

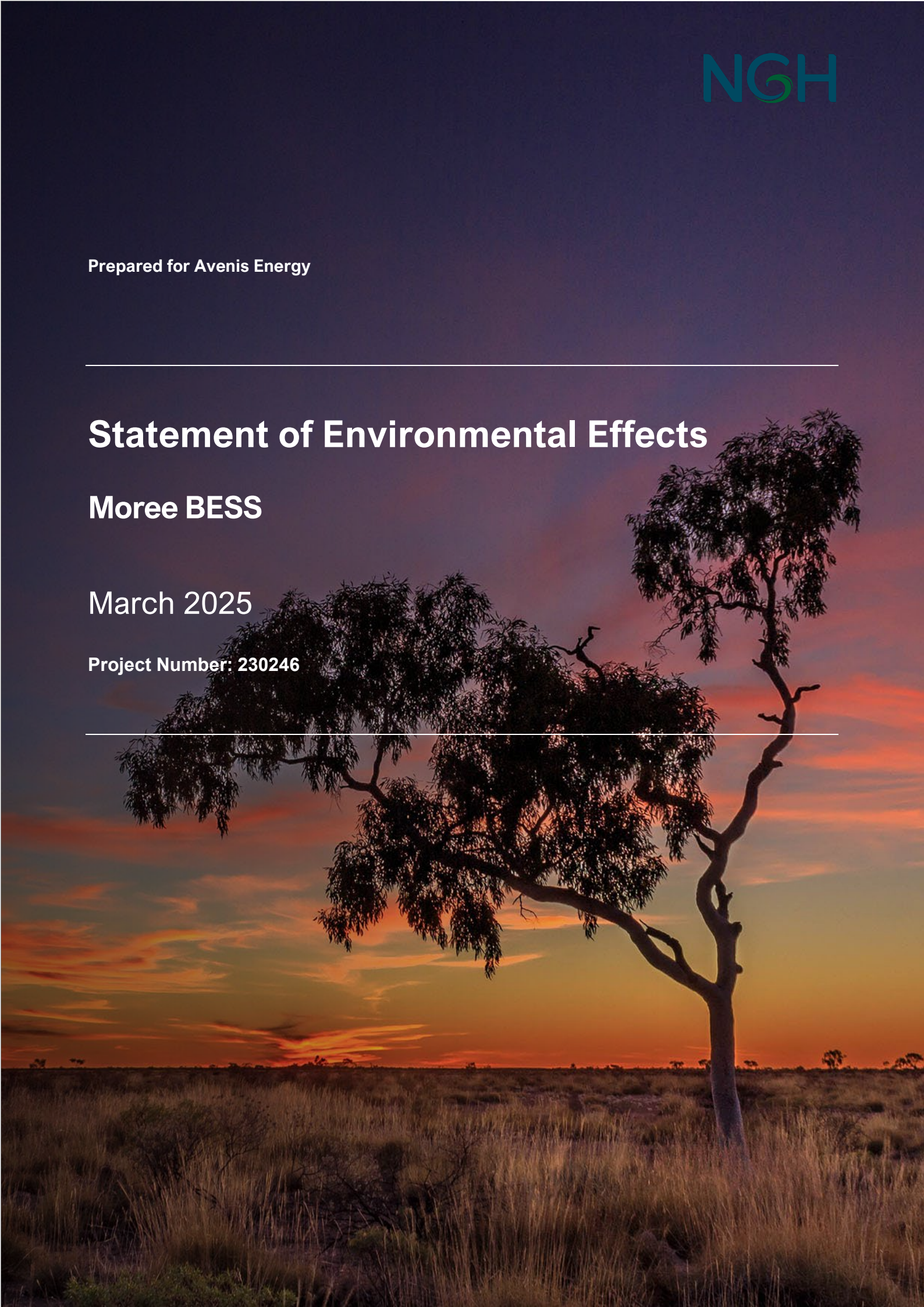
Prepared for Avenis Energy

Statement of Environmental Effects

Moree BESS

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Acronyms and abbreviations

AHIMS	Aboriginal Heritage Information Management System
APC	Activation Precinct Certificate
APZ	Asset Protection Zone
BC Act	<i>Biodiversity Conservation Act 2016 (NSW)</i>
BESS	Battery Energy Storage System
DA	Development application
DPHI	Department of Planning, Housing and Infrastructure
EIS	Environmental impact statement
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
ha	hectares
km	kilometres
LEP	Local Environment Plan
LFP	Lithium-ion phosphate
MPSC	Moree Plains Shire Council
MW	Megawatt
PBP	Planning for Bushfire Protection 2019 (NSW Rural Fire Service)
PHA	Preliminary Hazard Analysis
Regional Precincts SEPP	State Environmental Planning Policy (Precincts—Regional) 2021
Resilience and Hazards SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
RGDC	Regional Growth NSW Development Corporation
SAP	Special Activation Precinct
SEE	Statement of Environmental Effects

1. Introduction

1.1. Overview

This Statement of Environmental Effects (SEE) has been prepared to support a Development Application (DA) seeking the Department of Planning, Housing and Infrastructure (DPHI) consideration of a proposed 120MW/480MWh lithium-ion phosphate (LFP) Battery Energy Storage System (BESS) at Bulluss Drive, Moree (the proposal).

The BESS would connect to the national electricity market (NEM) via Transgrid's 132kV Moree Bulk Supply Point substation, located immediately to the north of the development site (leased developable area). The connection to the substation would be via underground transmission line and subject to Transgrid requirements.

The proposal would include the following:

- Approximately 140 battery containers, containing LFP technology.
- Approximately 42 skid-mounted Power Conversion Systems (PCS) comprising of; the inverters, which convert direct current (DC) to alternating current (AC); the medium-voltage transformer, which converts the inverter output voltage to the medium-voltage of the system (33 kilovolt); and the medium voltage switchgear, which contains the medium voltage circuit breakers and disconnectors for the PCS.
- A 33kV switch room, which collects all the individual medium voltage cables from the PCS units in one location, before connection to the high-voltage transformer. Auxiliary power is supplied from a low-voltage room, which is connected to the medium-voltage switch room. Underground cables would connect the switch room, power conversion units and batteries, to allow for easy access and minimal disruption (if access is required).
- A high voltage substation containing the 33/132kV transformer accompanied by harmonic filters.
- A control room, which will contain battery-monitoring equipment, allowing operators to control the plant remotely.
- A short underground transmission cable which would connect the proposed BESS to the adjacent Moree substation. The connection type would be subject to Transgrid requirements.
- Associated ancillary infrastructure, including:
 - Operations and Maintenance (O&M) building
 - Auxiliary low-voltage transformers
 - Ancillary storage
 - Staff amenities
 - Sewerage holding tank
 - On-site car parking
 - A water tank
 - Internal access tracks
 - Security fencing
 - Onsite drainage infrastructure.

1.2. Subject land and locality, site selection and design

The proposed development sits within the Moree Special Activation Precinct (SAP), in effect under the State Environmental Planning Policy (Precincts—Regional) 2021, Chapter 3 Activation Precincts. The Moree SAP is located in the far north of NSW and known for its productive soils. In December 2019, the Moree SAP was announced, followed by the adoption of the Master Plan and Delivery Plan in 2022. The Moree SAP currently comprises of mostly industrial and agri-industrial development, with a focus on stimulating further growth in these areas.

The proposed development relates to land described as Bulluss Drive, Moree. The subject land (the full area of all involved lots) comprises Lot 82 DP 751780 and part of Lot 144 DP751780 and Lot 1 DP 999486, which total 17.58 hectares (ha) of privately-owned land. The area to be developed (referred to herein as the development site) would comprise approximately 4.06 ha. The subject land as viewed from Bullus Drive is shown in Figure 1-1.



Figure 1-1 View of the proposed development site from Bulluss Drive (Source: NGH, 2024)

The subject land is currently undeveloped. It is devoid of stands of remnant vegetation. An existing borrow pit turned farm dam is present in the north-western portion. As indicated above, the subject land is adjacent to the Moree Bulk Supply Point substation and fronts Bullus Drive.

Moree Regional Airport is located approximately 1km south-west. The Inland Rail corridor and the Newell Highway are about 300m west of the site. Grain storage and rail associated infrastructure are the closest developments to the site. General industrial development, such as metal fabrication, concrete manufacture

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and vehicle associated industry, is located to the south around Industrial Drive and to the north, beyond the rail corridor, along James Street. The Gwydir Thermal Pools Motel and Caravan Park is located around 400m west.

The proposed development site was selected based on analysis of landscape and topographical conditions, biodiversity values, agricultural values, distance from sensitive receivers and urban areas, compatible land use conditions, access to the electricity grid network, access to the road network, and the absence of hazards.

The design has been further analysed and adapted as necessary as part of the preparation of this DA, consistent with the findings of associated supporting studies to avoid and minimise the environmental effects of the proposal.

The development site and surrounds are shown in Figure 1-2 and the site is shown in Figure 1-3.



LEGEND

- Subject Land
- BESS Development Site
- Construction Extent
- Moree SAP
- Roads

Datum: GDA2020 / MGA Zone 55

Ref: 230246 Moree BESS Planning | Location of Moree SAP Author: Martin Wyburn Date created: 07.02.2025 © NGH 2025 © ESRI 2022



LEGEND

-  Subject Land
-  BESS Development Site
-  Construction Extent
-  Lot Boundaries
-  Roads
- Waterways**
-  1st order stream

Datum: GDA2020 / MGA Zone 55

1.3. Applicant and land ownership

Avenis Energy on behalf of **AE BESS 2 Pty Ltd as Trustee for AE BESS 2 Unit Trust** (the applicant) intends to develop the proposed Battery Energy Storage System (BESS) at Bulluss Drive, Moree.

Avenis Energy was founded in 2023 and is committed to developing quality renewable and battery energy storage projects. The team has been working together since 2018 and established an independent, management owned, Australian business in 2023. Avenis have a deep sector knowledge in Australian renewable energy generation, transmission and storage and a proven track record of developing high quality deliverable projects.

The Avenis team of experts are dedicated to developing large-scale renewable energy projects that deliver clean, green energy into our transmission network, reducing our reliance on fossil fuels and helping mitigate climate change.

The landholder is Bundaburrah Pty Ltd. Landholder consent for this application is provided, signed by company directors BR Bourke and DF Bourke.

1.4. SEE structure and supporting plans and documents

This SEE has been prepared by NGH Pty Ltd (NGH) on behalf of Avenis Energy.

This SEE has been informed by design plans and reports prepared by NGH and other specialist consultants.

This SEE:

- Describes the proposed works, the development site, and the wider locality.
- Describes the planning context and statutory approval requirements.
- Identifies and assesses the effects on environmental values.
- Provides mitigation measures to avoid, minimise or mitigate identified impacts.

This SEE shall be read with the accompanying plans and documentation listed in Table 1-1.

Table 1-1 Accompanying plans and documents

Appendix	Title/Description	Prepared by
A	Development design plans	WSP
B	Utilities Demand Report	NGH
C	Noise Assessment	Renzo Tonin
D	Preliminary Hazard Analysis	Pando Consulting
E	Bushfire Impact Assessment	Ember

F	Traffic Impact and Haulage Assessment	Amber Organisation
G	Windshear Assessment	NGH
H	Landscape Plan	Moir Landscape and Architecture
I	Waste Management Plan	NGH
J	Stormwater Management Plan	WSP
K	Flood Statement	Cumulus
L	Statement of Consistency	NGH
M	Consultation evidence	NGH

1.5. Legislative context (summary)

The subject land is in the Moree Special Activation Precinct (SAP), according to the State Environmental Planning Policy (Precincts—Regional) 2021 (Regional Precincts SEPP).

Under the provisions of the Regional Precincts SEPP, the land is zoned Regional Enterprise. Electricity generating works as defined, which is inclusive of energy storage, are permitted with consent in the zone. Where development requires consent in the SAP, the consent authority is the Planning Secretary (Department of Planning, Housing and Infrastructure (DPHI)). The proposed development would contribute to achievement of the zone objectives.

According to the Regional Precincts SEPP, the State Environmental Planning Policy (Planning Systems) 2021 does not apply in a SAP, i.e. development does not trigger the respective requirements for Regionally Significant Development and State Significant Development. Furthermore, the proposed development is not categorised as Designated Development according to schedule 3 section 50 of the EP&A Regulation.

An Activation Precinct Certificate (APC) has been obtained for the proposed development in accordance with the provisions of the Regional Precincts SEPP (APC 285 dated 2 October 2024).

The SEPP also requires the consent authority to have regard to the Master Plan and Delivery Plan and the zone objectives when determining a DA. A Statement of Consistency with the Moree SAP Master Plan and Delivery Plan has been prepared to demonstrate consistency, having regard to the permissibility of the development, the proposed land use, development design, and site constraints, and is further detailed in Section 4.2.4.

Additional legislation relevant to the proposed development includes the State Environmental Planning Policy (Resilience and Hazards) 2021. Compliance is achieved via the provision of a Preliminary Hazard Assessment (PHA) undertaken in accordance with clause 3.11 and 3.12 of the SEPP.

2. Proposed development

2.1. General overview

The applicant intends to develop a 120MW/480MWh lithium-ion Battery Energy Storage System (BESS) at Bulluss Drive, Moree. The BESS would connect to the national electricity market (NEM) via Transgrid's 132kV Moree Bulk Supply Point substation, located immediately to the north of the development site. The connection to the substation would be via underground transmission cable and subject to Transgrid requirements.

2.2. Proposed development (summary table)

Key features of the proposed development are summarised in Table 2-1 below, with design plans provided as Appendix A. Note that component specifications are subject to further detailed design and final product selection subject to rapid technological improvements.

Table 2-1 Summary of features of the development

Key Elements	Description
Subject land	Lot 82 DP 751780 and part of Lot 144 DP751780 and Lot 1 DP 999486 (17.58ha) Development site – 4.06ha
Battery Containers	Lithium-ion phosphate batteries (LFP) 140 x 20ft containers
Power Conversion Systems (PCS)	42 x PCS (Skid Mounted)
Switch room	33 Kilovolt (kV)
High voltage on-site substation	High voltage transformer and harmonic filters
Control Room	Contain battery-monitoring equipment and allows operators to control the plant remotely
Connection transmission line	A short underground transmission line which connects the proposed BESS to a new or existing 132kV bay at the neighbouring Moree Bulk Supply Point substation.

Ancillary infrastructure	<ul style="list-style-type: none"> • Bunding. • Construction laydown areas. • Drainage. • Fencing and landscaping. • Internal access tracks. • Security fencing. • On-site car parking. • Operations and maintenance (O&M) building. • Ancillary storage. • Staff amenities. • Underground cables connecting site infrastructure • Auxiliary low-voltage transformers • Water tank; and • Pumpable sewerage holding tank.
Fencing	2m high

2.3. Construction phase

The construction phase is expected to last approximately 6-12 months. The main construction activities would include:

- Site establishment and construction of temporary facilities (fencing, ground preparation, upgrade of existing access points, preliminary civil works, and drainage, weed management).
- Construction of BESS and Power Conversion System (PCS) foundations
- Installation of module components
- Sand trenching
- Installation of underground cabling and new overhead powerline as required.
- Installation of substation and switching equipment
- Construction of ancillary buildings and structures
- Landscaping
- Testing and commissioning
- Removal of temporary construction facilities and rehabilitation of disturbed areas.

Temporary facilities established at the site during the construction phase would generally include:

- Material laydown areas.
- Construction site offices, generator and skip bins with wind shield and lid.
- Vehicle parking areas for construction workers.
- Staff amenities (portable toilet/s).
- CCTV at construction compound.
- Waste management areas.

Temporary staff amenities would be designed to accommodate the proposed maximum number of workers simultaneously at the site at the peak of the construction period.

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The management of waste during the construction phase would observe the objectives of the *Waste Avoidance and Resource Recovery Act 2001*.

Construction wastes would include:

- Packaging materials.
- Excess building materials, scrap metal and cabling materials.
- Masonry products, including concrete wash.
- Excavation of topsoils and vegetation clearing.
- Bio wastes facilities, hired from portable WC providers.

Waste produced during construction would be disposed of at an appropriately licensed waste facility. In accordance with the POEO Act and associated waste classification guidelines, most waste would be classified as building and demolition waste within the class general solid waste (non-putrescibles).

Ancillary facilities in the site compound would produce sanitary wastes classified as general solid waste (putrescibles) in accordance with the POEO Act. Toilet hire and maintenance services would be employed to remove or pump out sanitary wastes on a regular basis. This would not be discharged to the land.

2.4. Permanent infrastructure

2.4.1. BESS containers

LFP Battery modules would be within a container as shown in Figure 2-1. The container would be approximately 6058mm wide, 2438mm deep and 2986mm high. They would be anchored to a concrete footing and would have an individual capacity of 4073.47kWh. there would be a total of around 140 such containers within the development site.



Figure 2-1 Example of BESS module

2.4.2. Power conversion systems

These systems contains inverters which convert direct current (DC) to alternating current (AC); the medium-voltage transformer, which converts the inverter output voltage to the medium-voltage of the system (33 kilovolt); and the medium voltage switchgear, which contains the medium voltage circuit breakers and disconnectors for the PCS.

There are 42 PCS distributed throughout the development site. Three BESS containers are connected to each PCS via underground cables and all PCS are connected to switch room via 33kv underground cables.

2.4.3. Substation/transformers/switching station

A 33kV switch room, which collects all the individual medium voltage cables from the PCS units in one location, before connection to the high-voltage transformer. Auxiliary power is supplied from a low-voltage room, which is connected to the medium-voltage switch room. An on-site substation would be separately fenced within the facility and contain the 33kV/132kV transformer (HV transformer) to step the voltage up to the level of the substation. This high voltage transformer would be connected to the 33kV switch room via an underground cable. Accompanying the HV transformer would be the harmonic filters responsible for ensuring the voltage supplied to the grid is within the necessary range of the broader network.

2.4.4. Onsite cabling, distribution line and external connection

The onsite cabling would consist of buried medium voltage AC cabling and low voltage DC cabling as well as the outgoing 132kV high voltage cabling that will connect the BESS to the substation. They would be at least 800mm below ground surface as shown in Figure 2-2.

