suitable feedstock for the operation of the power station. These risks include:

- logistical challenges in managing quality control for different types of biomass from a range of different suppliers;
- potential strengthening of guidance and protocols for the clearing of INS following the independent review by Dr Ken Henry of the LLS Act, which may restrict the volume of INS available for use as feedstock – with the Land Management (Native Vegetation) Code 2018 currently under review; and
- the ability of Verdant to secure land in proximity to the site for purpose grown crops in competition with other potential land uses on mine owned buffer land.

Management of suppliers

98. Verdant has indicated that it would undertake due diligence to confirm that all necessary approvals, permits, and authorisations are held by the suppliers prior to any biomass deliveries. Arup concluded that this approach is considered to be acceptable given the current phase of the project. The recommended Quality Control and Quality Assurance Plan includes the requirements to demonstrate quality control procedures for each type of feedstock and the specific procedures that would be implemented during processing, transport, delivery and storage of feedstock.

Potential legislative changes

99. Verdant completed a risk assessment to manage potential issues in securing sufficient biomass supply if the recommendations of the review of the BC Act and LLS Act were to be implemented and considered the risks could be managed. Verdant identified that by Year 5 of operations 70% of feedstock would be from purpose grown plantations.

100. The Department notes the NSW Government's response to the review of the LLS Act was to support a recommendation to improve administration and outcomes of authorisations under the *Land Management (Native Vegetation) Code 2018* to manage environmental risk and reduce the cleared area for INS.

Land for purpose grown crops

101. Verdant have indicated it would investigate options to establish bana grass, sorghum, agave and woody biomass crops to cultivate purpose grown fuels. Verdant stated it has had preliminary discussions with local mines sites for the establishment of bana grass crops.

102. Arup concluded that at this stage of the project the information is acceptable, however if crop production arrangements cannot be secured this would represent a significant risk to the operation of the project.

Conclusion

103. The Department considers the commercial risks must be managed by Verdant to achieve an economically viable project. The established regulatory framework and recommended conditions of consent would ensure risks to the environment and human health are low irrespective of commercial factors.

6.1.5 Ash management

104. Ash would be generated as a byproduct of the combustion of biomass at a maximum rate of approximately 42,500 tpa. Verdant Earth propose to transfer ash to an existing silo which has capacity for up to three days of ash production. Ash would then be dispatched off-site via heavy vehicles for reuse as a soil or fertiliser additive in accordance with EPA's *Ash from Burning Biomass Order 2014*. The EPA did not raise residual issues regarding the management of ash for the project. The Department notes the lower contamination risks associated with EWF and standard fuels proposed to be used and strict requirements as part of resource recovery orders and exemptions reduces concerns about the suitability of the ash for beneficial reuse.

105. Arup identified that variations in the moisture content of feedstock may have implications for the potential for ash to soften and fuse which can impact the operation of the power station from the accumulation of slag within the combustion system. Arup recommended that ash fusion temperature thresholds for feedstock be tested to manage this risk.

106. The Department has recommended that the Quality Control and Quality Assurance Plan includes testing methods to inform ash management including to understand ash fusion behaviour and slagging potential to manage these risks.

6.1.6 Other waste streams

107. Other waste streams would be generated during the construction and operation of the project including demolition and construction waste and office and maintenance wastes. Key waste streams including excavated natural material, asphalt and concrete.

108. Jackson Environment and Planning prepared a Waste Management Plan assess the waste and manage potential waste impacts of the project. The plan identified the potential for high rates of potential recycling of key waste streams. Verdant would implement the Waste Management Plan during the construction and operation of the project.

6.1.7 Conclusion

109. The Department has considered the ability of the project to comply with the NSW Energy from Waste framework including the relevant provisions of the POEO Act, EfW Policy and EWF Guidelines.

110. The Department consulted closely with the EPA and its independent expert during the assessment of the project. All residual issues raised by the EPA were resolved during the assessment process.

111. The Department considers that Verdant has demonstrated that compliance with the regulatory framework is achievable, including the use of material that meets the definition of a standard fuel and an EWF. Compliance with the regulatory framework would be enforced during the operation of the project by the EPA in addition to compliance undertaken by the Department in accordance with the consent.

112. The Department has recommended conditions consistent with the advice of the EPA that require the project to only use EWFs or standard fuels to ensure that potential risks to human health and the environment are low. The conditions would ensure the fuels meet the strict criteria in the EWF Guidelines.

113. The sampling requirements for the required resource recovery orders and exemptions would ensure the chemical characteristics of the EWFs meet the requirements of the EFW Guidelines and would be regulated by the EPA.

114. The Department has recommended conditions that require the preparation of a Quality Control and Quality Assurance Plan to ensure that the feedstock quality would not compromise strict air discharge emission limits from the combustion of biomass. The plan would formalise the *Quality Assurance and Control Procedure for Receipt and Use of Biomass* prepared by Verdant as part of the EIS and includes requirements to address recommendations identified by Arup including:

    - the requirement to have regard to EN 14778-1:2011 – Sampling of Solid Biofuels;
    - specific sampling requirements for each type of feedstock;
    - managing standard fuels which generally do not require a resource recovery order or exemption for use;
    - the identification of quality controls through all stages of the feedstock supply chain including during processing, transport, delivery and storage prior to combustion; and
    - testing methods to inform ash management including to understand ash fusion behaviour and slagging potential.

115. The Department considers there is a robust regulatory framework for the management of standard fuels and EWFs that would apply to the operation of the project as enforced by the EPA which would ensure risks related to the use of these fuels are minimised. The Department has recommended conditions of consent to complement the existing regulatory framework. The regulation of air emissions from the project would further ensure risks to human health are minimised as considered by the Department in the section below.