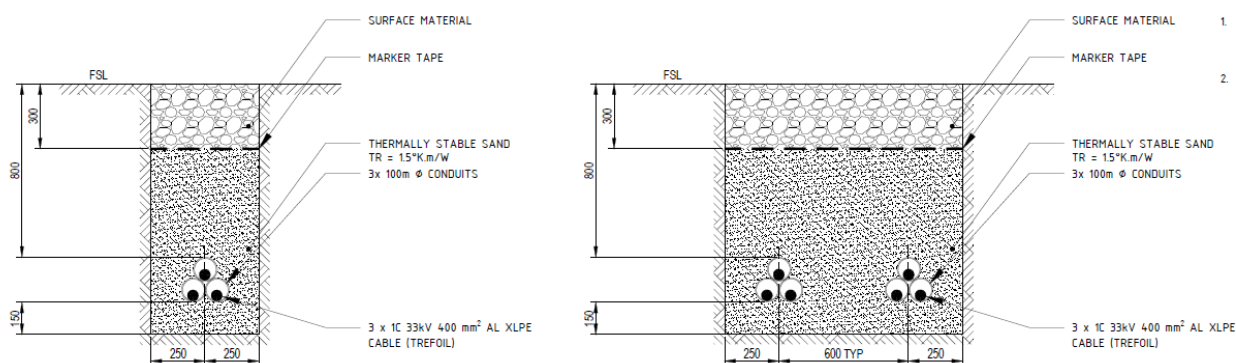


Figure 2-2 Typical cross section of 33kV underground cable

2.4.5. Connection to the Moree Bulk Supply Point Substation

A short underground transmission cable would connect the proposed development to the adjacent Moree Bulk Supply Point Substation. The connection type will be subject to Transgrid's requirements and involve termination at either an existing 132kV bay or a newly constructed 132kV bay on the 132kV Transgrid busbar.

As part of this connection, Transgrid would be responsible for the following works within their land:

- Construction of either an 132kV bay or preparation of an existing 132kV bay to facilitate the integration of the BESS within the substation infrastructure.

- Installation of associated secondary high-voltage equipment required for the selected connection option, ensuring compliance with Transgrid's technical and operational standards.
- Execution of any necessary civil works to support the bay construction or modification, including foundation works, trenching, and structural reinforcements as required.
- The final design and scope of these works will be determined in coordination with Transgrid's technical and regulatory requirements.

2.4.6. Perimeter fencing and security CCTV

Fencing installed around the site perimeter would be approximately 2m high. Infra-red security technology and CCTV cameras may be installed on posts to a height of approximately 2m around the perimeter fence and along the internal access road.

2.5. Materials, machinery and water use

Construction materials would be sourced locally wherever possible. Gravel would be imported to surface hardstand areas and access road. Sand would be required for the bedding of underground cables. Concrete would be required for the switching station equipment, BESS, PCS, and transformer foundations.

Approximately 2ML of water would be required during construction, mostly for dust suppression, but also for cleaning, concreting, on-site amenities. Water would be sourced from a council approved standpipe and stored in temporary tanks if needed. Additional water would be stored for firefighting purposes in a prefabricated non-combustible storage tank of no less than 200kL, exceeding the requirements of the Planning for Bush Fire Protection Guideline 2019 (PBP) (RFS, 2019). Water for the tank will be captured rainwater or trucked to site. It is not proposed to connect the site to town water mains.

During operation, the development would require approximately 50kL of potable water for the proposed operations and maintenance (O&M) building. Bottled water will be supplied for the O&M building. Approximately 30kL of non-potable water would be needed for landscape establishment activities in the initial stages. Water for landscaping will be drawn from the 200kL storage tank and replenished as required to maintain the minimum 20kL requirements for firefighting. As with the construction period, it is not proposed to connect the site to town water mains,

Refer to Appendix B for a Utilities Demand Report. Performance Criteria (PC) 21 of the SAP Delivery Plan requires the applicant to address adequate services and development sequencing. However, is not applicable to the proposed development given the temporary facilities provided for construction, limited operational staff, and no connection to council-maintained water supply, sewerage, and stormwater. Gas and telecommunication connections are also not a requirement of the Project, with electrical connection approved by TransGrid.

Indicative machinery/plant potentially in use at any one time across the site, are:

- Telehandler forklift
- Crane
- Padfoot roller
- Dump truck
- 30t excavator
- Water truck

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- Bobcat tracked
- Scraper for topsoil stripping
- Grader (access track construction)
- Smooth drum roller (access track construction)
- 15t excavators for shallow trenches

2.6. Personnel and work hours

At the peak construction period, the proposed development is expected to require approximately 80 workers. Where workers are non-local, they would be encouraged to use accommodation within the local area.

Construction activities would be undertaken during standard construction hours:

- 7.00 am to 6.00 pm Monday to Friday,
- 8.00 am to 1.00 pm on Saturdays.
- No work on Sundays or public holidays

Construction activities would be restricted to the hours indicated above, construction required outside of these hours would only be undertaken with prior approval from relevant authorities and in accordance with the development's Construction Management Plan, or in the event of emergency circumstances i.e., to make work safe.

2.7. Operations

Once operational, the BESS would operate on a continuous basis; recharging when supply is high, and energy prices are low and discharging when demand and energy prices are high. The BESS also has other ancillary functions and benefits such as providing system strength and stability to the electrical network.

There would be 5 permanent staff members on site to take care of the operation of the BESS during workdays and it can be automated/remotely operated outside of work hours. The battery component of the proposal would need to be replaced every 10-15 years. The BESS would be operational for 20-25 years after which it would either be decommissioned or refurbished.

As detailed above, bottled water would be supplied for the O&M building for staff. It is not proposed to connect the site to town water mains.

The discharge of wastewater and sewerage is not proposed. The O&M building would be connected to a suitably sized tank, which would be pumped out periodically and disposed of off-site by a licensed contractor. Hygiene facilities (i.e. non-potable water for hand washing) would be served by the 200kL storage tank, and replenished as required.

2.8. Decommissioning

The timeframe for decommissioning to be carried out would be approximately 12 months. This would include the following key activities:

- Contractor mobilisation.
- Uncoupling of connections and cabling.
- Sorting and stockpiling materials and components for off-site recovery, recycling, disposal.

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- Removal of BESS components including containerised batteries, power conversion stations off-site for processing and resource recovery/recycling.
- Removal of internal roads, footings, slabs and concrete pads and reinstatement.
- Removal of underground cabling and reinstatement.
- Removal of ancillary buildings and structures.
- Minor land shaping to return the site to a suitable state for agriculture to recommence or for the land to be developed for a new purpose in the Regional Enterprise Zone.

2.9. Justification for the proposed development

Table 2-2 Meeting Special Activation Precinct Goals and Vision (NSW Government RGDC, 2022)

Objective and description	How the development meets these targets
<p>Sustainability</p> <p><i>Meeting key United Nations' Sustainable Development Goals (SDGs).</i></p>	<p>The proposed development would be well-aligned with the sustainability goals for the precinct as it would more effectively use daytime excess solar-generated energy in the NEM. This would be advantageous for the Moree SAP, given its focus on agri-industrial development which is likely to generate large electricity demands; however, will also have wider benefits for the NEM with storage off energy and release during peak consumption times.</p> <p>Increased storage capacity across NSW also supports additional renewable energy projects around NSW by reducing production curtailment and in turn turn helps achieve the net zero targets by 2050.</p>
<p>Circular economy</p> <p><i>Circular economy design principles are at the heart of our precincts focused on driving resource efficient outcomes. We partner with businesses to identify opportunities to co-locate and provide support to achieve sustainable outcomes.</i></p>	<p>The proposed development would be carried out in the Regional Enterprise Zone and is consistent with the zone objectives and desired vision for the SAP.</p> <p>The BESS would also provide a notable support function to industrial development and renewable energy generators that are envisioned for the SAP. It is a desirable and productive use of the land for this infrastructure, specifically providing storage of electricity and grid stability in an area that aims to support high intensity industrial development such as manufacturing. This will achieve resource efficient outcomes, in alignment with the SAP objectives.</p> <p>Due to the highly specialised equipment used, conventional circular economy streams are unlikely</p>

	to eventuate; however, recycled components are incorporated into the manufacture of the equipment and at the end of their operational life, recyclable components are again extracted and waste minimised.
<p>Strategic Partnerships</p> <p><i>Partnerships will be prioritised based on the impact and scalability they have on achieving precinct objectives including job creation, economic uplift, and sustainability.</i></p>	<p>The project is considered a desirable partner of the precinct as it will improve the use of renewable energy in the precinct by the target agri-industrial industries and help to achieve the precinct vision around sustainability and resource efficiency.</p> <p>The proposed development is consistent with the social objectives of the SAP centred on driving economic growth and job creation in the area.</p>
<p>Net Zero targets</p> <p><i>The NSW Government's net zero targets are expected to attract more than \$39 billion in private investment and support more than 13,000 jobs by 2035, mostly in regional NSW.</i></p> <p><i>This program will look at best practise net-zero emission initiatives and energy infrastructure that can offer precinct businesses:</i></p> <ul style="list-style-type: none"> • Low cost, green energy options to drive significant energy savings • Shared infrastructure that is reliable and unconstrained as businesses and the precinct grows • Access to onsite renewable energy production and industry electrification opportunities • Improved profitability, social licence, and competitiveness • Increased innovation and investment in low carbon technology • Future proofed low emissions growth • Lower climate risk • Reduced carbon offset liability and cost 	<p>The proposed development will support existing and future renewable energy projects around NSW by capturing the excess power generated and storing for use at the time of peak demand. The BESS would also contribute to grid stability.</p> <p>At present it cannot be guaranteed that the energy supplied to the BESS would be solely from renewable sources, given coal is still the major energy generation source in NSW. However, renewable energy will soon be a major source of power generation in NSW, in alignment with relevant legislation and government strategies. Regardless, it is desirable that any daytime excess electricity in the grid (whether coal, gas or solar generated) is stored for discharge during peak times.</p>
<p>Environmental Management Systems (EMS)</p> <p><i>The system is focused on minimising environmental risk. This will drive competitive advantages for businesses and enable improved environmental</i></p>	<p>As outlined above, the proposed development is considered to provide crucial support to the vision for the SAP to be a carbon neutral precinct, by way of more efficient energy use.</p>

<p><i>performance through more efficient use of resources and reduction of waste.</i></p>	<p>In accordance with the provisions of the Delivery Plan, the proposed development is considered to support and contribute to the principles of the UNIDO framework, by way of contribution of data for the precinct EMS framework (once made publicly available for review by proponents). Alternatively, the proponent would develop an EMS framework for the proposed development specifically, prior to the commencement of works, in accordance with the Delivery Plan requirements.</p>
<p>Skills Pathways</p> <p><i>Each precinct will develop a collaborative network of training and education providers. This network will ensure the local workforce has the skills required to meet the business needs of the precinct.</i></p> <p><i>Our partners include:</i></p> <ul style="list-style-type: none"> • Training Services NSW • TAFE NSW • Local and affiliated universities • Local councils • Regional Organisation of Councils • Local skills providers 	<p>The proposed development would provide employment opportunities to several hundred construction workers, including 80 on-site simultaneously during the peak construction period. During operation, the BESS would employ approximately 5 staff members with technical background in electrical engineering.</p> <p>The Applicant proposed a monetary contribution of \$100,000.00 per annum plus CPI paid for a period of 20 years to Moree Plains Shire Council (MPSC) via an agreed Voluntary Planning Agreement (VPA). The project EDC is calculated at \$202 million, therefore the VPA is equivalent to approximately of 1% development cost. As part of the VPA, a portion of this contribution will go to training and education services for the LGA.</p>
<p>Innovation</p> <p><i>We will enable innovation between industry, investors, government, and researchers to realise competitive advantages, sustainability goals, and productivity of precincts.</i></p>	<p>The proposed development would be consistent with the proposed directions and recommendations of the Renewable Energy Report (Arcadis, 2021). Given the adopted target of 100% renewable energy reliance for the Moree SAP, it is considered BESS would be crucial in providing support to renewable energy sources, providing grid support services which are noted to be an issue, better managing the potential for excess renewable energy in the grid, and shifting this to cover the energy needs of industrial development in the SAP which would likely extend outside the coverage provided by peak renewable energy production hours.</p>

<p>Aboriginal outcomes</p> <p><i>The precincts will prioritise partnerships that broaden Aboriginal outcomes and participation for organisations, businesses and communities. This will create employment and education opportunities and embed local Aboriginal culture and their connection to Country across the precincts.</i></p>	<p>The proposed development avoids areas of Aboriginal cultural heritage identified in the Master Plan and Delivery Plan.</p> <p>At the peak construction period, the project is expected to require approximately 80 workers and several hundred across the construction, operations and decommissioning phase. This will provide employment and education opportunities for locals, where possible, including those identifying as Indigenous.</p>
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3. Environmental Analysis

3.1. Subject land

The subject land comprises Lot 82 DP 751780 and part of Lot 144 DP751780 and Lot 1 DP999486, which total 17.58 hectares (ha) of privately-owned land. The development site would comprise approximately 4.06 ha. The subject land is currently undeveloped. It is devoid of stands of remnant vegetation. An existing borrow pit turned farm dam is present in the north-western portion.

3.2. Site analysis and surrounds

The proposed development sits within the Moree Special Activation Precinct (SAP), located in the far north of NSW. The Moree SAP currently comprises of mostly industrial and agri-industrial development. The subject land is adjacent to the Moree Bulk Supply Point substation and fronts Bullus Drive. One first order Strahler stream passes through the northeastern side of the subject land. At closest, this stream is mapped to be at least 260m from the development site. Closest residential receiver is located approximately 420m west of the development site.

The site is close to major transport nodes. Newell Highway is on the western side of the development site and is only at a short distance to the Highway from the development site via Bulluss Drive.



Figure 3-1 View of proposed development site and neighbouring Moree Bulk Supply Point substation from Bulluss Drive (Source: NGH, 2024)



Figure 3-2 View of development site and neighbouring area from eastern boundary (Source: NGH, 2024)



Figure 3-3 View of proposed development site from south west corner (Source: NGH, 2024)



Figure 3-4 View Moree Bulk Supply Point substation from Bullus Drive looking north-west (Source: NGH, 2024)

3.3. Noise

Renzo Tonin and Associates was engaged to conduct a Construction and Operation Noise and Vibration Assessment (NVA) of the proposed BESS. The assessment is attached as Appendix C.

3.3.1. Methodology

Noise and vibration impacts are assessed in accordance with relevant policies, guidelines and standards, including:

- NSW 'Interim Construction Noise Guideline' (ICNG – DECC, 2009)
- NSW 'Noise Policy for Industry' (NPfI – EPA, 2017)
- 'Assessing Vibration: A Technical Guideline' (DECC, 2006)
- NSW 'Road Noise Policy' (RNP – DECCW, 2011).

Background noise varies over the course of any 24-hour period, therefore, the NPfI requires that the level of background and ambient noise be assessed separately for the daytime, evening and night-time periods (to cover a full 24-hour period).

The NPfl defines these periods as follows:

- **Day** is defined as 7:00am to 6:00pm, Monday to Saturday and 8:00am to 6:00pm Sundays & Public Holidays.
- **Evening** is defined as 6:00pm to 10:00pm, Monday to Sunday & Public Holidays.
- **Night** is defined as 10:00pm to 7:00am, Monday to Saturday and 10:00pm to 8:00am Sundays & Public Holidays.

Assessment of potential disturbance from vibration on human occupants of buildings is made in accordance with the EPA's 'Assessing Vibration; a technical guideline' (DECC, 2006). The guideline provides criteria which are based on British Standard BS 6472-1992 'Evaluation of human exposure to vibration in buildings (1-80Hz)'. Sources of vibration are defined as either 'Continuous', 'Impulsive' or 'Intermittent'.

The NVA generally conforms with the requirements of the Moree Special Activation Precinct – Delivery Plan (SAP – Regional Growth NSW Development Corporation, 2022), in particular the noise requirements in Section 6.3.3.3. It is noted that the 'SAP Assessment Framework – NOISE' referred to in the Delivery Plan is not yet publicly available; however, acceptable solutions for noise nominated in the Master Plan/Delivery Plan also draw from the NPfl which the NVA is prepared in accordance with.

3.3.2. Existing environment

The nearest affected receivers were identified through aerial maps and are presented in Figure 3-5.



Figure 3-5 Noise sensitive receivers

The identified receivers surrounding the subject site are all currently classified as rural under NPfl guidelines. This also ensures a conservative assessment of the impacts by adopting the lowest RBLs. Based on Table 2.1 on page 10 of the NPfl, for a conservative assessment the minimum assumed RBLs were adopted for all receiver locations. Therefore, the applicable RBLs use for this assessment are presented in Table 3-1.

Table 3-1 Applicable RBLs, dB(A)

Time of day	Minimum RBLs, dB(A)	Applicable RBLs, dB(A)
Day	35	35
Evening	30	30
Night	30	30

3.3.3. Potential impacts

Construction noise

In accordance with the ICNG, the NIA established the following construction noise management levels. Only day time noise management levels have been included as all construction works would be limited to day time hours. Refer to Table 4-2 and 4-3 in the NIA.

Table 3-2 Construction noise management levels

Location	Project receivers	Description	Relevant Noise Management Level (LAeq15min)
Residential receiver	R18 (caravan park)	35 dB(A) Background Noise Level + 10dB(A)	45 dB(A)
Industrial premises	All others assessed	External noise level	75 dB(A)

Noise levels at any receptors resulting from construction would depend on the above and the type and duration of construction being undertaken. Furthermore, noise levels at receivers would vary substantially over the total construction program due to the transient nature and large range of plant and equipment that could be used. Section 4.2 of the accompanying NIA identifies the typical plant and equipment likely to be used for construction.

Noise emissions were predicted by modelling the noise sources, receiver locations, topographical features of the intervening area, and possible noise control treatments using the CadnaA (version 2023) noise modelling computer program.

The noise prediction models takes into account:

- Location of noise sources and receiver locations;
- Height of sources and receivers;
- Separation distances between sources and receivers;
- Ground type between sources and receivers (soft); and
- Attenuation from barriers (natural and purpose built).

The predicted construction noise levels represent the worst-case scenario where all plant and equipment are operating for each corresponding construction stage. This worst-case scenario would not be typical and is unlikely to occur in practice.

The predicted construction noise levels are detailed in Table 4-5 of the accompanying NIA. Noise assessment indicates that the predicted construction noise levels comply with the construction noise management levels for all receiver locations. The maximum noise levels would be at R1 which would experience <20-55 dB(A) noise levels when up to 3 noisiest plants are operating at the same time. At R18, the only residential receiver within the assessed area, the maximum noise levels experienced when up to 3 noisiest plants are operating at the same time would be <20-44 dB(A).

The predicted noise levels do not exceed the respective construction noise management levels according to the ICNG. The NIA concludes that no further mitigation and/or management measures are required for construction noise.

Operational noise

Noise impact from the general operation of the development was assessed against the NPfl. The assessment procedure has two components:

- Controlling intrusive noise impacts in the short-term for residences; and
- Maintaining noise level amenity for residences and other land uses.

In accordance with the NPfl, noise impact should be assessed against the project noise trigger level, which is the lower value of the project intrusiveness noise levels and project amenity noise levels.

According to the NPfl, the intrusiveness of a noise source may generally be considered acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (represented by the LAeq,15min descriptor) does not exceed the background noise level measured in the absence of the source by more than 5dB(A).

In accordance with the NPfl the NIA established the project noise trigger level, which is the lower (i.e. more stringent) value of the project intrusiveness noise level and project amenity noise level. Refer to Table 5-4 in the NIA.

Table 3-3 Project noise trigger levels (Operational assessment)

Location	Project receivers	Day	Evening	Night
Residential receiver	R18 (caravan park)	40	35	35
Industrial premises	All others assessed	68 (when in use)		

Moree BESS

Operational noise sources for the BESS are outlined in section 5.2 of the accompanying NIA and include the containerised batteries and associated fans/cooling systems, power conversion systems (PCS) and HV transformer.

The noise from the power conversion systems is tonal in nature. Therefore, a 5dB(A) penalty has been applied to the predicted noise contributions from the power conversion systems, in accordance with the definitive procedures of the NPfI related to modifying factor adjustments. Refer to section 5.3 of the accompanying NIA.

Noise emissions were predicted by modelling the noise sources, receiver locations, topographical features of the intervening area, and possible noise control treatments using the CadnaA (version 2023) noise modelling computer program. The noise prediction models takes into account:

- Location of noise sources and receiver locations;
- Height of sources and receivers;
- Separation distances between sources and receivers;
- Ground type between sources and receivers (soft); and
- Attenuation from barriers (natural and purpose built).

Furthermore, standard and noise-enhancing meteorological conditions were adopted as outlined in section 5.4 of the accompanying NIA.

The assessment as shown in Table 5-6 of the NIA (replicated in the table below) indicated that the predicted operational noise levels comply with the project noise trigger levels for all time periods (i.e. over a 24-hour period) for all receiver locations assuming a worst-case operation scenario. As outlined, the scenario accounts for concurrent operation of all the operational BESS plant and equipment, modifying factor adjustments and noise-enhancing meteorological conditions.

The maximum noise levels would be at R2 which would experience 44 dB(A) noise levels when up to 3 noisiest plants are operating at the same time. At R18, the only residential receiver within the assessed area, the maximum noise levels experienced during operations would be 35 dB(A).

The predicted noise levels comply with the project noise trigger levels according to the NPfI. The NIA concludes that no further mitigation and/or management measures are required for operational noise.

Table 3-4 Predicted LAeq,15min Operational Noise Levels at Sensitive Receiver Locations, dB(A)

Receiver	Project Noise Trigger Levels			Predicted Operational Noise levels			Comply? (Yes/No)
	Day	Evening	Night	Calm and isothermal conditions	Slight to gentle breeze	Moderate temperature inversion (night)**	
R1	68 (when in use)			41	42	42	Yes
R2	68 (when in use)			43	44	44	Yes
R3	68 (when in use)			39	40	40	Yes
R4	68 (when in use)			37	38	38	Yes

R5	68 (when in use)			40	41	41	Yes
R6	68 (when in use)			35	37	37	Yes
R7	68 (when in use)			34	36	36	Yes
R9	68 (when in use)			37	38	38	Yes
R15	68 (when in use)			32	34	34	Yes
R18*	40	35	35	33	35	35	Yes
R21	68 (when in use)			34	36	36	Yes

*Residential receiver

**Applicable for nighttime period only

The sleep disturbance assessment determined only mechanical plant would be operating at nighttime. Noise emissions from these plant items were considered to be continuous with no potential for high peak noise level events. Therefore, the LA_{max} noise levels experienced at the identified receivers will be similar to the predicted LA_{eq,15min} noise levels shown in Table 5.5 of the NIA. Hence, it is expected that both the LA_{eq,15min} and LA_{Fmax} noise levels would be well below the nominated sleep disturbance criteria of 40dB(A) and 52dB(A), respectively, for all residential receiver locations.

Vibration impacts

Based on the proposed plant items, vibration generated by construction plant was estimated. The assessment is relevant to the identified receiver locations. The assessment indicates that there is very low risk of structural damage and/or adverse comments on potential vibration impacts for all receiver locations. Refer to section 6 of the NVA for further details.

Road traffic noise assessment

Access to the site will be from Bulluss Drive via Narrabri Road (Newell Highway) which are classified as freeway/arterial road. For existing residences affected by additional traffic on existing arterial roads generated by land use developments, the RNP road traffic noise criteria of 60dB(A) for daytime traffic would apply. Operational traffic would be considerably lower or negligible in comparison to construction traffic associated with the proposed development.

Road noise is predicted at a distance of 20 m from the road based on closest typical distance from the façade of dwelling. The resulting noise level is 52dB(A). It is noted that the predicted noise levels represent the traffic noise contribution from the vehicle movements associated with the construction works and does not take into account traffic noise levels due to existing general traffic flows as existing traffic volumes along Bulluss Drive are unknown.

Traffic noise level contributions from the vehicle movements associated with the construction works are within the applicable noise criteria based on dwellings being at the closest typical distance from the roads.

Furthermore, as the predicted levels are at least 2dB(A) less than the relevant traffic noise criterion, it is not expected that the traffic noise contribution from the construction vehicles would result in an exceedance of the traffic noise criterion and/or increase the existing traffic noise levels by more than 2dB(A).

Therefore, traffic noise levels as a result of the construction works for the project would not adversely contribute to the existing traffic noise levels at the most affected residences along the surrounding roads.

3.3.4. Mitigation measures

Renzo Tonin and Associates found that construction and operational phases of the proposed development are predicted to comply with the nominated criteria at all existing nearest affected receivers.

The following mitigation measures have been proposed to ensure noise and vibration remain within the compliance criteria.

- Establish a complaints procedure, including signage and other means to advertise the contact number regarding complaints. Respond to complaints in a timely manner and keep relevant parties informed of progress.
- Good relations with people living and working in the vicinity of a construction site should be established at the beginning of a project and be maintained throughout the project, as this is of paramount importance. Keeping people informed of progress and taking complaints seriously and dealing with them expeditiously is critical. The person selected to liaise with the community should be adequately trained and experienced in such matters.
- Develop a Noise Management Plan to ensure noise and vibration impacts are minimised during construction and operation phases.

3.4. Fire, ignition and hazards

A Preliminary Hazard Analysis (PHA) has been prepared by Pando Consulting to support the subject application. The PHA has been conducted to comply with the legislative requirements of the State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) and demonstrate that the risk levels associated with the BESS do not impede the approval of the proposed development. Key elements of the PHA are summarised below and the report attached as Appendix D.

3.4.1. Methodology

The methodology undertaken to prepare the PHA includes:

- Identification of the nature and scale of all hazards at the proposed development, and the selection of representative incident scenarios.
- Analysis of the consequences of these incidents on people, property, and the biophysical environment.
- Evaluation of the likelihood of such events occurring and the adequacy of safeguards.
- Calculation of the resulting risk levels of the facility.
- Comparison of these risk levels with established risk criteria and identification of opportunities for risk reduction.

The PHA was prepared in accordance with relevant Departmental requirements including the Hazard Industry Planning Advisory Paper No.6 – Guidelines for Hazard Analysis (HIPAP 6) and Multi-Level Risk Assessment (MLRA).

The PHA also includes a preliminary risk screening in accordance with the Hazardous and Offensive Development Application Guidelines – Applying SEPP 33. The risk screening process considers the type and quantity of hazardous materials to be stored on site as well as the expected number of transport movements. ‘Hazardous materials’ are defined as substances that fall within the classification of the Australian Dangerous Goods Code (ADGC) (i.e. have a Dangerous Goods (DG) classification). Detail of the DG classification is obtained from the materials’ Safety Data Sheet (SDS).

3.4.2. Potential impacts

Preliminary Hazards Assessment

The proposed development comprises 140 CATL EnerC+ containerised liquid-cooled battery system containers. Each container consists of 40 modules with 104 LFP battery cells with high thermal stability per module. Each container also consists of fire protection system and integrated liquid cooling system (ethylene glycol aqueous solution). In accordance with NFPA 855 14.3.2.2, the containerised BESS would be designed to include a 2-hour fire resistance rating, a fire alarm system, and an automatic sprinkler system.

Additional design safeguards include:

- Emergency stop
- Ground fault detection
- Manual Service Disconnect (MSD) switch
- Overcurrent protection
- Battery module isolation loss alarm
- Battery Management System (BMS).

Separation distance may be the most effective control to reduce the likelihood and consequence of fire propagation should a thermal runaway event occur. The separation distances for the BESS include:

- Ten-metre-wide asset protection zone (APZ)
- Minimum clearance of 3.5m between pairs of containers (refer to Figure 3-6)
- Minimum clearance of 0.2m between back-to-back containers.

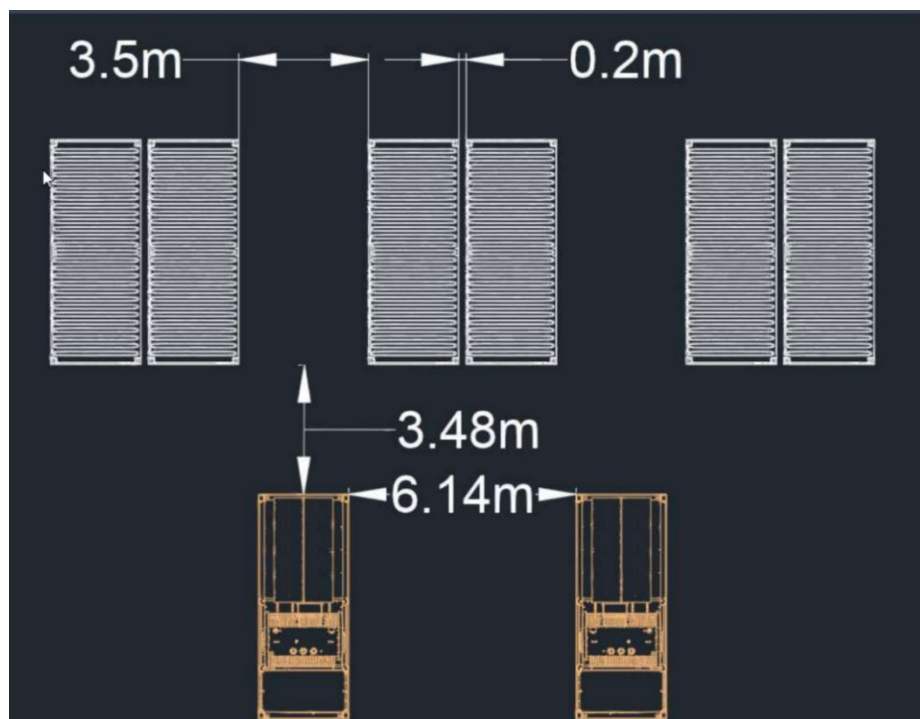


Figure 3-6 BESS separation distances

The PHA determined the separation distances proposed to be appropriate given they exceed the following relevant standards, specifications and assessments:

- CATL EnerC+ container product specification
- CATL UL9540A test report
- NFPA 855
- Readily available UL9540A test reports (for LFP only)
- Other BESS facilities approved by the Department of Planning, Housing and Infrastructure (DPHI).

The detailed design of the proposed development would also comply with the CATL EnerC+ container product specification, UL9540A test report recommendations and the fire safety study.

Pursuant to the implementation of the recommendations of the PHA, including the proposed separation distances, the likelihood of a multi-module fire would be minimised to a non-credible event. The PHA demonstrated that the risk levels associated with the BESS do not impede the approval of the Project. The PHA findings did not identify any significant offsite consequences or societal risks.

Based on the risk assessment, it was determined that the risk profile for the proposed development is considered tolerable under the principle of "So Far As Is Reasonably Practicable" (SFARP). Most of the medium-risk events related to fire events. The primary exposure to fire events would be to the construction and operations workforce, with minimal offsite impacts anticipated. The risk assessment concluded that there is no potential for offsite fatality or injury identified, thus meeting the land use planning criteria.

The qualitative assessment of a thermal runaway event indicates that, due to the separation distances, a multi module fire (i.e., fire propagating from battery container to battery container or battery unit to battery unit) is a non-credible event.

Preliminary Risk Screening

The objective of the preliminary risk screening is to determine whether the proposed development is considered as 'potentially hazardous industry' as defined by the Resilience and Hazards SEPP. The Resilience and Hazards SEPP defines 'potentially hazardous industry'.

A Preliminary Risk Screening was undertaken to consider the storage and transport of hazardous materials (dangerous goods) associated with the proposed development, as detailed in section 5 of the PHA. Seven hazardous materials were assessed and no exceeded the relevant screening thresholds under the Applying SEPP 33 Guideline. No further assessment or action is required according to the Guideline. The proposed development is not considered a hazardous industry.

3.4.3. Mitigation measures

The PHA made the following recommendations.

- It is recommended that the results of the PHA be used as inputs into other safety studies required including:
 - Emergency response plan
 - Fire safety study.
- In addition to the above it is required that:
 - The detailed design of the BESS will be undertaken to comply with the requirements of section 3.2 of the PHA, including separation distances, UL9540A test reports and OEM recommendations
 - If the proponent chooses to use the Tesla Megapack, all recommendations from the Victorian Big Battery Fire Statement of Technical Findings – Victorian Government 2021 will be implemented.

It is noted the proposed development would not involve the Tesla Megapack. Any change to the Tesla Megapack would involve a modification application and be relevantly assessed.

3.5. Bushfire risk

3.5.1. Methodology

A Bushfire Impact Assessment (BIA) was prepared by Ember. It is summarised below and attached as Appendix E to support the application. The methodology for the BIA included:

- On-site survey in October 2024.
- Bushfire threat assessment undertaken as per the relevant sections of the PBP.
- A detailed BIA report as per Section 4 of the PBP, together with recommendations needed for future development to satisfy specifications and requirements of the PBP.

3.5.2. Existing environment

The subject land is currently undeveloped, and devoid of stands of remnant vegetation. A site visit by a qualified bushfire risk assessor identified the site and surrounding area to consist of open flat plains with historical land clearing.

The site is mapped as Category 3 Bushfire Prone as shown in Figure 3-7. Vegetation Category 3 is considered to be medium bushfire risk vegetation, consisting generally of grassland, wetland, semi-arid woodland, alpine complex and shrubland.

3.5.3. Potential impacts

Woody vegetation along Campion Close further north of the site was noted as well as Weeping Myall open woodland of varying density further north-east of the subject land, refer to section 2.6 of the BIA. The subject land is well connected to the local and state road network, with directed access to Bullus Drive and beyond to the Newell Highway, refer to section 2.8 of the BIA.

A site visit confirmed the subject land to be Category 3 grassland.

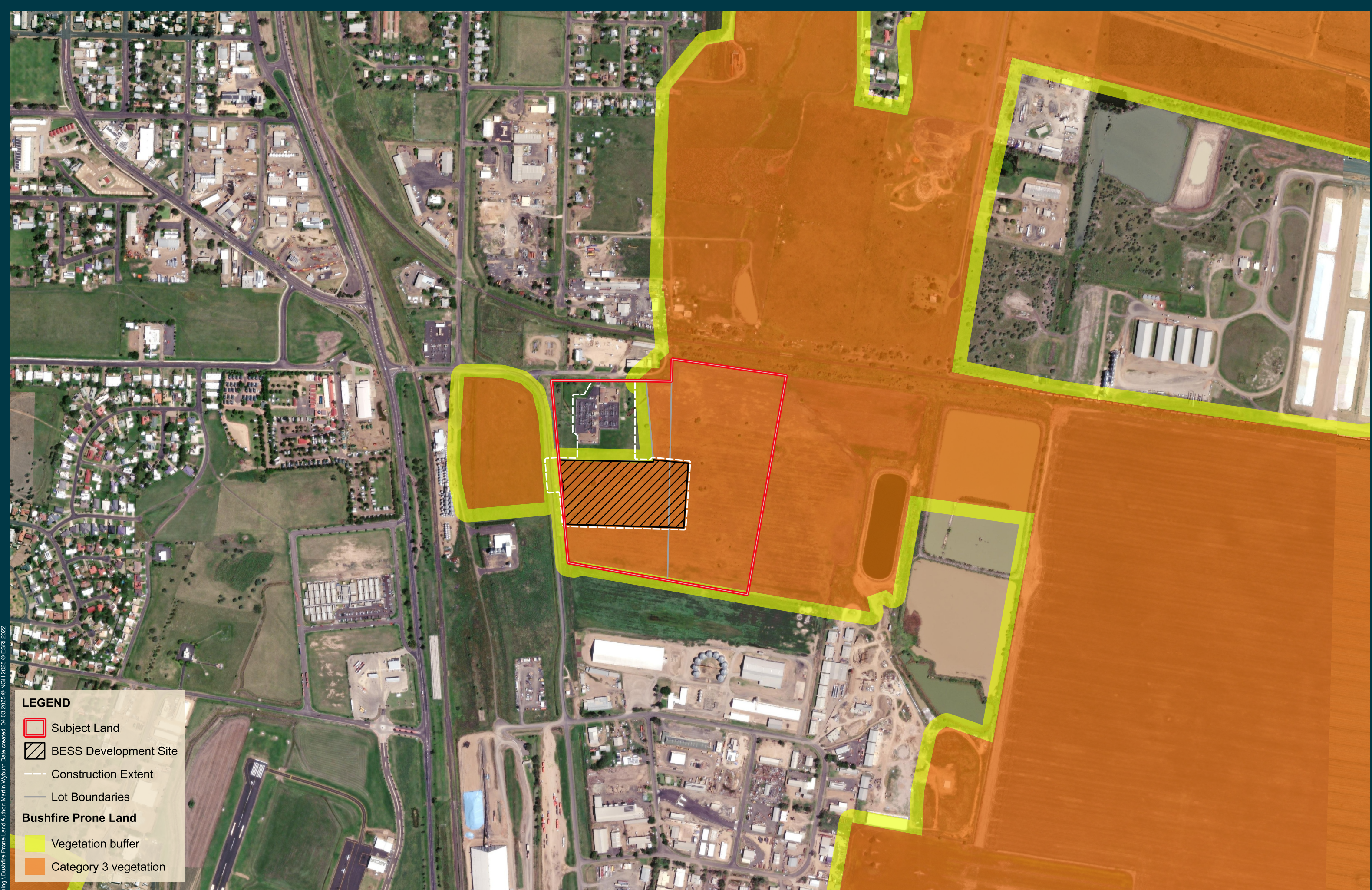
The greatest threat of bushfire was considered by the consultant to be from vegetated areas along the Mehi River, 2km north, rather than the grassland present on the site itself.

It was determined that the proposed Asset Protection Zones (APZ) would ensure the development is not exposed to radiant heat levels exceeding 29kW/m², subject to final detailed design. Public road and internal road access is considered appropriate, and firefighting water supplies exceed the requirements of PBP.