6.2 Air Quality and Greenhouse Gas

6.2.1 **Air quality**

116. The combustion of biomass would result in emissions from the boiler stack which would include carbon monoxide (CO), oxides of nitrogen (NOx), sulfur dioxide, particulate matter (PM_{10} and $PM_{2.5}$), total suspended particles (TSP), volatile organic compounds (VOC), hydrogen fluoride (HF), hydrogen chloride (HCl) and a range of heavy metals.

117. The operation of the project would also result in fugitive dust emissions from truck movements, feedstock handling (such as unloading, rehandling, stockpile maintenance and conveying/handling), and wind erosion of the biomass stockpile.

Assessment methodology

118. EMM prepared an Air Quality Impact Assessment (AQIA) for the operation of the project in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2022).

119. An addendum to the AQIA was prepared to support the Submissions Report to address comments from the EPA requesting further information on several matters relating to the assessment of potential impacts from proposed fuels, confirmation of the assessment methodology and the provision of further data relating to pollutant concentrations and emission rates.

120. This also included clarification that the assessment had accounted for the operation of the plant on diesel fuel for a maximum of 40 hours per year for plant startup (accounting for one minor and one major outage per year).

121. Upon review of the AQIA addendum, no residual issues were raised by EPA.

122. The AQIA included dispersion modelling for an expected operations scenario and a 'regulatory worst-case' (RWC) scenario (calculated by adopting the standard of concentration/emission limits provided for electricity generation for Group 6 in the Clean Air Regulation) compared against the EPA impact assessment criteria for ground-level concentrations at receiver locations.

123. The AQIA also considered the impacts of the previously approved combustion of beneficiated dewatered coal tailings (BDT) compared to the impacts of the proposed biomass combustion. While the assessment generally demonstrated there would be improved air quality outcomes for the biomass combustion scenario, the scope of the Department's assessment is of the merits of the application which involves biomass combustion only. Further discussion of the comparative scenario is not provided in the remainder of this report.

124. The AQIA assessed potential impacts to 38 residential receptors and five commercial/industrial locations within approximately 8 km of the project site. The nearest residence is located 1.6 km to the north-east of the site and the nearest commercial/industrial receptor is located 0.9 km to the east. Residential receptors are generally located to the north-east of the project as shown in **Figure 6** below.

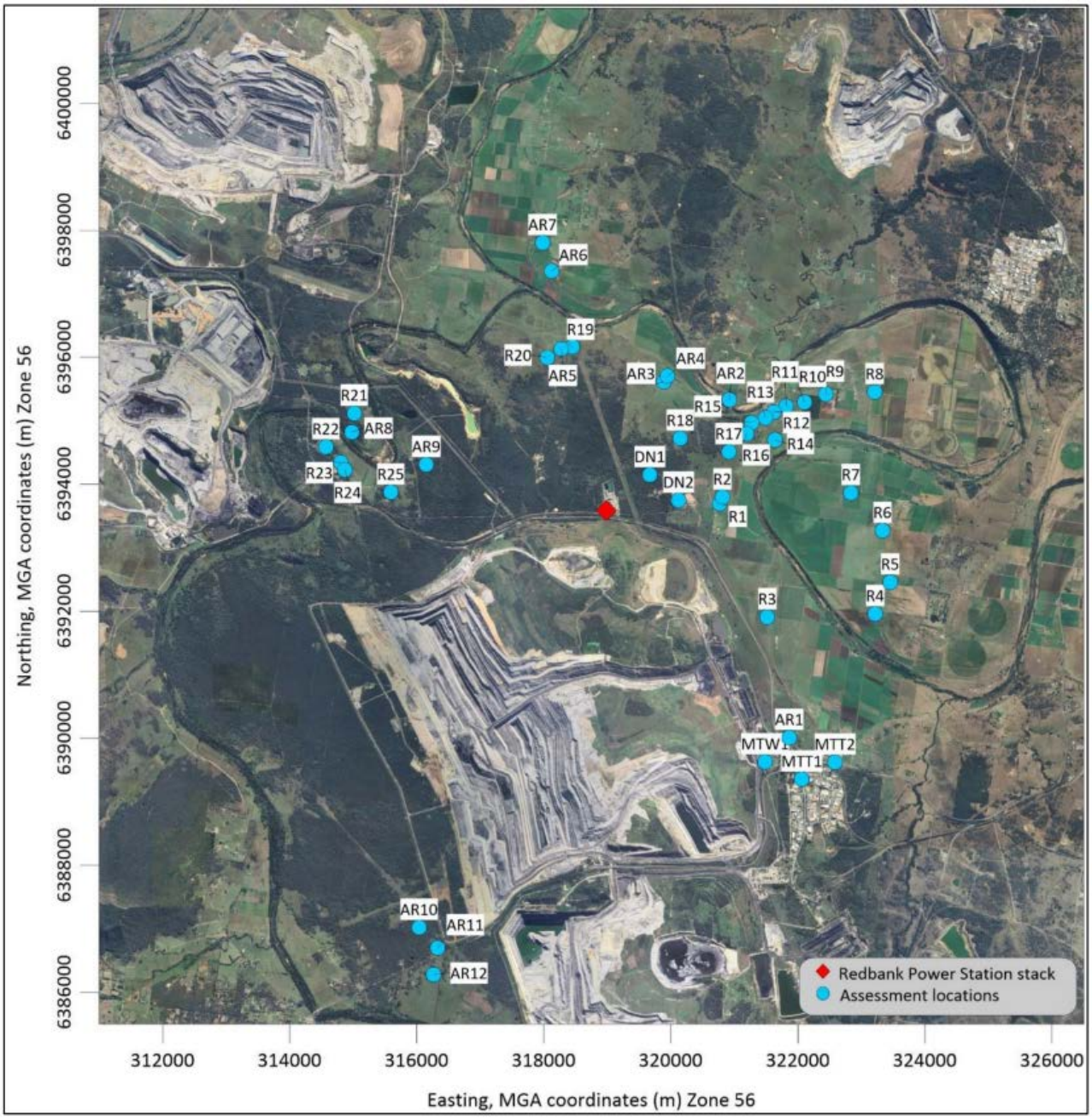

Figure 6 | Sensitive receivers (Source: AQIA)

125. In the independent review, Arup requested that Verdant provide a sensitivity analysis to consider the air quality implications of the combustion of biomass at the lower and upper limits of moisture content (10% and 50% moisture content). Verdant noted in its response that the RWC scenario reflects a worst-case scenario independent of moisture content.

126. Verdant also prepared a Human Health Risk Assessment (HHRA) which considered the potential risks to human health based on the outcomes of the AQIA.

127. A detailed assessment of construction air quality impact was not completed by Verdant given that construction primarily includes upgrades to existing infrastructure and no disturbance outside of the existing development footprint is required.

Potential impacts

128. The predicted incremental (that is project emissions only) ground-level concentrations for all pollutants were below the impact assessment criteria for both the expected and RWC scenarios.

129. The predicted cumulative (including other background sources) concentrations for all pollutants were below the impact assessment criteria for both the expected and RWC proposed operations scenarios except for annual average PM_{10} and $PM_{2.5}$ for both scenarios, and 24-hour average PM_{10} concentrations for the RWC proposed operations scenario.

130. Existing background concentrations for annual average PM_{10} and $PM_{2.5}$ are already above the impact assessment criteria for the year selected for modelling (2018), with contribution of the project being minor (approximately 1% incremental contribution to the ambient air concentration).

131. Existing background concentrations for the 24-hour average PM_{10} concentrations are above the impact assessment criteria for the year selected for modelling (2018). Under the RWC scenario, the criteria would be exceeded for one additional day at two receptor locations, with contribution of the project being minor (approximately up to 1.6%). Given the minor contribution of the project to the exceedance, and the conservative nature of the RWC scenario, additional adverse impacts as a result of the project at the two receivers are considered to be unlikely.

132. Predicted ground-level concentrations of SO_2 from biomass combustion were well below odour detection thresholds and therefore odour impacts are not expected during operation of the project.

133. The EPA advised that the scenarios modelled in the AQIA predicted compliance with relevant assessment criteria based on the use of standard or EWFs only. The Department has recommended conditions that only permit the combustion of standard fuels and EWFs in the power station.

134. The HHRA concluded that based on the results of the AQIA that all risks to human health including chronic risks are considered to be negligible.

Proposed mitigation and regulation

135. The modelling in the AQIA incorporates the existing emissions controls at the power station including furnace stack baghouse filters and a centralised dust collection system and measures to manage fugitive emissions such as wheel-generated dust, truck and truck unloading activities, biomass movement activities and wind erosion of biomass stockpiles. The AQIA demonstrated that with this mitigation, the project can meet the relevant assessment criteria, as described above.

136. Construction air quality impacts and dust emissions would be managed in accordance with a Dust Management Plan that has been prepared for the project.

137. The primary mechanism for the regulation of air quality emissions from the power station would be under the existing EPL, which would be varied by the EPA for the project.

138. The EPL would include the detailed air emissions limits, monitoring requirements and other reporting requirements as regulated by the EPA. Verdant would be required to complete proof of performance testing to demonstrate compliance with air emissions standards during commissioning and operate continuous in-stack emissions monitoring and a testing program to review air pollutant emission concentrations against the limits in the EPL.

139. Air emissions limits would be in accordance with the strict requirements of the Clean Air Regulation. The EPA noted in its advice on the Submissions Report that its recommended limits (subject to the variation of the EPL) are below the standard limits that would be applicable to the power station, as it has been demonstrated the project can achieve a higher level of performance with lower emissions levels. As an example, solid particles (total) standard concentration is identified as 50 mg/m^3 under the Clean Air Regulation, however the EPA intends to impose a limit of 25 mg/m^3 subject to the variation of the EPL as Verdant have demonstrated a more conservative limit is achievable.

140. Noting the primary mechanism to regulate air emissions is under the EPL and consistent with the recommendations of the EPA, the Department's recommended conditions are limited to requirements to ensure dust generation is minimised, a limit to the diesel operations for 40 hours per year and the requirement to prepare emissions monitoring reporting within three months of commencing operations in accordance with the EPL. This approach avoids the duplication of the regulation of air emissions.

Conclusion

141. The Department considers that the AQIA has demonstrated the project can operate with acceptable impacts to air quality with negligible risks to human health. Air emissions from the

power station would be regulated by the strict limits and monitoring requirements that would be prescribed in the revised EPL for the project in accordance with the Clean Air Regulation.

6.2.2 Greenhouse gas emissions

142. The operation of the project would result in greenhouse gas emissions. The majority of direct emissions would be from the combustion of biomass, with a small contribution from diesel combustion for the start-up of the power station and in equipment used for material handling. Indirect greenhouse gas emissions would also result from the off-site handling and transport of biomass.

Assessment methodology

143. Verdant prepared a Greenhouse Gas Mitigation Plan and Climate Change Adaptation Plan (GHG Assessment) as part of the EIS which calculated annual Scope 1 (on-site) and Scope 3 (off-site) greenhouse gas (GHG) emissions for the estimated 30-year operational lifespan (from 2025/26 to 2054/55). Verdant also prepared a Life Cycle Assessment to assess how the project would impact electricity supply with regard to GHG emissions.

144. As the project would generate electricity, Scope 2 emissions were not calculated. The GHG Assessment identified greenhouse gas emissions during construction would be negligible given the scale of construction works required for the project.

145. The emissions calculations in the GHG Assessment were revised in the Submissions Report in response to advice from the EPA. Upon review of the revised calculations no residual issues were raised by EPA.