According to the BIA, and with the implementation of mitigation measures, the proposed development would be able to satisfy the broad aims of the PBP and specific considerations in Section 8.3.9 of the Hazardous Industry PBP as follows:

- Afford structures protection from exposure to a bushfire.
- Provide for a defensible space.
- Provide appropriate separation between a hazard and structures to prevent the likely spread of fire.
- Ensure that appropriate operational access and egress for emergency service personnel is available.
- Provide for ongoing management and maintenance of protection and prevention measures.
- Ensure that utility services are adequate to meet the needs of firefighters.

Ref: 230246 Moree BESS Planning | Bushfire Prone Land Author: Martin Wyburn Date created: 04.03.2025 © NGH 2022



LEGEND

- Subject Land
- BESS Development Site
- Construction Extent
- Lot Boundaries

Bushfire Prone Land

- Vegetation buffer
- Category 3 vegetation

Datum: GDA2020 / MGA Zone 55

3.5.4. Mitigation measures

In response to the bushfire threat analysis, a suite of Bushfire Protection and Prevention Measures (BPMs) are proposed as follows:

- Appropriate setbacks from adjacent unmanaged hazardous vegetation of minimum 10m (APZ), confirmed subject to detailed design.
- Within the 10m APZ, minimum 4m wide all-weather gravel perimeter road, generally in compliance with the PBP.
- Manage and maintain the APZ as an Inner Protection Area as per the requirements of the PBP.
- Inclusion of 200kL static water supply, in line with the requirements of Table 7.4a of the PBP.
- Electrical services in line with the requirements of Table 7.4a of the PBP.
- Constructed to the appropriate Bushfire Attack Level (BAL) as per AS3959:2018 - Construction of buildings in bushfire-prone areas.
- Preparation of a Bush Fire Emergency Management and Operations Plan during the construction and operational phase of the BESS.

3.6. Land use compatibility

3.6.1. Existing environment

The subject land is within an agri-industrial precinct, which is currently sparsely developed. The site is serviced by Bulluss Drive towards the west, industrial premises to the south, undeveloped land to the east and a railway corridor and Transgrid substation to the north.

The land has been selected based on proximity to the Transgrid Moree Bulk Supply Point Substation. The proposed development footprint was refined from a larger area in response to identified site constraints.

The subject land is currently undeveloped and is used for cropping presently. It is devoid of stands of remnant vegetation. An existing borrow pit turned farm dam is present in the north-western portion of the subject land. It has been historically used for cropping and livestock grazing.

Moree Regional Airport is located approximately 1 kilometre (km) to the southwest. The Inland Rail corridor and the Newell Highway occur approximately 300 metres (m) to the west of the subject land. Grain storage and associated rail infrastructure are the closest developments to the subject land. General industrial developments, including metal fabrication, concrete manufacturing and vehicle associated industries, are located to the south (around Industrial Drive) and the north (along James Street). The Gwydir Thermal Pools Motel and Caravan Park is located around 400m west of the proposal.

3.6.2. Potential impact

The proposed development involves the establishment of 120MW of energy storage, immediately adjacent to the Moree Bulk Supply Point Substation. The energy storage is in the form of 140 containerised batteries as outlined and shown in 2.4 of this report. The appearance of the site would be of a similar infrastructural nature to the adjacent substation. Landscape screening is proposed around the proposed development in accordance with Delivery Plan requirements.

The proposed BESS is considered to be a desirable use for the precinct. It is permitted in the zone and would contribute to the achievement of the zone objectives, specifically the development of industry leading renewable energy generation and resource management and provision of opportunities for regional economic development and employment. The proposed BESS would incorporate the latest technology, would contribute to the efficient use of energy in the NEM, provide crucial energy support to help the Moree SAP to flourish and achieve its vision around renewable energy and sustainability. It is considered unlikely to cause land use conflict with other desired uses in the SAP, nor with potentially conflicting uses adjoining the SAP.

Due to the nature of the site and its location among various transmission line easement (as shown in Figure 3-8 and Figure 3-9), other development activities would be highly constrained on the subject land. The proposed development can make effective use of this land resource whilst respecting these constraints. Existing easements have been addressed in the design of the development.

The proposed development would prevent continued agricultural use of the land, therefore would change the existing land use. However, the intended land use for this site is no longer agricultural, according to the endorsed SAP Master Plan and applicable Regional Enterprise zone (REZ) under the provisions of the SEPP. Carrying out the proposed development would be in line with the objectives of the REZ. and would not negatively impact any existing land use in the area as outlined above.



Figure 3-8 Transmission lines through the subject land



Datum: GDA2020 / MGA Zone 55



Moree BESS
Transmission lines and easements

3.6.3. Mitigation measures

Other relevant mitigation measures are outlined in this report to manage such impacts as noise, traffic, bushfire risk, flooding and stormwater. The following mitigation measure/s would be implemented to minimise the impact to land use from the proposed development:

- Land rehabilitation to be detailed as part of a Decommissioning Plan, in consideration of relevant NSW Department of Primary Industries guidelines and best practice.
- Implementation of site landscaping in accordance with the accompanying Landscape Plan.

3.7. Access and traffic

A Traffic Impact Assessment (TIA) was prepared by Amber Organisation Pty Ltd (Amber) to assess the access and traffic implications of the proposed development and proposed haulage route. The findings are summarised below with the full TIA appended as Appendix F.

The assessment indicates the proposed development would comply with the acceptable solutions (or where relevant, alternative solutions) in respect of traffic and access under the Delivery Plan.

Consultation with TfNSW, MPSC and ARTC/Inland Rail was carried out by Amber as indicated in section 1.4 and associated appendices of the TIA. Further consultation with TfNSW will be required in relation to future OSOM movements and with MPSC in relation to the required section 138 permit.

3.7.1. Existing environment

Bulluss Drive

The subject land is accessed from Bulluss Drive (Figure 3-10), an arterial road managed by MPSC, that runs in a north-south direction between the Newell Highway and Burrington Road. The northern section of Bulluss Drive is a sealed single carriageway of approximately 7m width, with the southern section of the road, approximately 1km south of the proposed development, unsealed single carriageway through to Burrington Road. The posted speed limit of Bulluss Drive is 50km/h.

Newell Highway

Newell Highway is a State road managed by Transport for NSW (TfNSW), that runs in a north-south direction through NSW between Tocumwal and Goondiwindi. Within the locality of the proposed development, the Newell Highway is a sealed single carriageway road with a posted speed limit of 60km/h. The road widens at the intersection with Bulluss Drive for channelised left and right turn treatments.



Figure 3-10 Looking north along Bulluss Drive from development site frontage (NGH, 2025)

Existing traffic movements

A turning movement count survey at the intersection of Newell Highway and Bulluss Drive was conducted on 6 February 2025. The survey data indicated that the intersection currently experiences a moderate level of traffic with the highest volumes being through movements on the Newell Highway, as would be expected. In the order of 200 vehicles were recorded to and from Bulluss Drive across both peak hours (refer to Figure 3-11). Of the recorded vehicle movements, approximately 25% and 23% were heavy vehicles using the intersection in the morning and afternoon peak periods, respectively.

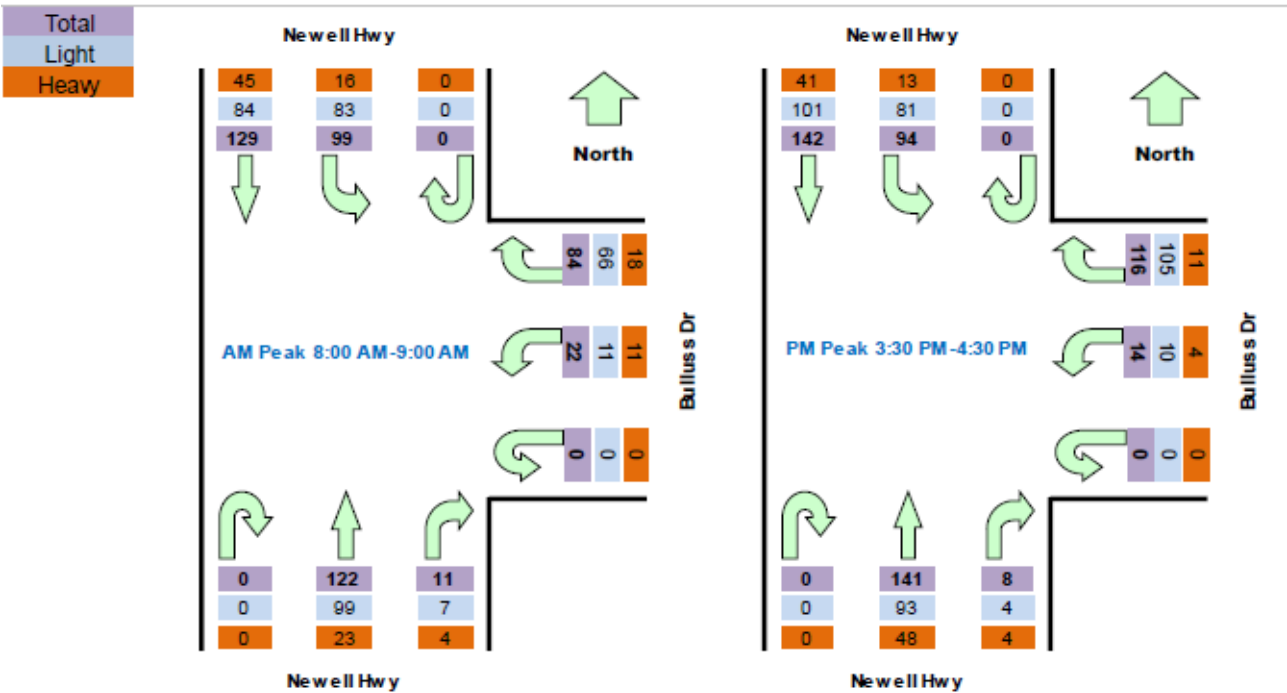


Figure 3-11 Peak -hour survey results for Newell Highway / Bulluss Drive (Amber, 2025)

Figure 3-12 illustrates the TfNSW Restricted Access Vehicle Map for the surrounding area. The green lines indicate approved B-double routes with the orange lines representing approved routes with travel conditions. As shown, Bulluss Drive and the surrounding road network are B-double approved routes, with the site being accessible along the approved network via Bulluss Drive and Newell Highway.



Figure 3-12 TfNSW 26m B-Double Network Approved Roads (Source: NVHR Restricted Access Vehicle Map)

Further details of existing traffic and transport conditions are provided in section 2 of the accompanying TIA.

3.7.2. Potential impacts

Construction

Full assessment of construction traffic is provided in section 4.2 of the accompanying TIA and key issues are summarised below.

During construction, the proposed development is likely to generate additional light and heavy vehicle movements for approximately 12 months, with the peak period expected to comprise approximately 6 months of that. It is anticipated that during peak construction up to 80 light and 82 heavy vehicle trips would be generated per day. The proposed development is expected to generate up to 52 vehicle trips per hour (vph) in the morning and evening peak hours during the peak construction period and is expected to reduce to 30vph outside peak construction periods (refer to Table 3-5).

Table 3-5 Traffic generation during construction period (Amber, 2025)

Vehicle Type		Average Construction Periods		Peak Construction Period	
		Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)	Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)
Light Vehicles		35	20	80	30
Heavy Vehicles	Shuttle Bus	4	2	4	2
	Rigid Trucks	8	2	12	4
	Truck and Dog	22	4	48	12
	Semitrailers	8	2	8	4
	B-Doubles	2	0	6	0
	Special Purpose Vehicle	0	0	0	0
	Other OSOM Vehicle	2	0	4	0
	<i>HV Subtotal</i>	46	10	82	22
Total		81	30	162	52

The general traffic to / from the proposed development would typically be comprised of staff and courier movements, and it is expected that most staff would generally reside in Moree and Narrabri. All traffic travelling to / from the proposed development would travel via Newell Highway and Bulluss Drive.

Bulluss Drive – Newell Highway intersection assessment

Amber undertook a traffic modelling exercise for the intersection of Newell Highway and Bulluss Drive using the SIDRA intersection modelling software. The results of the SIDRA analysis are shown in Table 3-6.

Table 3-6 SIDRA Analysis results summary (Amber, 2025)

Approach / Movement		Morning Peak Hour			Evening Peak Hour		
		Average Delay (sec)	95% Queue (m)	Level of Service	Average Delay (sec)	95% Queue (m)	Level of Service
Newell Highway (South)	Through	0.0	0.0	A	0.0	0.0	A
	Right Turn	7.2	3.2	A	8.0	0.6	A
Bullus Drive (East)	Left Turn	6.0	2.2	A	7.6	8.3	A
	Right Turn	9.0	2.2	A	10.5	8.3	A
Newell Highway (North)	Left Turn	5.7	0.0	A	5.7	0.0	A
	Through	0.0	0.0	A	0.0	0.0	A

As detailed in section 4.2.6 of the accompanying TIA, the analysis indicated:

- The intersection is expected to operate with minimal queue lengths on all legs;
- The overall average delay at the intersection is 4.2 and 3.4 seconds in the morning and evening peak hour respectively; and
- The intersection is expected to continue to operate with a good level of service.

Accordingly, the intersection is expected to continue to operate with a good level of service with minimal queuing and delays expected during the peak construction period. Intersection upgrades were not considered necessary according to the analysis. The intersection of Bulluss Drive and the Newell Highway already consists of channelised right and left turn lanes.

The Bulluss Drive railway level crossing is suitably separated from the intersection and some vehicle types are required to observe certain travel conditions as outlined in Table 2 of the TIA.

OSOM Vehicles

Non High-Risk Oversize-Overmass (OSOM) vehicles would be required during construction to deliver control buildings and switchroom for the development. It is anticipated that the vehicle would comply as a Class 1 OSOM vehicle and would be able to operate on the approved Class 1 OSOM road network.

High Risk OSOM vehicles would also be required to deliver large plant and equipment. These vehicles would exceed the Class 1 mass and / or dimension requirements and are subject to separate permit applications and regulations, including use of a pilot vehicle escort.

Site Access Assessment

A swept path assessment was undertaken for the proposed site access point, which is provided within Appendix E of the TIA. The assessment demonstrates the access has been suitably designed to cater for the traffic expected to access the proposed development site. A minor temporary hardstand area would be required as indicated on Bulluss Drive to facilitate OSOM turning movements.

Bulluss Drive has a speed limit of 50km/h. For the purpose of this assessment, a design speed of 60km/h was adopted, as a conservative approach, which requires a Safe Intersection Sight Distance (SISD) of 131m based on a reaction time of 2.5 seconds.

The available sight distance at the site access would exceed the requirements of the Austroads Guide. Accordingly, vehicles are expected to be able to safely enter the road network from the proposed site access. Refer to section 7 of the accompanying TIA.

A section 138 permit would be obtained from MPSC for such works within the public reservation of Bulluss Drive. The subject application is considered Integrated Development.

Haulage Assessment

Full assessment of haulage matters is provided in section 5 and 6 of the accompanying TIA and key issues are summarised below.

Non High Risk OSOM vehicles

It is expected that most specialist plant will be delivered from Port Botany, Sydney. The proposed access route (excluding High Risk OSOM vehicles) travelling from the port measures approximately 643km and utilises roads that are designated for B-Double vehicles (refer to the table below).

Table 3-7 B-Double Vehicle Route - Access Roads (Amber, 2025)

Road Name	Jurisdiction	B-Double Approved	
Friendship Road	TfNSW	Approved	
Bumborah Point Road			
Botany Road			
Beauchamp Road			
Denison Street			
Wentworth Avenue			
Bunnerong Road			
Gardeners Road			
Anzac Parade			
Eastern Distributor (M1 Toll Road)		Approved with Conditions	
Cahill Expressway (M1)			
Sydney Harbour Tunnel (M1)			
Warringah Freeway (M1)		Approved	
Gore Hill Freeway (M1)			
Lane Cove Tunnel (M2 Toll Road)		Approved with Conditions	
Hills Motorway (M2 Toll Road)			
Cumberland Highway (A28)			
NorthConnex (M11)			
Pacific Motorway (M1)			
Hunter Expressway (M15)			
New England Highway (M15) (A15)			
Kamilaroi Highway (B51)			
Boundary Road, Gunnedah	Gunnedah Shire Council TfNSW		Approved
Bloomfield Street, Gunnedah			
Warrabungle Street, Gunnedah			
Kamilaroi Highway (B51)	TfNSW		
Newell Highway (A39)			
Bulluss Drive, Moree	Moree Plains Shire Council TfNSW		

The above route is only suitable for vehicles under 4.3m in height due to clearances in the tunnels. The conditions of travel for B-Double vehicles indicated above are for prohibited transport of dangerous goods in the tunnels. Additionally, travel through Sydney Harbour Tunnel is only permitted between 5:00am and 11:00pm.

High Risk OSOM Vehicles

OSOM vehicles will be required to deliver a substation transformer to the site from one of two possible locations, being Port Botany in NSW or Glen Waverley in Victoria. These vehicles are expected to exceed the Class 1 mass and / or dimension requirements and would be classified as high risk OSOM vehicles per relevant TfNSW definitions.

A total of three high risk OSOM vehicles would be required to access the site during the construction period. These vehicles would travel outside the peak periods, mostly likely during Q4 2026 (or later). The route assessment for both Port Botany, NSW and Glen Waverly, Victoria is detailed in Section 6.2 and 6.3 of the TIA (Appendix F).

The Port Botany and Glen Waverly route assessments both identified a number of minor road works required in order to allow the vehicles to successfully access the site. Escorts and spotters would be required at all locations to control traffic and ensure the vehicle and load are clear of infrastructure.

Overall, it was concluded that both proposed routes are suitable for use by OSOM vehicles associated with the development, subject to relevant formal approvals.

Relevant permits need to be applied for as part of a Traffic Management Plan (TMP) and mitigation measures, as outlined below are to be adhered to. It is recommended that any OSOM movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

Operation

The proposed development is anticipated to have a negligible impact on the road network during operation. The expected traffic movements during operation would be limited to:

- Daily routine maintenance to be carried out by 1-2 staff. It is assumed that the daily traffic generation will not exceed 8 vehicle trips per day to the local road network, with all other movements being internal to the site.
- Occasional maintenance will occur when components of the development need to be replaced, such as replacing BESS unit components. This is expected to occur only very occasionally and will have no discernible impact on the external road network.
- Visitors to the site such as office-based staff and courier deliveries etc.

3.7.3. Mitigation measures

The assessment concluded that the road network is suitable to accommodate the light and heavy vehicle traffic volumes generated by the proposed development and is consistent with relevant provisions of the Master Plan and Delivery Plan.