146. Scope 1 emissions calculations include an emission factor of zero for carbon dioxide (CO_2) emissions from the combustion of biomass. In the actual operation of the power station, carbon dioxide emissions from the stack would not be zero. However as outlined in the GHG Assessment, this approach to the calculation of emissions is appropriate based on the assumption that the combustion of biomass in the power station is balanced by the amount of CO_2 taken out of the atmosphere by the biomass during its life as part of the natural carbon cycle. For biomass waste products, CO_2 would be released into the atmosphere upon decomposing, irrespective of whether it is used to fuel the power station. Net changes in the amount of biomass stock that is part of the carbon cycle is considered in carbon accounting under the land use, land use change and forestry (LULUCF) category.

147. Without this assumption actual CO_2 emissions would be double counted for the project. The approach is consistent with relevant guidelines including the Australian Government Department of Climate Change, Energy, the Environment and Water (AG DCCEEW) National

Greenhouse Accounts Factors (NGAF) workbook (AG DCCEEW 2023) and Arup and the EPA did not raise residual concerns regarding this approach.

148. Notwithstanding the combustion of biomass results in the emission of methane and nitrous oxide which are greenhouse gases and accounted for in the calculation of Scope 1 emissions.

149. Scope 3 emissions are primarily associated with the offsite processing and transport of biomass.

150. The greenhouse gas emissions for the project are outlined in **Table 10**.

Table 10 | Greenhouse gas emissions for the project

Emission source	Emissions (t CO_2-e/year)
Scope 1 – electricity generation	17,136
Scope 1 – biomass handling	474
Scope 1 – station start ups	163
Scope 1 - total	17,773
Scope 3 – total	20,642

151. Total scope 1 emissions were calculated to be 17,773 t CO_2^{-e} per year, with the combustion of biomass for electricity generation accounting for 96% of direct emissions. The emissions intensity of electricity generation for the project is estimated to be 0.016 t CO_2^{-e}/MWh and would represent 0.02% of state-wide emissions in 2030, and 0.1% in 2050 (based on policy framework projections[6]).

152. Opportunities to avoid or mitigate direct emissions for the project are limited as there are limited technologies available to reduce emissions at their source. Verdant indicated it would mitigate emissions primarily through carbon offsetting, consistent with the NSW emission trajectory towards net zero by 2050. The Department notes there is currently no statutory or strategic policy obligation for the project to offset emissions at the development application stage but considers this commitment would offset the greenhouse gas emissions of the project consistent with NSW targets.

[6] Figures emissions modelling data from *NSW greenhouse gas emissions projections 2024 – Methods paper* (DCCEEW, 2025)

153. Scope 3 emissions from offsite handling and transport of biomass are a similar scale of direct emissions and would be subject to state emissions reductions targets for the transport, agricultural and stationary energy sectors.

154. The Life Cycle Assessment identified that as a continuous source of energy, the electricity generated from the project would most likely over time displace coal fired power. A sensitivity analysis was also completed using natural gas as the displaced energy source. This approach is consistent with Australian Renewable Energy Agency (ARENA) Guidelines for Life Cycle Assessments. Arup noted the assessment was consistent with the ARENA Guidelines but also noted that the facility may compete with other firming technologies beyond 2030 including natural gas and energy storage.

155. The Life Cycle Assessment also identified the project would displace emissions compared to the alternative of landfilling biomass (where more methane is produced during anaerobic decomposition compared to aerobic combustion) primarily in the first five years of the project and the use of ash as a fertiliser would displace emissions from potassium, phosphorus, and calcium content of alternative fertilisers.

Proposed mitigation and regulation

156. Verdant would implement the Greenhouse Gas Mitigation Plan during the operation of the project and would report emissions in annual environmental reporting and under the EPL as required.

157. The EPA is the lead regulator of greenhouse gas emissions for the NSW and further measures may be required under the EPL for the project subject to the delivery of the EPA's *Climate Change Action Plan 2023-2026*.

158. Notwithstanding the Department notes the commitment of Verdant to offset direct emissions in accordance with the NSW emission reductions targets.

Conclusion

159. The Department considers the greenhouse gas emissions would represent a small (0.1% by 2050) contribution to NSW emissions and would be offset in line with the emissions reduction trajectory for NSW and is therefore consistent with the NSW strategic policy framework for actions to address climate change.

160. The Department has recommended conditions that require Verdant to implement reasonable and feasible greenhouse gas avoidance and mitigation measures and to describe offsetting arrangements in the Environment Management Strategy (EMS), to ensure the commitments in the EIS are delivered.

6.3 Other issues

161. The Department's consideration of other issues is summarised in **Table 11** below.

Table 11 | Assessment of other issues

Issue	Findings and conclusions	Recommended conditions
Traffic	• Potential traffic impacts are primarily related to truck movements required for operation of the project required for the delivery of biomass to the site. • Ason Group prepared a Transport Assessment in accordance with relevant guidelines including *Roads and Maritime Services Guide to Traffic Generating Developments* to assess the traffic and transport impacts of the project. • The project would operate 24 hours per day, seven days per week. Verdant have indicated it would prioritise biomass deliveries in 16-hour shifts on Monday through Sunday between 6am and 10pm. • The operation of the project would generate up to 56 heavy vehicle deliveries (112 total movements) per day and up to 15 heavy vehicle trips per hour. There would be up to 70 light vehicle trips per day and up to 65 light vehicle movements per hour. • The key intersection with the potential to be impacted by the project is the Golden Highway/Long Point Road intersection. • SIDRA analysis completed as part of the assessment indicates that the additional traffic generation from the project would not cause a significant impact on the operation of the Golden Highway/Long Point Road intersection in the AM or PM peak hours. The intersection would continue to operate at LoS B in the PM	• Manage traffic impacts in accordance with an EMS. • Upgrade the intersection of Golden Highway and Long Point Road to include an AUL treatment.