Safeguards and mitigation measures to address access and traffic risks are provided below:

- Prior to construction, a pre-condition survey of the relevant sections of the existing road network should be undertaken in consultation with the road authority. During construction the sections of the road network utilised by the proposal are to be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the BESS would be rectified. At the end of construction, a post-condition survey would be undertaken to ensure the road network is left in a condition equivalent to that at the start of construction.
- A Traffic Management Plan (TMP) will be prepared and implemented. The TMP should be prepared in reference to the TIA, Australian Standard (AS) 1742.3 and the Work Health and Safety Regulation 2017.
- Neighbours of the BESS are to be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
- Heavy vehicles should avoid travel during peak bus operating times to limit the interaction of larger vehicles and vulnerable road users.
- It is recommended that any OSOM vehicle trips be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

3.8. Aboriginal Heritage

3.8.1. Existing environment

A basic Aboriginal Heritage Management System (AHIMS) search for Lot 82 DP 751780 shows no recorded Aboriginal items or places within 200m of the subject land.

A Heritage Report (Aurecon, 2021) was prepared for the Moree SAP. The report indicated several areas of known Aboriginal sites and areas of moderate to high archaeological potential (Aurecon, 2021).

The Moree SAP Master Plan requires further Aboriginal cultural heritage assessment be undertaken in accordance with the 'Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW' prior to any development on the land indicated as Aboriginal Heritage sites in Figure 10 (replicated in Figure 3-13 on the following page). The subject land does not affect any areas identified as having Aboriginal Heritage sites according to Figure 10 of the Master Plan. Accordingly, no further cultural heritage assessment was considered warranted in consultation with RGDC.

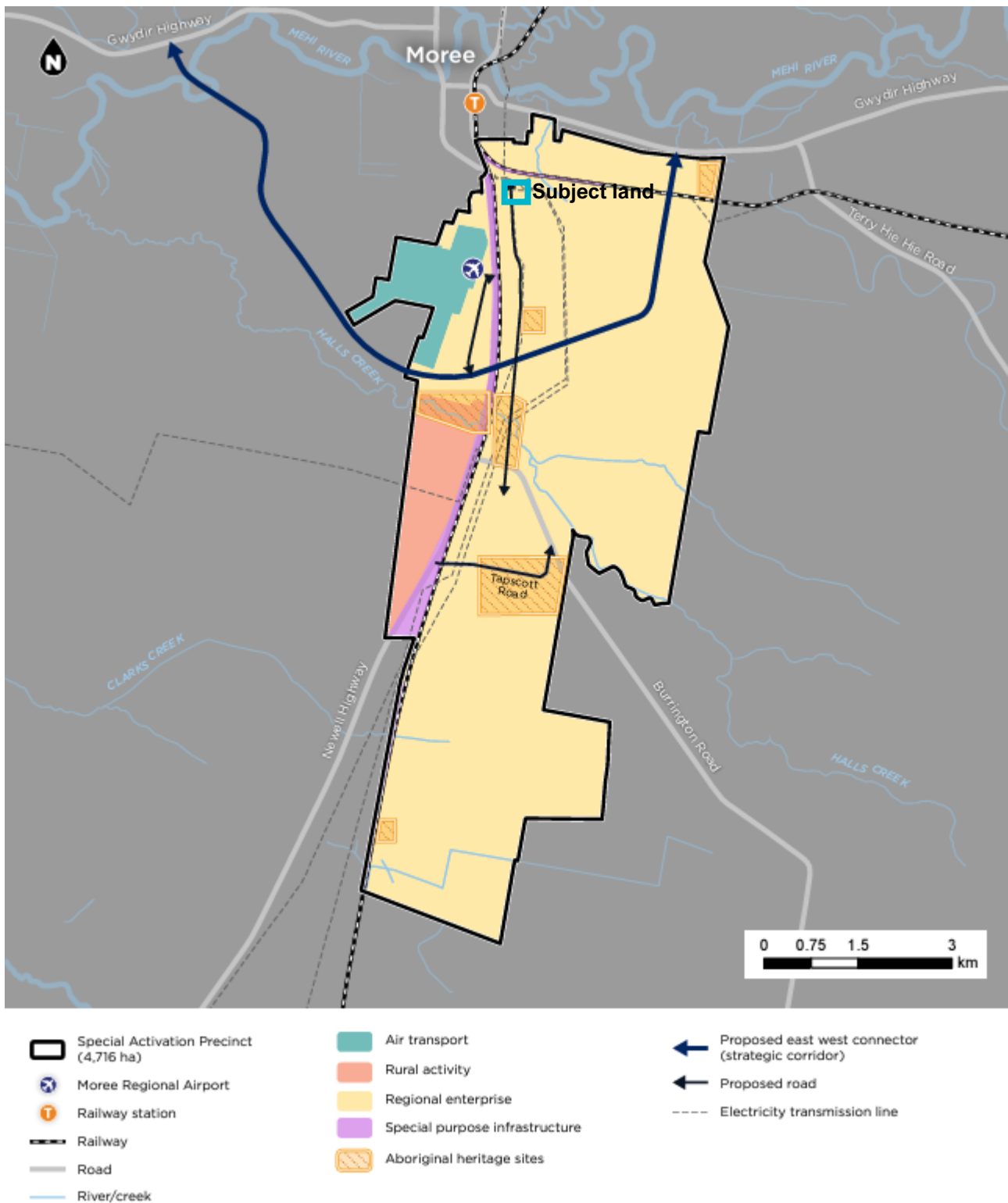


Figure 3-13 Aboriginal heritage map from Moree SAP Master Plan (NSW Government, 2022)

3.8.2. Mitigation measures

The following mitigation measures have been recommended based on the information provided above.

- If any items suspected of being Aboriginal in origin are discovered during the work, all work in the immediate vicinity must stop and Heritage NSW notified. The find will need to be assessed and if found to be an Aboriginal object, and Aboriginal Heritage Impact Permit (AHIP) may be required.
- In the unlikely event that human remains are discovered during the development works, all work must cease in the immediate vicinity; Heritage NSW and the police should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in origin, the Registered Aboriginal Parties should be advised of the find as directed by the appropriate heritage team within Heritage NSW. Heritage NSW would advise the Applicant on the appropriate actions required.

3.9. Non-Aboriginal Heritage

3.9.1. Existing environment

A search of State Heritage Inventory (SHI) was carried out on 5 June 2024. The result showed no heritage site within or close proximity to the development site. The closest registered item was Victoria Hotel (I022) which is listed under Moree Plains LEP. The site is approximately 1500m north west of the development site.

A search of Section 170 heritage items did not identify any heritage items within the locality of Moree.

No non-Aboriginal cultural heritage places were identified within the Moree SAP (Aurecon, 2021). Therefore, it is considered unlikely that the proposal would have an impact on a place of non-Aboriginal heritage.

3.9.2. Mitigation measures

In the event that any unexpected substantial intact historic archaeological relics of State or local significance are unexpectedly discovered during the construction of the proposal, the following management protocols will be implemented:

- Works at that identified heritage location will cease with an appropriate buffer zone of at least 20m to allow for the assessment and management of the find. All site personnel will be informed about the buffer zone with no further works to occur within the buffer zone.
- A heritage specialist should be engaged to inspect and assess the item.
- For items determined to be historic relics, work must remain ceased in the affected area and the Heritage Council must be notified in writing. This is in accordance with section 146 of the Heritage Act 1977 (NSW).
- Depending on the nature of the discovery, additional assessment may be required prior to the recommencement of work in the area. At a minimum, any find should be recorded by an archaeologist.

3.10. Biodiversity

3.10.1. Existing environment and potential impacts

A Biodiversity Report (Aurecon, 2021) was prepared to identify existing biodiversity values within the Moree SAP, based on desktop and field investigations. An initial baseline site investigation which informed further detailed field surveys.

The subject land is not mapped as containing Biodiversity Values land (Figure 3-16). Vegetation occurring within the subject land is non-native and is not consistent with a TEC (Aurecon, 2021), refer to Figure 3-15.

Seven threatened flora species listed under the *Biodiversity Conservation Act 2016* (BC Act) and three threatened flora species listed under the *Environment Protection and Biodiversity Conservation 1999* (EPBC Act) are associated with plant community types (PCTs) within the Moree SAP. However, vegetation within the subject land is non-native, therefore it is considered unlikely that threatened flora species occur within the subject land.

A site visit by an NGH consultant in April 2024 also confirmed that the site is cleared of native vegetation. There are few scattered trees within the subject land however, the rest of the area is free of any vegetation as shown in the Figure 3-14.

Nine threatened fauna species listed under the *Biodiversity Conservation Act 2016* have been recorded within and surrounding the Moree SAP (Aurecon, 2021) as well as ten threatened fauna species and eight migratory species under the EPBC Act. The Biodiversity Report indicates that non-native vegetation occurs within the proposed development site, that aquatic habitat is limited to a farm dam and in proximity to an industrial estate. It is considered possible that threatened species could utilise the subject land opportunistically; however, the subject land is unlikely to represent important habitat for threatened species.

The aquatic ecological community in the natural drainage system of the Lowland Catchment of the Darling River is listed under the *Fisheries Management Act 1994* (Aurecon, 2021). As shown in Figure 1-3 one first order waterway occurs within the northeast corner of the subject land. The development site occurs approximately 285m southwest of the waterway. It is considered unlikely that the proposal would impact on any aquatic EECs occurring within the area.

3.10.2. Mitigation measures

The following mitigation measures and controls have been recommended to minimise any potential impacts from the proposed development:

- Consideration of noise impacts within proximity to the scattered trees and the first order waterway to reduce disturbance and exclusion of fauna.
- Implement lighting structures, styles and time of use that aim to reduce impacts on nocturnal fauna and sensitive species.
- Maintain the proposed separation distance to the first order waterway to avoid impact to any aquatic species utilising the waterway.



Figure 3-14 Site condition (Source: NGH 2024)

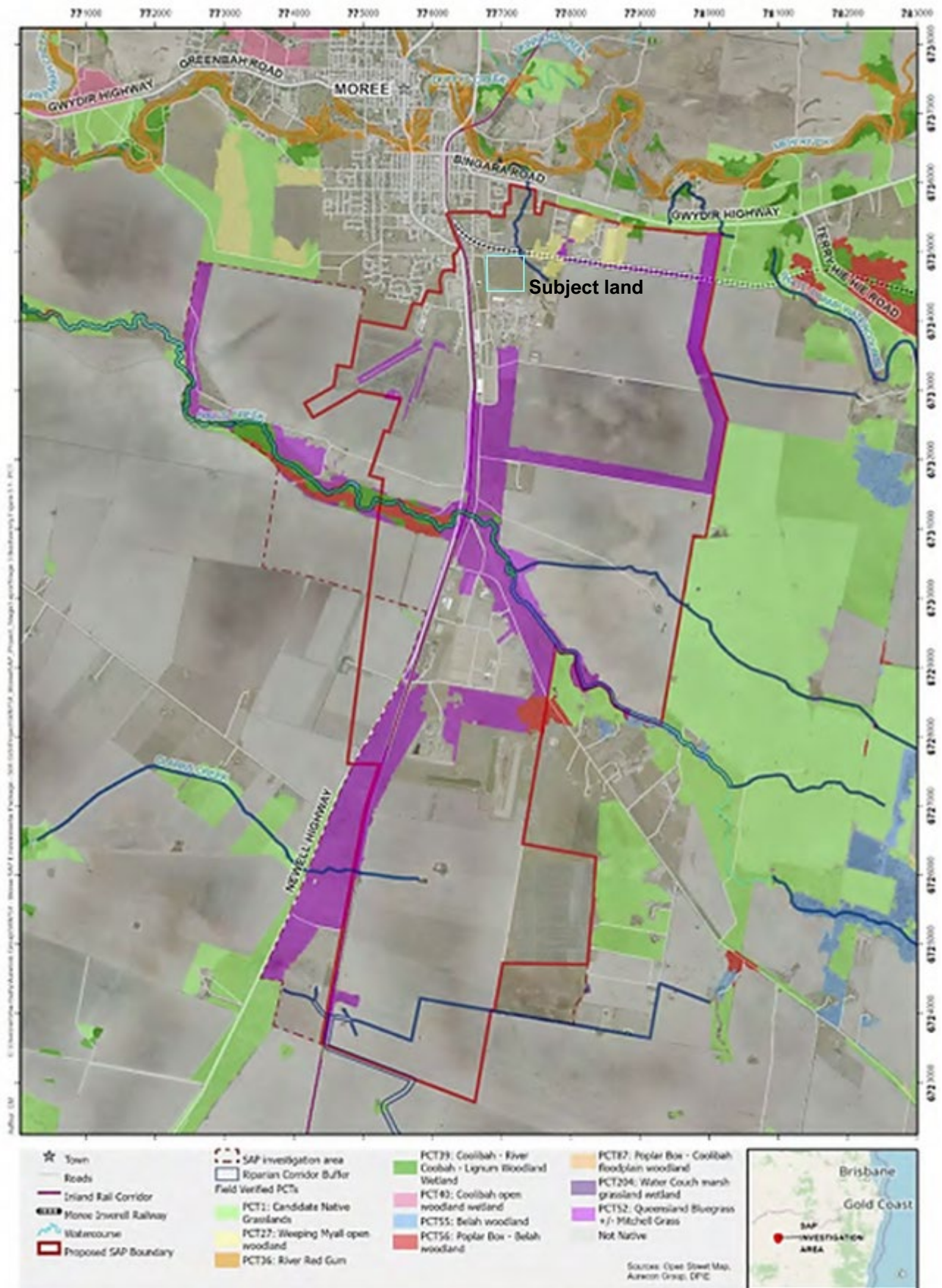


Figure 3-15 Vegetation occurring within the Moree SAP, with subject land highlighted in blue (Aurecon, 2021)



Ref: 230246 Moree BESS Planning | Biodiversity Values Map Author: Martin Wyburn Date created: 07.02.2025 © NGH 2025

Datum: GDA2020 / MGA Zone 55

3.11. Visual

3.11.1. Existing environment

The proposed development would be in the Regional Enterprise zone, which aims to stimulate industrial activity, regional economic growth and job creation in the industrial core of the SAP.

One residential receiver (R18 – Gwydir Thermal Pools Motel and Caravan Park) is located within 500m of the subject land (Figure 3-17). It is located west of the site, on the western side of the Newell Highway. Part of the caravan park falls within the Moree SAP and is zoned Regional Enterprise, whereas the portion lying outside the SAP is subject to the provisions of the Moree LEP and zoned R1 General Residential.

3.11.2. Potential impact

The proposed development is of a low scale, generally not more than 4m in height, though some of the internal substation structures (lightning masts used to intercept lightning strikes) would be up to 8m above natural ground levels. It is also considered to be consistent with the relevant visual and design controls of the Master Plan and Delivery Plan.

Views from R18 – Gwydir Thermal Pools Motel and Caravan Park to the development site are obscured by existing Austgrains infrastructure and vegetation screening located between the receiver and the proposed development, wholly blocking views to the site. (refer to Figure 3-17 to Figure 3-19).

The proposed development is consistent with other surrounding activities within the SAP. As mentioned previously, the area consists of industrial enterprise and the adjacent substation. The proposed development would be similar to these developments, would not be incongruous with its surrounds, and would not occupy a large footprint within the SAP.

Together, the Regional Precincts SEPP and endorsed Master Plan and Delivery Plan outline the planning framework and future vision for the Moree SAP which includes considerable industrial and agri-industrial growth and activity. The proposed development would further that vision and is consistent with the planning framework.

Moir Landscape Architecture has developed a landscape plan to provide screening and beautification and minimise the visual impact of the proposed development, in accordance with the relevant controls of the SAP Master Plan and Delivery Plan. The plan is attached as Appendix H of this report. The plan includes a 5m wide vegetation buffer around the site (outside of the security fence). The aim of this screen is to improve the visual amenity of the project.

The plan has adopted plantation of tree and shrubs of different sizes to create a natural screen. The plants proposed are:

- Cooba, *Acacia salicina*
- Warrior Bush, *Apophyllum anomalum*
- Wild Orange, *Capparis mitchellii*
- Lignum, *Duma florulenta*
- Spiny Saltbush, *Rhagodia spinescens*.

Screening is proposed, in accordance with the Delivery Plan provisions, to contribute to embellishment and increased landscape cover across the precinct. Furthermore, the proposed development would be consistent with the surrounding landscape features hence would not change the landscape character of the area. Therefore, any potential visual impacts are expected to be minimal.

3.11.3. Mitigation measures

The following mitigation measures are recommended to minimise any potential visual impacts from the proposed development.

- A Landscape Management Plan (LMP) will be implemented based on the final detailed design, to achieve the landscape requirements of the Delivery Plan.
- Good design principles employed through the proposed development design phase can ameliorate the visual impact. Consideration will be given to the colours, type and height of the facility to ensure minimal contrast and to help blend into the surrounding landscape to the extent practicable.
- External lighting shall be installed to comply with Australian/New Zealand Standard AS/NZS 4282:2019 – Control of Obtrusive Effects of Outdoor Lighting, or its latest version.



Ref: 230246 Moree BESS Planning | Sensitive Receiver Locations Author: Martin Wyburn Date created: 04.03.2025 © ESR 2022



Figure 3-18 View from development site looking west to R18 Gwydir Thermal Pools Motel and Caravan Park (not visible) with intervening Austgrains infrastructure visible (NGH, 2024)



Figure 3-19 Google Street View from R18 Gwydir Thermal Pools Motel and Caravan Park east to development site (not visible) with intervening Austgrains infrastructure visible

3.12. Air quality

3.12.1. Existing environment

The development site is located adjacent to the rural township of Moree. The town itself has some dense residential areas; however, the immediate surrounding is open space and surrounded by transport infrastructure and industrial/ business developments.

Air quality in the study area is typical of the surrounding rural region. In general, air quality is high. However, raised dust during the drier months contributes to sporadic reductions in air quality. During autumn, the level of particulate matter in the air increases due to the burning of agricultural residues and soil cultivation for cropping. In winter, the burning of wood in solid fuel fires contributes to elevated levels of particulate matter in the atmosphere.

3.12.2. Potential impacts

Air quality would be affected during the construction phase by vehicle and machinery exhaust emissions, although the emissions would be readily dispersed and any impacts to residents or workers at the site are expected to be transient and minor.

Construction and decommissioning traffic accessing the site may produce some dust where work is required in unsealed areas of the site and during bulk earthworks/site filling. However, Bullus Drive, the site access road and main internal access road is sealed, and any air quality impact would be actively managed and monitored to ensure no adverse impacts on neighbouring land.

Dust has the potential to cause nuisance for neighbouring industries. Dust can also adversely affect the natural terrestrial and aquatic ecosystems which occur at the site. The condition of internal tracks and movement areas would be monitored regularly, and a water cart would be used as required for dust suppression.

During the operation phase, soils at the site would be stable and vegetated with perennial grass cover. Dust generation would be closely managed to avoid nuisance to surrounding receivers and ecosystems.

3.12.3. Mitigation measures

Subject to mitigation measures, any dust or other air quality impacts are likely to be minor, temporary, and highly localised. To minimise dust emissions from proposed development:

- A reduced speed limit would be enforced within the site.
- Vegetation clearing would be kept to minimum.
- Stockpiles at the site which has a potential to generate dust would be covered.
- Equipment will be turned off while not in use.
- A water cart would be used to suppress dust during peak movements times.
- During the operation of the BESS, soils are to be protected, and perennial grass cover is to be maintained in order to slow dust generation.

3.13. Waste

Legal requirements for the management of waste are established under the POEO Act and the POEO (Waste) Regulation 2005. Unlawful transportation and deposition of waste is an offence under section 143 of the POEO Act. Waste management would be undertaken in accordance with *the Waste Avoidance and Resource Recovery Act 2001* (NSW) (WARR Act).

A Waste Management Plan (WMP) has been developed (Appendix I) and would be implemented during construction, operation and decommissioning to minimise wastes. The Plan includes provision for:

- Identification of opportunities to avoid, reuse and recycle, in accordance with the waste hierarchy.
- Quantification and classification of all waste streams.
- Provision for recycling management onsite.
- Provision of toilet facilities for onsite workers and how sullage would be disposed of (i.e., pump out to local sewage treatment plant).
- Tracking of all waste leaving the site.
- Disposal of waste at facilities permitted to accept the waste
- Requirements for hauling waste (such as covered loads).

3.14. Consideration of other hazards

3.14.1. Soil

Existing environment

Aurecon report states that the subject land is mapped as having black soils. Black soils are likely to refer to medium to heavy clays with strong pedality down to 2.0 metres below ground level (mbgl), as mapped by NSW eSPADE soil map for the Moree area (GHD 2019a, 2019b, 2019c). These soils break down in water, forming a cloudy colloidal suspension. The suspension contains clay particles that are much finer than silt, hence conventional silt fences would not combat the turbid runoff during rainfall. The erosion potential of the alluvial and residual soils was assessed to be moderate to high (ARTC, 2017). Black soils are also known to have highly reactive and strong shrink swell properties.

Black soils have the potential to move significantly and react to variable moisture change conditions. Some minor damage may occur in the life of buildings under normal conditions. More significant damage may occur where site maintenance conditions are a problem e.g. influence of trees or leaking underground plumbing or poor drainage. The proposed development would not significantly alter the existing environment under the ground. Trenches would be dug in order to lay the underground cabling but would be filled soon in order to improve safety and workability around the site.

The soil chemistry throughout the proposed SAP area indicates that acid sulfate soils or potential acid sulfate soils (ASS/PASS) are not present, and saline soils are not present.

The subject land is mapped as having class 2 capability soils which is regarded as a very high capability land for agricultural uses. Majority of the development site is also mapped as a Biophysical Strategic Agricultural Land (BSAL). The site is not mapped as having Naturally Occurring Asbestos (NOA)

Potential impact

The proposed development site also intended to be filled up to a maximum of 1.8 metres in order to achieve the necessary stormwater management arrangements. The filling would also manage the impacts of any black soils, should these be present in the area. Prior to the commencement of works, geotechnical investigations and further detailed civil design would be carried out.

An Erosion and Sediment Control Plan has been prepared for the proposed development, as requested in the Activation Precinct Certificate (APC) checklist.

3.14.2. Contamination

Existing environment

A search of the EPA contaminated sites register under section 58 of CLM Act on 23 May 2024 for the suburb of Moree found one current contaminated site which is a Caltex Service station located approximately 1950m north west of the subject land.

A search of the EPA contaminated land record of notices under section 60 of CLM Act on 23 May 2024 for the locality of Moree found one current contaminated land record, being the same Caltex Service station site identified above.

Aurecon conducted a soil and contamination assessment for the Moree SAP (Aurecon, 2021a). The report concluded that there is generally a low risk of encountering elevated Contaminant of Potential Concerns (CoPC) concentrations throughout the SAP area. The report identified some Areas of Potential Environmental Concerns (APECs) as shown in Figure 3-20 on the following page. The subject land is adjacent to APEC 1 and APEC 2 but is excluded from the identified areas of concern in the Aurecon report.

Potential impact

The development site is not within the area identified by the Aurecon report. There were no identifiable areas of site contamination within the subject land during a site visit by an NGH environmental consultant.

Construction works would involve laying out underground cables. Cables would be laid at a depth of 1150mm. This could be laid out before filling up some sections of the footprint as the design proposes lifting the ground level by 1800mm at some places.

The Aurecon report identified a high likelihood that excavated materials across the SAP would meet virgin excavated natural material or excavated natural material as defined by the Protection of the Environment Operations (Waste) Regulation 2014 Resource Recover Order. This may assist the proposed development given the abundance of suitable natural material in the locality.

As such, the site is considered suitable for the proposed purpose, namely the construction and operation of a BESS.

Mitigation measures

The following mitigation measures have been recommended to reduce the risk of potential contamination as a result of the proposed development.

Moree BESS

- The fill to be brought to the site will be natural material free of contaminants.
- If contaminated material is identified onsite during the construction program, the Unexpected Finds Protocol will be implemented.

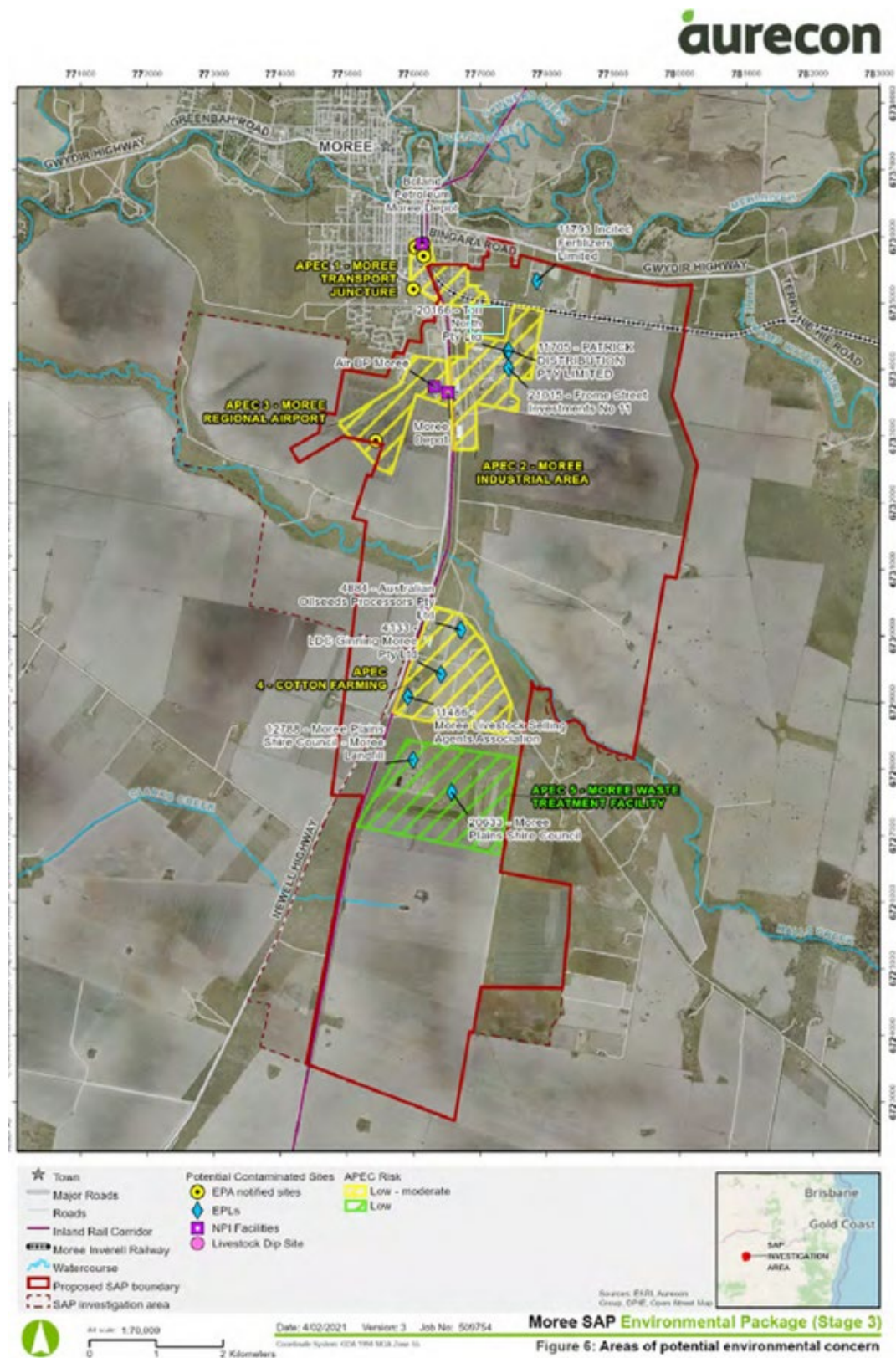


Figure 3-20 Areas of potential environmental concerns. The subject land is shown in blue (Aurecon, 2021a)

3.14.3. Aviation

Existing environment

The development site is approximately 1km north-east of Moree Regional Airport.

The subject land is within the Obstacle Limitation Surface (OLS) area of the Airport as mapped in the EPI dataset and Master Plan. The development site has a maximum allowable height restriction of 230m Above Sea Level (ASL). The development site sits at a height of 212-214m ASL and would not penetrate the OLS.

The subject land is within the Moree Airport Windshear Assessment Trigger Area according to Figure 23 of the Master Plan. A Windshear Assessment has been prepared for the proposed development in accordance with the NASAG Framework Guideline B Managing the Risk of Building Generated Windshear and Turbulence at Airports.

The subject land is within the affected area of Figure 23 Moree Regional Airport Wildlife Hazards of the Master Plan; however, it is not a development type listed under Group A, B or C and no further action is required.

According to the Figure 24 Moree Regional Airport Lighting Restrictions in the SAP Master Plan, the subject land is within the Zone B area for lighting restrictions. Lights within Zone B are restricted to an intensity of 50 candela (cd).

The subject land is not within the affected areas of Figure 25 Moree Regional Airport Public Safety or Figure 26 Moree Regional Airport Australian Noise Exposure Forecast (ANEF). No further assessment is required.

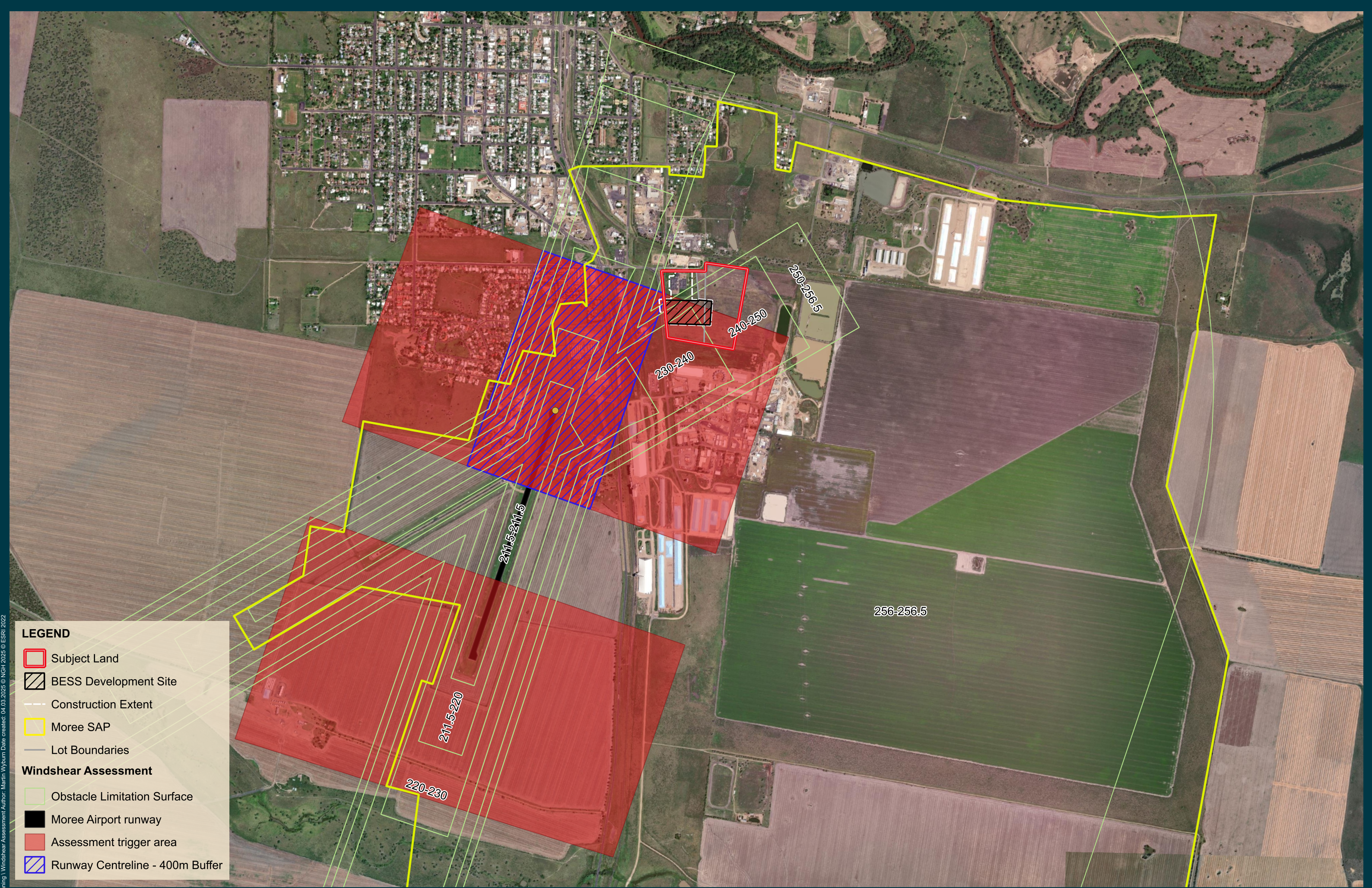
Potential impact

The proposed development would have minimal need for lighting, compared to other industrial and infrastructural uses, existing and likely future, in the SAP. Once operational, the BESS would require general security lighting around the perimeter of the site and approximately four light poles within the internal HV substation compound. Further detailed design for the proposed development including lighting selections would be required. Evidence would be provided prior to the commencement of works demonstrating that any lighting requirements would not exceed the intensity threshold of 50 candela applicable.

As identified above, a Windshear Assessment has been prepared (Appendix G) and is summarised below.

The windshear assessment map in Appendix A.5 of the Windshear Assessment identifies the nearest point of the proposed development site to be 400m from the Runway 01/19 centreline. The permitted height of structures on the site would be 11.4m above existing ground level according to the NASAG guideline. No elements of the proposed development would exceed this height. The tallest point of proposed buildings and structures would be lightning interception masts within the internal substation, being 7m in height and potentially bulk earthworks of up to 1.5m in this location. The total height above existing ground level would be up to 8.5m and therefore would not exceed the 1:35 surface. The assessment demonstrated that the proposed development would not trigger the threshold for further detailed assessment and no consultation with CASA would be necessary in this instance.

Ref: 230246 Moree BESS Planning | Windshear Assessment Author: Martin Wyburn Date created: 04.03.2025 © NGH 2025



LEGEND

Subject Land

BESS Development Site

Construction Extent

Moree SAP

Lot Boundaries

Windshear Assessment

Obstacle Limitation Surface

Moree Airport runway

Assessment trigger area

Runway Centreline - 400m Buffer

Datum: GDA2020 / MGA Zone 55



Moree BESS
Windshear Assessment

3.14.4. Stormwater

WSP has prepared a Site Based Stormwater Management Plan (SMP) (Appendix J) for the development. A summary of the impacts and proposed mitigation measures are discussed below.

Existing environment

The site stormwater is currently discharging via sheet flow into the urban stormwater open channel and ultimately flows into Mehi River. The catchment area, approximately 9 hectares in size, primarily consists of an average grassed surface. The average grading of the site is approx. 0.5%. The flow within this catchment moves from the southwest to the northeast direction. A site survey and Dial Before You Dig Search identified no existing stormwater infrastructure within the subject land.

Figure 3-22 illustrates the existing stormwater infrastructure and discharge points surrounding the proposed development.



Figure 3-22 Existing stormwater infrastructure (WSP, 2024)

Potential impacts

Stormwater quantity

To ensure the proposed development's stormwater runoff will not cause an actionable nuisance to downstream properties, existing and developed stormwater peak flows from the proposed developable areas were calculated and analysed. These were modelled using the hydraulic software DRAINS and Australian Rainfall Runoff 2019 (ARR2019) rainfall data. Post-developed peak flows from the developed areas were analysed for 10% AEP (1 in 10 years) and 1% AEP (100-year ARI).

The proposed development would involve the construction of a new onsite combined detention and sediment basin and grassed swale to collect and treat the additional runoff ensuring no increased flows are released to the existing legal point of discharge, consistent with Delivery Plan requirements.

An onsite stormwater detention infrastructure will be constructed and operated in accordance with the Australian Rainfall and the Australian Standard for Plumbing and Drainage: Part 3 Stormwater Drainage AS/NZ3500.3.2021, to meet PC23 and Section 6.1.2.7 of the Moree SAP Delivery Plan. The 200kL onsite storage tank will utilise captured rainwater and further reduce stormwater runoff. No groundwater extraction is proposed.

Stormwater quality

The proposed development would increase the site impervious area and subsequently may increase the pollutants running off the development site. The pollutants would vary between the construction phase and the operational phase of the development. Since the proposed development is a largely unsealed yard, Total Suspended Solids (TSS) is considered to be the primary urban pollutant attributed to this site.

To limit the impact of the anticipated pollutants, the WSUD best practice guidelines were adopted. NSW Water Sensitive Urban Design Guideline details the water quality control objectives for development as follows:

- 80% Total Suspended Solids Removed
- 45% Total Nitrogen Removed
- 60% Total Phosphorus Removed
- 90% Gross Pollutants Removed.

The site will be covered with a 100mm thick layer of 20m blue stone, which is aimed at eliminating the pollutants, in particular, managing Total Nitrogen (TN) through removal of nitrogen generating material. This measure will reduce the impacts on groundwater resources through minimising potential contaminated groundwater runoff, and therefore meeting the requirements set out in Section 4.6 of the Master Plan and Section 4.2.3 of the Delivery Plan.