Issue	Findings and conclusions	Recommended conditions
	peak hour. The project would result in a minor decrease in the LoS from A to B in the morning peak, increasing intersection delay by around seven seconds. Notwithstanding, LoS B is considered to be an acceptable in relation to delays & spare capacity. • Following consultation with TfNSW it was determined that an Auxiliary Left Turn (AUL) treatment is required for the western leg of the Golden Highway in accordance with Austroads guidelines. The Department confirmed with Verdant the upgrade would be assessed under a separate development approval such as under *Part 5 of the Environmental Planning and Assessment Act 1979*. The upgrade would be completed prior to the commencement of operations subject to approval from TfNSW. The Department has given regard to potential impacts associated with this development in this table below. • Traffic movements required for the construction of the project would be less than for operation and would not exceed the impacts for operation outlined above. • Verdant committed to preparing a Construction Traffic Management Plan (TMP), Operational TMP and Driver Code of Conduct for the project. • The Department considers that the traffic related impacts of the project would not be significant and can be managed through the proposed mitigation measures and recommended conditions.	
Noise and vibration	• Potential noise and vibration impacts are primarily related to operation of the project including truck movements in and around the	• Manage noise and vibration impacts in

Issue	Findings and conclusions	Recommended conditions
	site, plant and equipment used to load and stockpile fuel, and the operation of plant within the station. • Acoustic Logic prepared a Noise Impact Assessment in accordance with the relevant guidelines including the *NSW Noise Policy for Industry* (EPA, 2017) to assess the noise and vibration impacts of the project. • The noise model developed for the NIA was calibrated based on previous assessments for the power station and included any new noise sources required for operation of the project and considered noise emissions under both neutral and enhanced meteorological conditions. • The NIA identified 10 residential sensitive receivers within two noise catchment areas (NCAs). The three nearest residential receivers are located approximately 1.5 km to the east (R1 and R2) and 1.8 km to the north-east (R4) of the project site. • Noise modelling predicted that with the installation of a noise barrier, the project would be compliant with project noise trigger levels (PNTLs) at all receivers and road traffic noise would be below the 2 dB(A) increase permitted by the *EPA Road Noise Policy*. • In the event of deliveries of biomass being made to the project site during the night period under enhanced weather conditions, the noise barrier would ensure residences to the east do not exceed trigger levels. • Construction works are not anticipated to exceed the noise management level at the three nearest residential receivers given the	accordance with an EMS. • Project noise limits and requirements for noise monitoring.

Issue	Findings and conclusions	Recommended conditions
	distance and maximum noise generation of construction activities expected. • Vibration impacts are considered unlikely during both construction and operation of the project given blasting is not proposed and the distance of receivers to the site. • The EPA did not raise residual issues regarding noise and vibrations impacts and would regulate noise impacts under a varied EPL. • The Department considers that the noise and vibration related impacts of the project can be managed through the proposed mitigation measures and recommended conditions.	
Soil, water and contamination	• Potential soil and water impacts are primarily related to the generation of leachate from the stockpiling of biomass prior to combustion. There would also be potential sediment and erosion impacts during construction of the project from soil disturbance. • Sustainability Workshop prepared a Soil and Water Impact Assessment (SWIA) in accordance with relevant guidelines including *Environmental Guidelines - Composting and Related Organics Processing Facilities* (2004) (Composting Guidelines to assess the soil and water impacts of the project. • Consulting Earth Scientists prepared a Preliminary Site Investigation to identify the potential for existing contamination. Potential contaminant sources were identified (primarily hydrocarbon fuel oil and hydrocarbon oil storage and water treatment chemical storage), however the risk to receptors was considered low.	• Manage soil, water and contamination impacts in accordance with an EMS. • Ensure that all surface discharges from the site comply with all relevant provisions of the POEO Act.

Issue	Findings and conclusions	Recommended conditions
	• The proposed biomass stockpile area and one water quality pond is underlain by an impervious clay layer. The stockpile area is drained with subsoil drainage which directs leachate to a water quality pond and then raw water storage pond. The SWIA concluded that this meets the definition of working platform and leachate drainage system as per the Composting Guidelines and would therefore protect groundwater. Verdant committed to confirming that the existing clay layer meets the dimension requirements in the Composting Guidelines prior to operation. • Given the existing power station infrastructure, minimal changes are proposed to the existing impervious built form, water storage, and water usage of the site for the project. • Existing surface water quality management including bunded contaminant storage areas, sediment traps, water quality pond, raw water pond, and gross pollutant screen would continue to be used and managed during operation of the project. Site staff wastewater is treated and reused on-site via an existing aerated wastewater treatment system which would continue to be used. • The SWIA identified that offsite discharges are only predicted to occur for rainfall events larger than the 10% Annual Exceedance Probability (AEP) event and can comply with the discharge limits in the existing EPL. • Construction is expected to result in less than 2,500m^2 of soil disturbance and therefore standard erosion and sediment controls in accordance with the Blue Book would be	

Issue	Findings and conclusions	Recommended conditions
	sufficient to manage temporary impacts of construction. • Additional mitigation measures for the management of water quality are proposed including the establishment of two groundwater monitoring wells, construction of a new grassed swale around the raw water pond, and implementation of a vegetated buffer strip between the stockpile and the concrete channel to manage clean water flows. • The SWIA determined it is unlikely that the project would have an impact on groundwater and/or groundwater dependent ecosystems (GDEs). • The EPA did not have residual concerns regarding the assessment or management of soil, water or contamination impacts. The EPA recommended conditions to ensure a surface and groundwater monitoring program is implemented in accordance with the EPL. The Department notes this program would be required under the EPL and so does not need to be included in the conditions and can be regulated separately by the EPA. • The Department considers that the soil, water and contamination related impacts of the project can be managed through the proposed mitigation measures and recommended conditions.	
Economic	• Benefits of the project are associated with direct employment opportunities, population growth, and benefits to the NEM. • AEAS prepared an Economic Impact Assessment in accordance with relevant guidelines including *NSW Treasury, Policy and*	None required