The proposed stormwater quality treatment train incorporates the use of a Sedimentation Basin, Detention Basin and Grassed swales, as applicable based on the available layout. The Sedimentation basin was modelled in MUSIC, in accordance with the current Water by Design Guidelines. Utilising the above-mentioned treatment train, a stormwater quality model was produced utilising the MUSIC software package.

Table 3-8 details the resulting outputs of the proposed treatment train method.

Table 3-8 Post-Development MUSIC Modelling results

Pollutant	Required Pollutant Reduction (%)	Achieved Reduction (%)
Total Suspended Solids	80	89.2
Total Nitrogen	45	28.9
Total Phosphorous	60	60.2
Gross Pollutants	90	100

Mitigation measures

The following mitigation measures are recommended to minimise the impact to site stormwater.

- Ensure appropriate drainage controls are incorporated into the final detailed design to minimise the area of disturbance, runoff and pollutant generation.
- Erosion and sediment control measures will be implemented to mitigate any impacts in accordance with Managing Urban Stormwater: Soils & Construction.
- A Stormwater Management Plan has been prepared for the proposed development to provide on-site stormwater detention infrastructure to capture rainwater and surface runoff and maintain pre-flow rates for all events up to, and including, the 1% AEP at a capacity.
- The treatment and management of total nitrogen will primary be through:
 - Removal of vegetation across the primary footprint, via application of a 100mm thick blue stone application
 - fully fencing of all yards and adding grates to stormwater entry points
 - The circulation pathways around the BESS and general access areas are unsealed gravel topped roadways, trapping runoff at source.

It is proposed that the above treatment measures (removing TN generating nodes) be considered in lieu of meeting TN targets via alternative methods. That is, in the Hierarchy of Controls, adopting substitution and elimination of nitrogen generating elements, as opposed to inclusion of the lower order measures such as Engineering Controls (i.e. larger bio beds/filtration zones) is considered appropriate for the unique nature of this development.

With the implementation of the above recommendations and the findings outlined in the SMP, the mitigation measures are sufficient to meet the requirements set out in Section 4.6 of the Moree SAP Master Plan and Section 4.2.3 and 6.1.2.7 of the Delivery Plan.

3.14.5. Hydrology and flooding

A flood statement (Appendix K) has been prepared by Cumulus with expertise in flood risk management to assesses the impact of any development and filling of land within the flood planning area (FPA).

Existing conditions

A 1st order tributary of the Mehi River occurs around 285m north-east of the proposed development footprint. In addition, the SAP technical flood study suggests the far north-eastern corner of the wider subject land (involved lots) would be affected during a 1% Annual Exceedance Probability (AEP) flood event and Probable Maximum Flood (PMF) event (Figure 3-23); however, the remainder of the land is flood free. This is apart from the borrow pit/farm dam, which is mapped as “inundated” due to ponding in such an event and is not connected to the floodway in any way. The development site is not considered to be within the floodplain of the major rivers in the area such as the Gwydir or Mehi Rivers, with only the northeastern corner of the broader subject land within flood fringe hydraulic categorisation zones.

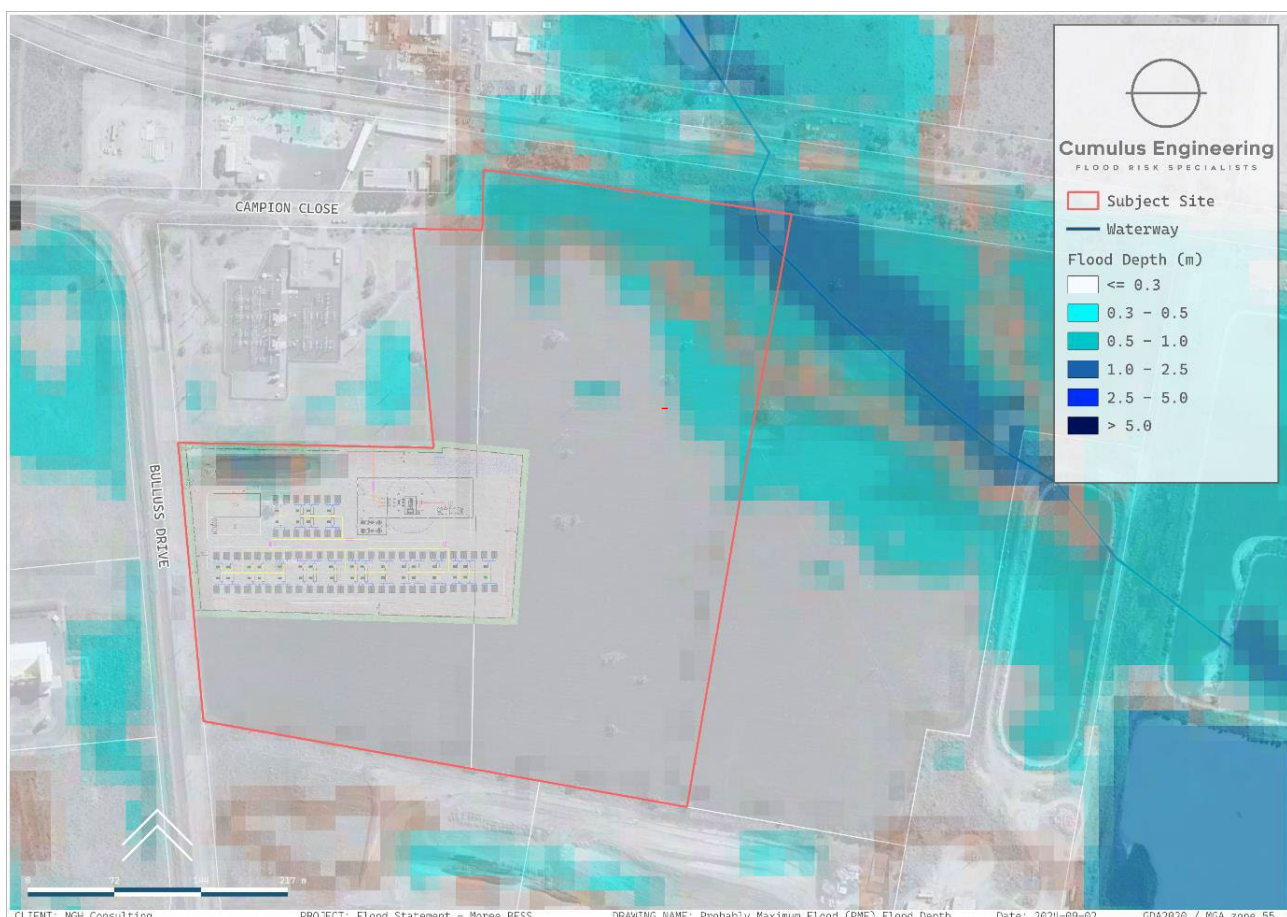


Figure 3-23 Probable Maximum Flood across subject land and surrounds (Cumulus, 2025)

Potential impact

Based on the flood data outlined in 2017, 2020 and 2021 studies, the Cumulus assessment for the proposed development concluded that there would be no adverse impacts to flooding at the site based on the following:

- Only a small portion of the subject land is at risk of inundation with the majority of the subject land flood-free in extreme flood events.
- The siting of the infrastructure associated with the proposed development is considered flood-free in extreme flood events with the exception of the existing dam, where some ponding was evident with flood mapping in the 2021 report.
- The provision of the detention basin within the design ensures that any additional stormwater run-off arising as a result of the proposed development and / or removal of the existing dam will be appropriately managed and there will be no adverse impacts to downstream properties.

The borrow pit is proposed to be infilled and replaced with a new detention basin at the low point of the site, as per the accompanying stormwater management plan and supporting report. The detention basin is suitably sized according to the Delivery Plan requirements and is proposed to cater for the same isolated area of inundation during a PMF event as the existing borrow pit.

Mitigation measures

A site-based flood emergency response plan is not required, due to no flood impact. The same mitigation measures as recommended in Section 3.14.4 are applicable for impacts to hydrology and flooding.

3.14.6. Groundwater and water resource

Existing environment

A Hydrogeological Report (Aurecon, 2011) and a Water Demand Report (WSP, 2021) were prepared for the Moree SAP. The findings of the Hydrogeological Report indicated that the availability of groundwater would be a significant constraint on the development of the Moree SAP. Findings of the Water Demand Report indicated that maximising the use of existing water supplies would provide an economically sustainable method of servicing the Moree SAP (WSP, 2021).

No registered groundwater bores occur within the proposed development footprint; However, two occur within the wider subject land and are classed as water supply bores. It is noted that the existing bores in the general area and groundwater resources are of critical importance to water supply in Moree. The location of groundwater bores surrounding the subject land are shown in Figure 3-24 on the following page.



LEGEND

- Subject Land
- BESS Development Site
- Construction Extent
- Groundwater Bore
- Waterways
- Lot Boundaries
- Roads

Datum: GDA2020 / MGA Zone 55

NGH  0 200 400 m

Moree BESS
Groundwater Bore Location

Ref: 230246 Moree BESS Planning | Groundwater Bore Location Author: Martin Wyburn Date created: 04.03.2025 © NGH 2022

Potential impacts

During operation, the development would require approximately 50kL of potable water for the proposed operations and maintenance building. Approximately 30kL of non-potable water would be needed for Landscape establishment activities in the initial stages. A 200kL water tank is proposed on-site to cater for potable water supply to the operations and maintenance building, landscape screening establishment and firefighting static supply.

The development does not propose groundwater extraction from the site. Water demand would be fulfilled with the help of water trucks delivering supply to the site. As such, PC 25 and 26 from the SAP Delivery Plan is not applicable.

The proposed development is not a type that would interact with groundwater resources in the area. Section 2.2.3 of the Hydrogeology Report completed for the Moree SAP (Aurecon, 2011) found that the groundwater table at the northern end of the SAP is typically around 15m below ground level. The groundwater monitoring bore GW 030396.1.1 (refer to Figure 3-24 and Figure 3-25) suggests the current groundwater level for the area are stabilised around 30m. The underground cabling proposed for the development would not be at a depth greater than 1.5-2m hence would not interfere with the groundwater table.

Further, the proposed development would not impact existing groundwater bores present on the wider subject land.

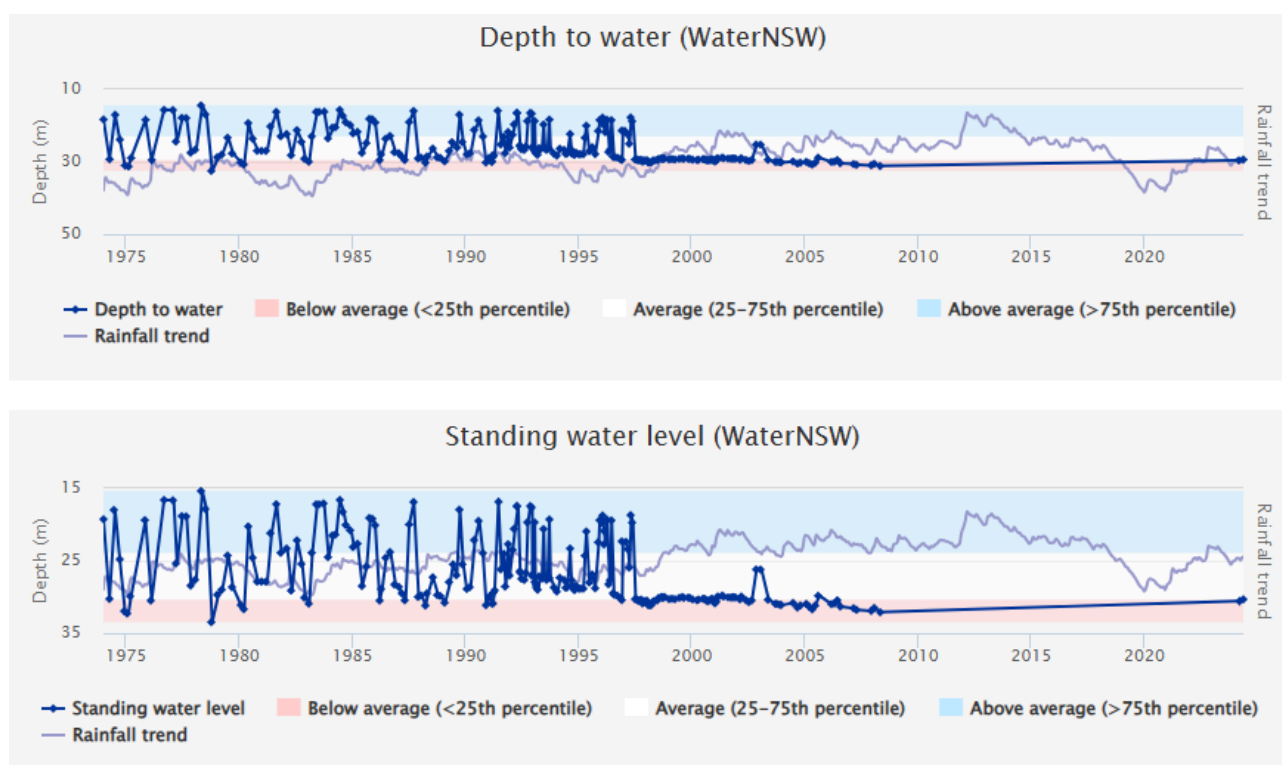


Figure 3-25 Piezometer data for the Moree SAP (Water NSW, 2024)

4. Statutory framework

4.1. Commonwealth legislation

4.1.1. Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is administered by the Commonwealth Department of the Environment and Energy (DEE). Under the EPBC Act, if the Minister determines that an action is a 'controlled action' then the action may not be undertaken without prior approval of the Minister.

Assessments of significance based on criteria listed in Significant Impact Guidelines 1.1 issued by the Commonwealth (Commonwealth of Australia 2013) are used to determine whether the proposed action is likely to have a significant impact (i.e. is likely to be considered a 'controlled action').

As outlined earlier in this report, and in further detail in the biodiversity report prepared by Aurecon, the proposed development consists of non-native vegetations within an established and growing industrial area. Therefore, it was considered not likely to have a significant impact on threatened species and communities, migratory bird species and marine species listed under the EPBC Act.

4.2. State legislation

4.2.1. Environmental Planning & Assessment Act 1979

The proposed development would be assessed under Section 4.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The consent authority must not grant consent for certain development on bush fire prone land unless it is satisfied the development meets the relevant specifications and requirements of PBP. The proposed development has been assessed by a qualified bush fire risk consultant, and it was determined to meet the relevant specifications and requirements of PBP. Refer to further details in section 3.5 of this report and full assessment in Appendix E.

This Statement of Environmental Effects report and supporting documentation addresses the matters to be considered under Section 4.15 of the Act.

The proposed development requires a section 138 permit under the *Roads Act 1993* as outlined below. Pursuant to section 4.46(3) of the Act, the proposed development is considered **Integrated Development** as such a permit is required from MPSC, who is not also the consent authority for this development application.

The development is not Designated Development according to Schedule 3 clause 50(b) of the *Environmental Planning and Assessment Regulation 2021*.

4.2.2. Biodiversity Conservation Act 2016

Development assessed under Part 4 of the EP&A Act must also address the relevant requirements of the *Biodiversity Conservation Act 2016* (BC Act).

The proposed development must be assessed to determine whether the development is likely to significantly affect threatened species, which as defined by the Act, is if:

- (a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, (5 part Test) or*
- (b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or*
- (c) it is carried out in a declared area of outstanding biodiversity value.*

The proposed development would not trigger the BC Act thresholds, according to the SAP Biodiversity Assessment report prepared by Aurecon, as the site consists of scattered non-native vegetation. The proposed development would not significantly affect threatened species or ecological communities, or their habitats. The subject land is not mapped as Biodiversity Values land as shown in Figure 3-16.

The proposed development would not generate a Biodiversity Offsets Scheme (BOS) offset obligation. Further detailed assessment is not required according to the BC Act.

4.2.3. Roads Act 1993

A section 138 permit from Moree Plains Shire Council would be required in order to carry out work in the public reservation of Bulluss Drive. This involves constructing the proposed new site access point to Bulluss Drive. The preliminary designs have been completed by WSP. The proponent would prepare detailed design plans and a TMP post-approval to obtain the section 138 permit from MPSC.

4.2.4. State Environmental Planning Policy (Regional – Precincts) 2021

The subject land is in the Moree Special Activation Precinct (SAP), as declared under Schedule 1B Moree Activation Precinct of the Regional Precincts SEPP.

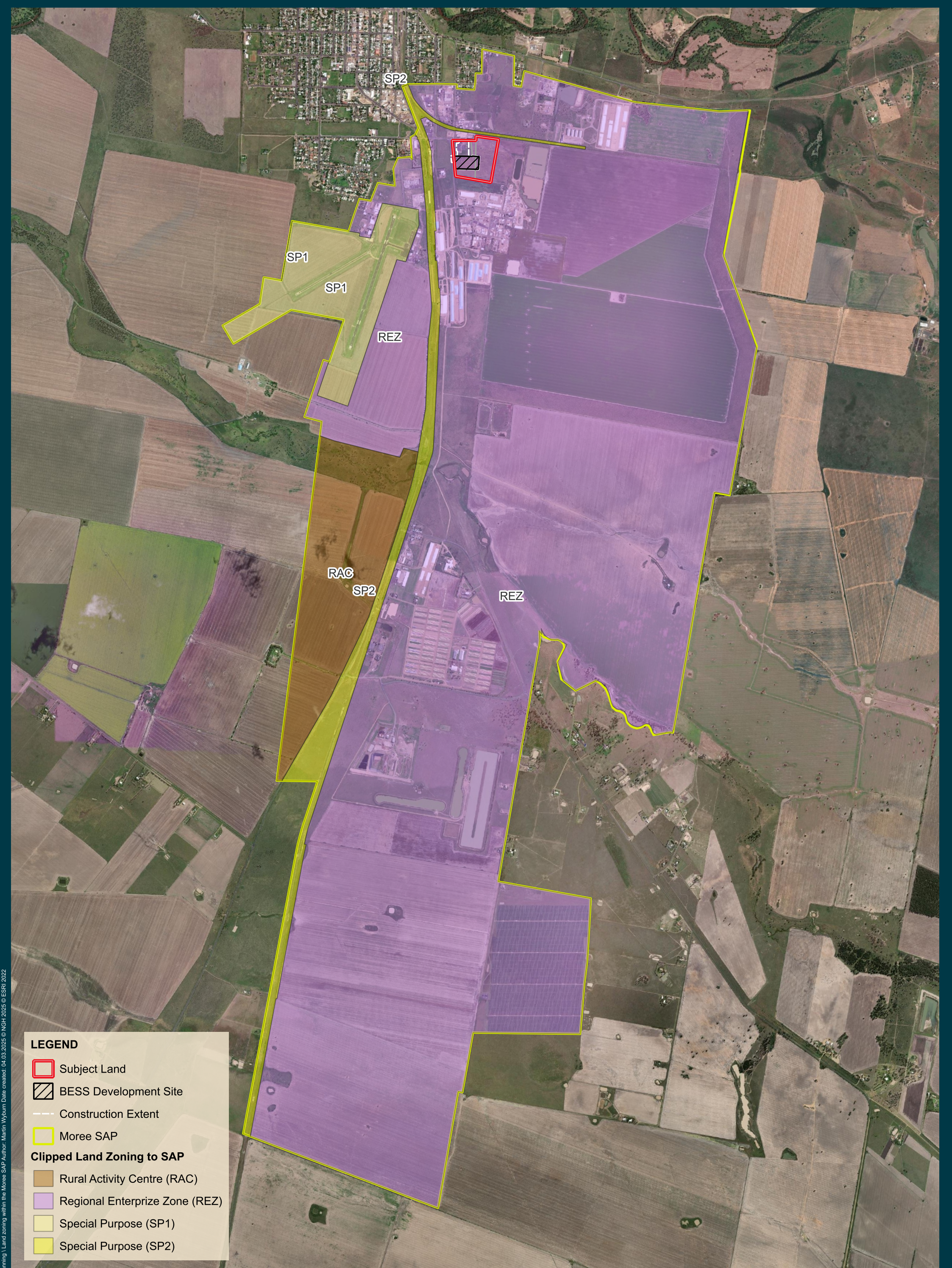
Under the provisions of Schedule 1B, the land is zoned Regional Enterprise as shown in Figure 4-1. 'Electricity generating works' as defined includes electricity storage. Electricity generating works are permitted with consent in the Regional Enterprise zone.