Issue	Findings and conclusions	Recommended conditions
	Guidelines Paper - NSW Government Guide to Cost-Benefit Analysis to assess the economic impacts of the project. • The assessment identified that the project would deliver economic benefits to the local and regional economy through procurement and employment, creating approximately 330 FTE jobs during construction and up to 60 during operation. The project is estimated to be able to provide approximately $901 million net present value (NPV) to the NSW economy across the first 25 years of construction and operation. • Singleton Council accepted an in-principle offer to enter into a VPA with Verdant for annual contributions totalling $1,060,000 subject to adjustments in the Consumer Price Index (CPI). • The project would provide a source of 151 MW of dispatchable energy consistent with the priorities identified in the 2024 ISP and would contribute to energy reliability and security for NSW. • Verdant considered the project would assist in addressing forecasted reliability gaps in NSW in its report *NSW Electricity Supply Gap - Expert opinion prepared for Verdant Earth Technologies on NSW electricity market* (Marsden Jacob Associates, 2024) (Appendix O of the EIS).	
Social	• SIS prepared a Social Impact Assessment in accordance with the Department's *Social Impact Assessment Guideline* to assess the social impacts of the project. • Potential social impacts are primarily related to temporary impacts to local amenity during	• Refer to conditions for relevant environmental aspects above

Issue	Findings and conclusions	Recommended conditions
	construction and impacts to road safety due to increased traffic associated with haulage of waste wood residues feedstock during operation. • Potential benefits are associated with increased economic diversity away from mining and improved environmental sustainability, direct employment and training opportunities, and contributing to electricity reliability. • Potential impacts to amenity and road safety have been considered in the respective technical assessments for those matters as described above. • The SIA identified a range of additional mitigation measures to manage social impacts and deliver benefits to the local economy including a Community Engagement Plan, Community Consultative Committee, Construction Workforce Accommodation Strategy and Recruitment and Training Strategy. • An addendum to the SIA was prepared to support the Submissions Report to address a comment from Council regarding potential impacts of short-term housing requirements of construction contractors. The addendum noted that review of the local labour force indicates the capacity to supply the majority of the required skills from the resident population. This would be considered in the Construction Workforce Accommodate Strategy. • The Department considers that the social impacts associated with amenity including noise, vibration, dust, and visual have been integrated into the Department's overall assessment and can be managed through the	• Ongoing engagement with the community as required under an EMS.

Issue	Findings and conclusions	Recommended conditions
	proposed mitigation measures and recommended conditions. The additional mitigation measures identified by Verdant would establish ongoing engagement with the community and encourage economic benefits to be captured within the local economy.	
Aboriginal and historic heritage	• Potential Aboriginal and historic heritage impacts are primarily related to unexpected finds given the highly disturbed nature of the site and existing infrastructure. • McCardle Cultural Heritage prepared an Aboriginal Cultural Heritage Assessment (ACHA) in accordance with relevant guidelines including the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) to assess the Aboriginal cultural impacts of the project, which included consultation with Aboriginal stakeholders and survey in accordance with relevant guidelines. • The site is highly disturbed landscape with no original landforms remaining from the construction of the Redbank Power Station and associated infrastructure. • No listed items of historic heritage are located in or within proximity to the project site. The project is unlikely to harm any known or unknown historic heritage items during construction or operation. • Heritage NSW requested further information regarding consultation with Registered Aboriginal Parties (RAPs) and clarification on matters associated with incorrect AHIMS site card information. An updated ACHA and letter response was prepared to support the Submissions Report to address the concerns	• Manage potential heritage impacts in accordance with an EMS. • Ensure the development does not cause any direct or indirect impacts on heritage items located outside the approved development footprint. • Procedure for unexpected finds.

Issue	Findings and conclusions	Recommended conditions
	raised by Heritage NSW. Heritage NSW raised no further concern. • The Department considers that Aboriginal and historic heritage related impacts of the project would be unlikely and can be managed through the proposed mitigation measures and recommended conditions.	
Hazard and risk	• The project is deemed a potentially hazardous industry in accordance with the *Applying SEPP 33: Hazardous and Offensive Development Application Guidelines* (NSW DPE, 2011) given the maximum capacity of confined biomass storage in equipment and the presence of Class 8 Packing Group II corrosive substances over 25 tonnes. • Arriscar prepared a Preliminary Hazard Analysis in accordance with the relevant guidelines including *Hazardous Industry Planning Advisory Paper (HIPAP) No.6, Hazard Analysis Guidelines* to assess the hazard and risk impacts of the project. • The PHA identified potential hazardous scenarios including risks from dust explosion, an explosion in boiler combustion chamber or flue gas dust, the release of carbon monoxide from silos and hopper and stockpile fires. • The PHA demonstrated that all these potential hazardous events would not generate off-site risk, and the Department's Hazards Division agrees with the conclusion established in the PHA that the proposal would not be generated offsite risk beyond the site boundary and therefore satisfy all relevant risk criteria as set out in *HIPAP No. 4, Risk Criteria for Land Use Safety Planning.*	• Prior to construction prepare final Fire Safety Study, Hazard and Operability Study and implemented recommendations raised in the PHA • Prior to commissioning prepare an Emergency Plan and Safety Management System • Store all hazardous materials in accordance with relevant Australian Standards and EPA guidelines.

Issue	Findings and conclusions	Recommended conditions
	• The PHA included a plume rise assessment in accordance with *Civil Aviation Safety Authority (CASA), Advisory Circular: Plume Rise Assessments* (2023) which confirmed stack velocity would exceed 4.3 m/s and require the lodgement of Form 1247 of the CASA advisory circular – Plume rise assessments to CASA. • Verdant submitted Form 1247 to CASA in December 2023, following which CASA had no objection to the project and noted that while aviation lighting on the stack would not be required, requested that the existing aviation markings at the top of the stack are refreshed if required. Verdant agreed to review the markings. • A Bushfire Assessment Report and Fire Safety Study was also prepared as part of the EIS given the project site is located within the Bushfire Vegetation Buffer zone on the Singleton Council Bushfire Prone Land Map. • The assessments identified bushfire hazard mitigation and management measures including the management of an asset protection zones around the project. With the establishment of the mitigation measures the assessments determined the project can meet the objectives of NSW Rural Fire Service's *Planning for Bushfire Protection* (PBP 2019). • The Department considers that the hazard and risks for the project are acceptable can be managed through the and recommended conditions.	
Biodiversity	• As the project would not result in any additional disturbance to biodiversity values outside of the existing approved operations, the Department considers the project to be	None required

Issue	Findings and conclusions	Recommended conditions
	continued development and no further assessment is required (refer to **Section 4.3.2**). • Regarding INS and potential offsite impacts to native vegetation raised in public submissions, the Department notes only INS or biomass from approved land clearing is permitted to be used (along with the other feedstock summarised in **Table 2**). Verdant have explicitly excluded native forestry residues from logging as a potential feedstock. • INS by definition are species that have reached unnatural densities and dominate an area and clearing of INS is permitted under the *Land management (Native Vegetation) Code 2018* and regulated under the LLS Act. Clearing invasive native species promotes the regeneration and regrowth of native vegetation that is not an invasive native species. • While biomass from approved land clearing may comprise some native vegetation, this clearing must be approved based on the merits of separate projects or activities (for example, a large infrastructure project). This vegetation can be cleared irrespective of the Restart of the Redbank Power Station. It must be demonstrated through the resource recovery and exemption framework that there are no higher order uses for the biomass. • The Department considers that INS is appropriate to be used as a feedstock subject to the requirements of the *Land Management (Native Vegetation) Code 2018,* LLS Act, and resource recovery and exemption framework and that the project would not result offsite impacts to other native vegetation.	

Issue	Findings and conclusions	Recommended conditions
Offsite infrastructure	• The upgrade to the Golden Highway/Long Point Road intersection and the offsite processing of feedstock is development that is not part of the project but is required to enable the delivery of the project. • The Department requested that Verdant provide a high level assessment of the potential environmental impacts and potential planning pathways of this offsite development and Verdant provided a response in May 2025. • The Department has considered these impacts in its assessment and considers there are viable planning approval pathways for the offsite development.	None required

7 Evaluation

162. The Department's assessment has considered the relevant matters and objects of the EP&A Act, including the principles of ecologically sustainable development (**Sections 3 & 6**), advice from government agencies, local councils and public submissions (**Section 5**), and strategic government policies and plans (**Section 4**).

163. This includes consideration of EIS and supporting documentation, public submissions, agency advice, independent expert advice and additional responses from Verdant to requests for further information.

164. If approved, it is expected the project would contribute to energy security and reliability for NSW by providing up to 151 MW of dispatchable electricity supply.

165. The project would create around 330 FTE jobs during construction and up to 60 FTE jobs during operation and has a NPV of $901 million to the NSW economy across the first 25 years of construction and operation.

166. The key risk for the project is the potential for impacts to human health from air quality emissions from the combustion of biomass. The Department consulted closely with the EPA regarding the assessment of potential risks and recommended conditions and engaged an independent expert to provide additional advice on these assessment matters.

167. The Department's assessment concluded that it is possible for the project to comply with the existing regulatory framework for the management of standard fuels and EWFs that would apply to the operation of the project as enforced by the EPA through the waste regulatory framework, including resource recovery exemptions and orders, and conditions in the environment protection licence for the site. Further, any clearing of INS would require oversight under the LLS Act and *Land Management (Vegetation Code) 2018*, which is currently under review.

168. The Department's assessment has also concluded that emissions from the power station can generally meet the relevant air quality assessment criteria.

169. Verdant addressed all issues raised by key government agencies including the EPA and addressed all key issues identified by the independent expert for this stage of the project.

170. Risks related to the use of EWFs would be minimised through the strict existing regulatory requirements, Verdant's proposed mitigation measures and the Department's recommended conditions which would ensure the origin, composition and consistency of the fuels meets relevant criteria to pose a low risk to human health during combustion.

171. Some commercial risks related to the ability of Verdant to obtain the required quantities and quality of feedstock were identified during the assessment process. These risks must be managed by Verdant to achieve an economically viable project. The established regulatory framework and recommended conditions of consent would ensure risks to the environment and human health are low irrespective of commercial factors.

172. Air emissions would be closely regulated under the existing EPL for the site, which would be varied for the project to include specific air quality criteria and monitoring requirements.

173. Given the project involves the conversion of the fuel type for an existing power station, other environmental impacts are generally minor and/or manageable under the proposed mitigation measures.

174. The Department has recommended a range of conditions to manage any residual environmental impacts.

175. Overall, the Department's assessment concludes that the project would result in benefits to the State of NSW and considers the project is in the public interest. As such the Department concludes that the project is approvable subject to conditions.

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Appendices

Appendix A – List of referenced documents

A1 – Environmental Impact Statement: Refer to folder "EIS" under the "Assessment" tab on the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/projects/restart-redbank-power-station

A2 – Response to Submissions: Refer to folder "Response to Submissions" under the "Assessment" tab on the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/projects/restart-redbank-power-station

A3 – Additional Information: Refer to folder "Additional Information" under the "Assessment" tab on the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/projects/restart-redbank-power-station

Appendix B – Submissions and government agency advice

B1 – Agency Advice: Refer to folder "Agency Advice" under the "Assessment" tab on the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/projects/restart-redbank-power-station

B2 – Public Submissions: Refer to "Submissions" tab on the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/projects/restart-redbank-power-station

Appendix C – Additional information

Available under the 'Additional Information' heading on the 'Assessment' tab on the Department's website at: https://www.planningportal.nsw.gov.au/major-projects/projects/restart-redbank-power-station

Table 12 | Objects of the EP&A Act and how they have been considered

Request	Response
RFI – Residual Heritage Advice **July 2024**	Submissions No 2 Report Submissions No 2 Report – Heritage Addendum

Request	Response
	August 2024
RFI – Terms of Planning Agreement **August 2024**	Response to RFI – Terms of Planning Agreement May 2025
RFI – Independent Review **RFI – Independent Review Report** **December 2024**	Response to RFI - Independent Review February 2025
RFI – Intersection upgrade and offsite infrastructure **April 2025**	Response to RFI - Intersection upgrade and offsite infrastructure Attachment 1 - Ason Group Letter May 2025
RFI - Independent Merit Review of Verdant Response **May 2025**	Response to RFI - Comment on Final Merit Review May 2025
Minor RFI – Consultation with CASA **May 2025**	Response to RFI – Consultation with CASA

Appendix D – Statutory considerations

Objects of the EP&A Act

A summary of the Department's consideration of the relevant objects (found in section 1.3 of the EP&A Act) are provided in Table 13 below.