Where development requires consent, the Planning Secretary is the consent authority for development on land in the Regional Enterprise Zone and Rural Activity Zone according to section 3 of Schedule 1B.

According to section 6 of Schedule 1B, the consent authority must have regard to the zone objectives in determining this application. The zone objectives are addressed in the table on the following page.

Table 4-1 Regional enterprise zone objectives

Zone objective	Response
<i>To encourage regional enterprise and innovation in industry, environmental management and performance and in urban and industrial design.</i>	The proposed development would achieve this objective as it would involve the development of industry leading renewable energy generation and resource management, incorporating the latest technology and best practice BESS design.
<i>To effectively manage land uses of varying intensities or environmental sensitivities, and to minimise the risk of conflict associated with incompatible land uses.</i>	The BESS would involve significant investment and play a crucial role in energy use in the SAP and wider region. However, from the public domain, it would appear as a relatively passive land use, with minimal visible activity. The key environmental and amenity impacts of the BESS have been assessed in this SEE and supporting reports. The risk of conflict with other permitted and desirable uses in the zone is considered very low.
<i>To provide opportunities for regional economic development and employment.</i>	The proposed development would achieve this objective and represents a significant investment in private infrastructure in the SAP at \$202m. The proposal would have considerable flow on effects during construction for economic activity and employment. Furthermore, the proponent intends to enter into a VPA with MPSC with a focus on a monetary contribution towards education and training opportunities for local residents.
<i>To attract industries that would contribute to and benefit from being close to major freight transport networks.</i>	The proposed development would be compatible with this objective as it would enable efficient energy usage in the precinct which would underpin the future growth of the SAP and help to achieve the vision for a carbon neutral precinct.
<i>To encourage the development of industry leading renewable energy generation and resource and waste management.</i>	The proposed development would achieve this objective as it would make more efficient use of energy in the NEM and potentially attract other solar farms to be developed in the area. The proposal involves the latest technology and incorporates measures that reduce resource consumption and waste at the end of the product lifecycle.



LEGEND

- Subject Land
- BESS Development Site
- Construction Extent
- Moree SAP

Clipped Land Zoning to SAP

- Rural Activity Centre (RAC)
- Regional Enterprise Zone (REZ)
- Special Purpose (SP1)
- Special Purpose (SP2)

Datum: GDA2020 / MGA Zone 55

Ref: 230246 Moree BESS Planning \ Land zoning within the Moree SAP Author: Martin Wyburn Date created: 04.03.2025 © NGH 2025 © ESRI 2022

Moree BESS

In accordance with section 3.4 of the SEPP, local environmental plans do not apply to land within an Activation Precinct except as provided under Schedule 1B section 11 and addressed in Table 4-2 on the following page.

Pursuant to section 3.12A of the SEPP, development consent must not be granted to the development unless an Activation Precinct Certificate is in force in relation to the development. The proposal has been granted APC 285 dated 2 October 2024.

According to section 3.13, the electricity supply authority must be consulted, given works are proposed within the relevant distance of existing electrical infrastructure. The proponent has conducted detailed consultation with Transgrid in relation to the proposed development.

Schedule 1B Moree Activation Precinct

Table 4-2 Provisions of Schedule 1B of the Regional Precincts SEPP

Provisions of Schedule 1B	Response
Section 10 Preservation of trees and vegetation	The proposed development would not be carried out on land identified as within an environmentally sensitive area on the Moree Activation Precinct Environmentally Sensitive Areas Map. No further action is required.
Section 11 Application of Moree LEP 2011	<p>Clauses 2.6–2.8, 5.1, 5.8, 5.10 are not triggered or relevant to the proposed development.</p> <p>Clause 7.3-7.5 relate to operational impacts on the Moree Regional Airport.</p> <p>The proposed development would not penetrate the Obstacle Limitation Surface Map or the Procedures for Air Navigation Services Operations Surface Map for the Moree Regional Airport.</p> <p>The subject land is not located within the ANEF Contour.</p> <p>The proposed development would not penetrate the Meteorological Station Obstacle Limitation Surface Map.</p>

Provisions of Moree Special Activation Precinct Master Plan

The provisions of the Moree SAP Master Plan are addressed in detail in the Statement of Consistency (Appendix L). The SOC demonstrates compliance and consistency with the SAP Master Plan.

Moree Special Activation Precinct Delivery Plan

The provisions of the Moree SAP Delivery Plan are detailed within the Statement of Consistency (SOC - Appendix L). The SOC demonstrates compliance and consistency with the SAP Delivery Plan.

4.2.5. State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 3 and 4 of the State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) have been considered for the proposed development as follows:

Chapter 3 Hazardous and Offensive Development

Chapter 3 requires that consideration be given to the current circulars or guidelines relating to such development as published by the Department of Planning, when determining if the development is potentially hazardous or offensive.

Electricity generating works are not identified as a potentially offensive or potentially hazardous industry or storage facility in Appendix 3 of the Guidelines. However, the proposed use is considered to meet the definition of potentially hazardous development and would involve the storage and transport of some dangerous goods.

The potential hazardousness and offensiveness of the proposed development has been assessed by way of a PHA prepared by a suitably qualified consultant in accordance with section 3.11 of the SEPP. Refer to summary provided in section 3.4 of this report and PHA provided in Appendix D.

According to section 3.12 of the SEPP, the consent authority must consider certain matters as addressed in the table below.

Table 4-3 Section 3.12 matters for consideration

Section 3.12 matters for consideration	Response
<i>(a) current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development, and</i>	The accompanying PHA has addressed all relevant circulars or guidelines published by the Department of Planning relating to hazardous or offensive development,
<i>(b) whether any public authority should be consulted concerning any environmental and land use safety requirements with which the development should comply, and</i>	The consent authority would undertake consultation with any other public authority it deems relevant.
<i>(c) in the case of development for the purpose of a potentially hazardous industry—a preliminary hazard analysis prepared by or on behalf of the applicant, and</i>	The proposed development has been assessed by way of a PHA prepared by a suitably qualified consultant in accordance with section 3.11 of the SEPP.
<i>(d) any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the</i>	Other feasible alternatives have been explored such as alternative sites, varying BESS sizes and varying technologies. The subject land was selected based on proximity to the Moree Bulk Supply Point substation, availability of an existing bay or willingness of Transgrid to facilitate an additional bay for

<p><i>development and the reasons for choosing the location the subject of the application), and</i></p>	<p>connection as well as other relevant NEM grid features in the region. The initial site assessment also included a comprehensive list of other considerations such as land use conflicts, biodiversity values, indigenous and non-indigenous heritage, traffic/access, risks such as bushfire and flooding, soil conditions and proximity to sensitive uses. It is considered the selected site is appropriate and desirable for the proposed development, as outlined in detail in this report.</p> <p>Varying BESS sizes were modelled, with 120MW 4-hour storage determined to be the most viable options.</p> <p>Varying technologies were considered; however, the selected technology has been settled upon due to being an advanced manufacturer and battery type, appropriately robust safety and operational data, adequate safety systems including fire protection, satisfactory noise impacts, product supply and cost considerations.</p> <p>Not proceeding with the proposed development is also an option considered. However, this also result in the forgoing of the economic and employment benefits of the project as well as the contribution the proposal can make to achieving the vision for the Moree SAP. The proposal would also involve monetary contributions to MPSC which can help to achieve meaningful education and training outcomes for local residents.</p>
<p><i>(e) any likely future use of the land surrounding the development.</i></p>	<p>The adopted Master Plan and Delivery Plan provide a detailed framework for the future use of the subject land and substantial surrounding area in the Moree SAP. The subject land is within the Regional Enterprise zone and is a permitted use. It would contribute to the achievement of the zone objectives. The likely future adjoining and surrounding uses are agri-industrial development, transport/logistics and manufacturing. The proposed development would not only be compatible with these activities but would achieve more efficient use of energy in the NEM and other ancillary functions to stabilise the grid.</p> <p>The key environmental and amenity impacts of the BESS have been assessed in this SEE and supporting reports. The risk of conflict with the likely future use of the land surrounding the development is considered very low.</p>

Chapter 4 Remediation of Land

Chapter 4 requires the consent authority to consider whether land is contaminated, whether the land is in a suitable state for the proposed development and whether land requires remediation to reach a state that is suitable for that development.

Pursuant to the provisions of section 4.6, the subject land is not located within an investigation area as declared under Division 2 of Part 3 of the *Contaminated Land Management Act 1997*, nor is it proposed to carry out development for residential, educational, recreational or child care purposes, or for the purposes of a hospital. The subject land has been used historically for agricultural activity which is a purpose referred to in Table 1 of the contaminated land planning guidelines.

No physical evidence of contamination was observed by NGH during a site inspection in April 2024.

A search of the EPA contaminated sites register under section 58 of CLM Act on 23 May 2024 for the suburb of Moree found one current contaminated site which is a Caltex Service station located approximately 1950m north west of the proposed Development.

A search of the EPA contaminated s land record of notices under section 60 of CLM Act on 23 May 2024 for the suburb of Moree found one current contaminated land record which is a Caltex Service station at 54 Alice Street located approximately 1950m north west of the proposed Development.

Aurecon conducted a contamination assessment for the Moree SAP (Aurecon, 2021a). According to the executive summary, the information in the report is consistent with the level of information included in a 'Stage 1 Preliminary Site Investigation' as described in State Environmental Planning Policy No 55 (now Resilience and Hazards SEPP) and the National Environment Protection (Assessment of Site Contamination) Measure 2013. The report noted that additional detail would be required for specific sites in future design stages where areas of potential environmental concern (APEC) have been identified (refer to Figure 3-20 of this report). The subject land is adjacent to APEC 1 and APEC 2 but is excluded from the identified areas of concern in the Aurecon PSI. No further assessment is considered necessary.

In terms of proposed development adjacent to potentially contaminated land, the activities to be conducted would be industrial in nature, permitted in the Regional Enterprise zone.

4.3. Moree Local Environmental Plan 2011

The relevant sections of the Moree Local Environmental Plan 2011 are addressed in Table 4-2.

5. Consultation

Advice on the level of consultation required was sought from the Regional Growth NSW Development Corporation (RGDC) and the DPHI State Rezoning team (Appendix M). The advice received was that engagement is not mandatory for local development applications in a Precinct. As part of the master planning process for the SAP, the Department and RGDC have conducted thorough engagement. Stakeholders consulted include:

- RGDC
- Former NSW Department of Planning, Industry and Environment (DPIE)
- Moree Plains Shire Council
- NSW EPA
- Transport for NSW
- Crown Lands
- Department of Primary Industries
- Landowners, businesses, and community members.
- NBN Co
- Transgrid
- Essential Energy

When an application is lodged with a current APC, all required referrals or consultations have been completed, and no additional consultation is necessary prior to the lodgement of a development application.

5.1. Moree Plains Shire Council

NGH met with MPSC Planning staff and RGDC to provide an overview of the proposal in October 2023.

NGH met with MPSC Planning and RGDC on behalf of Avenis Energy to discuss the potential for a VPA in lieu of infrastructure contributions in February 2024.

Avenis Energy more formally reached out to MPSC in August 2024, discuss access arrangements, and discuss preliminary terms for the Voluntary Planning Agreement (Appendix M). In line with Appendix B of the Moree Plains Shire Operations Plan (Fees and Charges 2024-25) (MPSC, 2024), the Applicant proposed a monetary contribution of \$100,000.00 per annum plus CPI paid over a period of 20 years. With an approximate Estimated Development Cost (EDC) of \$204 million, this is the approximate equivalent of 1% development cost.

MPSC confirmed via return letter that the offer was consistent with the adopted Council Policy. It has been recommended at the Ordinary Council Meeting that the monetary terms of the VPA be agreed in principle (Appendix M).

The Applicant received confirmation from MPSC in December 2024 of the following:

- MPSC agree in principle to the monetary terms of the offer to enter into a Planning Agreement.
- That the proponent be invited to prepare a draft Planning Agreement in accordance with section 7.4 of the Environmental Planning and Assessment Act 1979 (NSW).

Moree BESS

- That in accordance with the NSW Government's Planning Agreements Practice Note – February 2021, MPSC staff prepare a Planning Agreement Policy and Procedures for consideration by Council

In relation to the proposed traffic and access arrangements, MPSC was consulted regarding the proposed development. MPSC responded to advise the capacity of the road network can accommodate the proposed construction traffic; however, no further comments have been received on the TIA. The proposed development is integrated development with regard to a section 138 permit and thus MPSC will have further opportunity to provide input.

5.2. Transport for New South Wales

A version of the haulage assessment was provided to TfNSW via email in October 2024. Representatives from TfNSW provided comments which are summarised below and provided in Appendix C of the accompanying TIA.

The feedback outlined:

- Concerns about the use of Port Botany
- Recommendations about timing of the OSOM movements
- Information to be included in a route assessment which have been included in the haulage assessment where possible.

TFNSW would be further consulted with regard to obtaining relevant approvals for OSOM vehicles in future.

5.3. Regional Growth NSW Development Corporation

In relation to the proposed traffic and access arrangements, MPSC referred correspondence to RGDC Infrastructure section for comment. RGDC response is provided in Appendix F of the accompanying TIA.

RGDC Infrastructure advised the Moree SAP TIA was not yet finalised, and some further work to address some outstanding TfNSW comments on the precinct was planned for the near future. RGDC Infrastructure advised there would also be several new roads constructed within the SAP and which connect to Bulluss Drive south of Industrial Drive. Some pavement resurfacing work on Bulluss Drive may be expected but no change in the road geometry adjacent to the land proposed to be developed for the Moree BESS. No further comments have been received.

6. Conclusion

This SEE has addressed the requirements of Section 4.15 of the *Environmental Planning and Assessment Act 1979*. The proposed Moree BESS meets the relevant provisions of the State Environmental Planning Policy (Precincts—Regional) 2021 and relevant controls of the Moree SAP Master Plan and Delivery Plan. The proposed development site has been carefully selected and refined in response to early investigations. The proposed infrastructure layout was also designed in response to various considerations including environmental and amenity factors relevant to renewable energy facilities and the emerging industrial setting the proposed development would be carried out within.

The Applicant commits to carrying out the development in accordance with the safeguards and mitigation measures outlined in this SEE and supporting assessments. Overall, the proposed development is expected to have minimal environmental and amenity impact; it is suitably sited within the Regional Enterprise Zone of the Moree SAP. The development would result in a positive impact for the community and local economy.

Given the adopted target of 100% renewable energy reliance for the Moree SAP, it is considered the proposed BESS would be crucial in:

- Providing support to renewable energy sources such as the Moree Solar Farm and other likely future solar farms in the locality/region,
- Providing grid support services which are noted to be an issue in the Moree SAP Renewable Energy Report (Arcadis, 2021),
- Improved management of potential excess renewable energy in the grid, and shifting this to cover the energy needs of existing and future industrial development in the SAP.

Residential areas beyond the SAP would not be negatively impacted by the proposed development. The visual impacts are consistent with the adopted direction of the SAP and the Applicant has committed to 5m wide landscaping screening surrounding the site. Noise during construction and operation would have an acceptable impact as identified by the noise assessment. Importantly, no remnant native vegetation or sensitive biodiversity features would be impacted by the proposed development as none are present within the site. The proposed development would not result in any negative impact to the Moree Regional Airport and its activities.

This SEE and all supporting documents have shown that there are reasonable grounds to grant consent for the development. The safeguards and mitigation measures committed to by the applicant in this SEE would enable a development that avoids and minimises environmental, and amenity impacts and would support the objectives and aims of the Moree SAP.

7. References

- Arcadis. (2021). *Moree Special Activation Precinct - Renewable Energy Report*. Arcadis Design & Consultancy.
- Arcadis. (2021). *Moree Special Activation Precinct - Transport and Traffic Plan*. Arcadis Design & Consultancy.
- Aurecon. (2011). *Hydrogeology Report*. Retrieved from Moree Special Activation Precinct: <!DOCTYPE qgis PUBLIC 'http://mrcc.com/qgis.dtd' 'SYSTEM'>
- Aurecon. (2021). *Moree Special Activation Precinct Environmental Package - Biodiversity Report*. Aurecon Australasia Pty Ltd.
- Aurecon. (2021). *Moree Special Activation Precinct Environmental Package - Heritage Report*. Aurecon Australasia Pty Ltd.
- Aurecon. (2021a). *Moree Special Activation Precinct - Soil and Contaminatin Report*.
- NSW Government. (2022). *The Moree Special Activation Precinct*. Retrieved from NSW Planning Portal: <https://www.planningportal.nsw.gov.au/MoreeSAP>
- NSW Government RGDC. (2022). *Moree Special Activation Precinct Delivery Plan*.

Appendix A Development design plan

Appendix B Utilities Demand Report

Appendix C Noise Assessment

Appendix D Preliminary Hazard Analysis

Appendix E Bushfire Impact Assessment

Appendix F Traffic Impact and Haulage Assessment

Appendix G Windshear Assessment

Appendix H Landscape Plan

Appendix I Waste Management Plan

Appendix J Stormwater Management Plan

Appendix K Flood statement

Appendix L Statement of Consistency

Appendix M Consultation

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