Table 13 | Objects of the EP&A Act and how they have been considered

Object	Consideration
(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and	• The project would provide ongoing socio-economic benefits to the people of NSW through contributing to energy reliability and

Object	Consideration
conservation of the State's natural and other resources,	ongoing employment opportunities during construction and operation. • Consideration has also been given to the environmental features at the project site with appropriate conditioning of the project to avoid, minimise and offset impacts.
(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,	• The Department considers that the project can be carried out in a manner that is consistent with the principles of ecologically sustainable development. The Department's assessment has sought to integrate all significant environmental, social and economic considerations. Consideration of the key principles and programs of ecologically sustainable development is detailed below: Precautionary principle • The Department has assessed the project's threat of serious or irreversible environmental damage and considers that there is sufficient scientific certainty regarding environmental impacts and residual risks to enable determination of the application. • The EIS contains a number of specialist environmental impact assessments and a number of construction and operation measures to mitigate or manage potential impacts. • The Department considers that the recommended conditions can provide an appropriate level of protection to environmental values in the region. Inter-generational equity • The Department recognises that the NSW energy market is in a state of transition from one dominated by coal-fired power stations to a renewable energy mix. Whilst this transition is being fuelled by investment in renewable energy

Object	Consideration
	zones and increased battery storage systems, gas-fired power stations are still required to play a crucial role in firming the State's electricity supply. Conservation of biological diversity and ecological integrity • The project's potential impacts on biodiversity were considered as part of the Department's assessment of the project. As described in **Section 6.3**, the Department considers the project to be continuing development with minimal biodiversity impact. Improved valuation, pricing and incentive • The Department has recommended performance-based conditions where possible, to provide incentive to the applicant to achieve environmental outcomes and objectives in the most cost-effective way.
(c) to promote the orderly and economic use and development of land,	• The project is located on land zoned RU1 Primary Production in the Singleton LEP and development for the purposes of energy generating facilities is permitted with consent in this zone. The project would utilise existing infrastructure with additions and modifications.
(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,	• The Department considers that the project has been designed to minimise environmental and biodiversity impacts as much as practicable by utilising land already used for energy generating facilities.
(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),	• The Department considers that the modification presents a negligible impact to built and cultural heritage by utilising land already used for energy generating facilities.

Object	Consideration
(g) to promote good design and amenity of the built environment,	• The project would be located on land already used for energy generating facilities and would suit the existing built environment.
(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,	• The Department notified and consulted with Singleton Council and NSW government authorities throughout the assessment of the modification and carefully considered all responses in its assessment.
(j) to provide increased opportunity for community participation in environmental planning and assessment.	• The Department publicly exhibited the proposal and requested community submissions (see **Section 5**). All community submissions have been considered by the applicant and the Department during the assessment process.

Environmental Planning Instruments (EPIs)

Under section 4.15 of the EP&A Act, the consent authority is required to consider, amongst other things, the provisions of the relevant EPIs, including any exhibited draft EPIs. The Department notes the applicant's consideration of these instruments in its EIS (see section 4.6 of the EIS) and has undertaken its own consideration of the project against the applicable provisions of relevant EPIs.

Singleton Local Environmental Plan 2013

The project is located in the Singleton LGA. All subject land is within an area zoned RU1 Primary Production under the *Singleton Local Environmental Plan 2013*.

The project is permissible with consent in this zone.

State Environmental Planning Policy (Planning Systems) 2021

The project is declared to be State significant development under section 4.36 of the EP&A Act as it satisfies the criteria under section 2.6(1), as specified in section 7 of Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021.

In accordance with section 4.5(a) of the EP&A Act, the Independent Planning Commission is the consent authority for the project as there were more than 50 unique public submissions.

State Environmental Planning Policy (Resilience and Hazards) 2021

Hazardous and offensive development (chapter 3)

Chapter 3 of this SEPP requires persons proposing to carry out development for the purposes of potentially hazardous industry to prepare a Preliminary Hazard Analysis (PHA) and to submit this with the development application. The EIS (see section 17 of the EIS) and Appendix W of the EIS have considered the potential hazards and risks associated with the project.

With the proposed measures in place, the Department considers that the potential hazards associated with the project can be managed. The Department considers that the project would not increase risks to public safety.

Remediation of land (chapter 4)

The EIS (see section 15 of the EIS) and Appendix U of the EIS have considered the potential land contamination matters associated with the project. The project site was undeveloped bushland prior to the construction of the Redbank Power Station and therefore no other potential sources of contamination were identified, other than the use of the site as a power station.

The Department considers that the project does not have a significant risk of causing contamination and that the land is suitable for the proposed use.

State Environmental Planning Policy (Transport and Infrastructure) 2021

This SEPP requires the consent authority to notify relevant public authorities about developments that may affect public infrastructure or public land.

The Department has consulted with relevant NSW government authorities and considered the matters raised in its assessment of the project (see **Section 5.2.2**). Where appropriate, the Department has also developed conditions of consent to address the recommendations and advice of these authorities. The Department considers that such conditions would provide appropriate protection for public infrastructure.

Appendix E – Recommended instrument of consent

Refer to folder "Recommendation" under the "Assessment" tab on the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/projects/restart-redbank-power-station