
Appendix E – Mitigation Measures

1.0 Introduction

This appendix provides a consolidated summary of the commitments made to manage, mitigate, and monitor impacts during the construction and operation of the Project as proposed within this EIS.

2.0 Management Measures

A summary of the mitigation, management, and monitoring measures proposed for the Project is presented at **Table 1**.

Table 1 Consolidated Summary of Proposed Environmental Management and Monitoring Measures

Impact	Mitigation Measures and Monitoring Requirements
Biodiversity	
Biodiversity Development Assessment Report (BDAR) waiver granted on 18 August 2025 confirms no mitigation is warranted.	
Aboriginal Heritage	
ACH1	Detailed site recording is recommended for Aboriginal cultural heritage site SC_AS1. The information should be documented in a report and in AHIMS site cards and Aboriginal Site Impact Recording Forms.
ACH2	Prior to the commencement of construction works, an Aboriginal Cultural Heritage Management Plan (ACHMP) will be prepared and submitted to the Department for approval. The ACHMP will be prepared in accordance with the recommendations made in the ACHAR.
ACH3	Surface collection is recommended in areas where Aboriginal object/s were identified and cannot be avoided by project works. Surface collection should occur prior to any project works.
ACH4	RAP/s should have the opportunity to undertake community collection of any Aboriginal Objects identified during initial ground disturbing works.
ACH5	All site workers and personnel involved in site impact works associated with the proposed work should be inducted and briefed on the identification of Aboriginal sites and objects during works and their responsibilities according to the provisions of the <i>NPW Act 1974</i> , in case any additional unknown objects or items are uncovered during proposed works. The induction and briefing material will incorporate the recommendations of the ACHAR, including consideration provided for RAP input and delivery of these inductions.



Impact	Mitigation Measures and Monitoring Requirements
ACH6	If Aboriginal objects (excluding human remains or sites such as grinding groove complexes/engravings, rock art) are detected during ground disturbance, <i>NPWS</i> unexpected finds procedures will be observed. The unexpected finds procedures for the Project will be included in the Construction Environmental Management Plan (CEMP) and will also incorporate the recommendations of the ACHAR. A Care and Control agreement is to be prepared for the salvaged and unexpected finds.
Historic Heritage	
HER1	In the unlikely event that an unanticipated heritage object (relic) or human remains, whether associated with the cemetery or otherwise, are discovered during construction of the BESS, all works must immediately cease. Relevant procedures for managing unexpected finds and human remains must then be followed in accordance with established protocols.
Land Use Conflict	
LUC1	Prepare and implement a Construction Environmental Management Plan, which should include biosecurity management measures and outlines specific mitigation measures to minimise the chance of foreign weeds. The biosecurity management practises should be in accordance with the DPI's Managing biosecurity risks in land use planning and development guide.
LUC2	Prepare and implement a vegetation management plan.
LUC3	Prepare and implement an Operational Environmental Management Plan, which should include biosecurity management measures. The biosecurity management practises should be in accordance with the DPI's Managing biosecurity risks in land use planning and development guide.
Landscape and Visual	
LVIA1	Recommended mitigation measures to reduce visual impact during construction include: • Rehabilitation work on disturbed areas to be undertaken as soon as possible; • Avoiding or minimising vegetation clearing as far as practical; • Minimising temporary hoarding of barriers, traffic management, signage and construction materials; • Restricting lighting of compounds and worksites to low impact lighting; • Locating storage facilities away from residential areas and views from residential properties; • Storing materials and machinery neatly during the works, and where possible behind solid hoardings; • Maintaining access roads to site compounds and works areas as free of dust and mud as far as reasonably practicable; and



Impact	Mitigation Measures and Monitoring Requirements
	• Removing all construction materials to a suitable location upon completion of construction. Construction equipment and infrastructure should be demobilised from site as soon as practicable and all unnecessary project flagging and signage should be removed and disposed of at the completion of construction.
LVIA2	Recommended mitigation measures to reduce visual impact during operation include: • Considering the form and finish of structures, including minimising the size of structures where possible, using colours which match the surroundings and less reflective materials; • Considering the co-location or clustering of elements to reduce visual bulk and complexity; • Maintaining and enhancing the vegetation buffer along road frontages; and • Considering opportunities for landscaping where appropriate.
LVIA3	The mitigation principles will be applied from AS/NZS 4282-2023 Control of the Obtrusive Effect of Outdoor Lighting, including: • Direct lights downward as much as possible; • Only install lighting essential for safety, security and operation; • Use motion sensors or timers to switch lights off when not needed; • Fully shield external light fittings; • Avoid lighting reflective surfaces; • Use warm-white light only with a colour temperature less than 3,000 Kelvin; • Mount lights at a height and angle that minimises spill; and • Design and operate the site to minimise dust.
Noise and Vibration	
NV1	A Construction Noise and Vibration Management Plan (CNVMP) would be prepared before any work begins. This would: • Identify all potentially impacted receivers; • Assess potential noise and vibration impacts from the proposal; • Contain procedures for community engagement and handling complaints; and • Compliance monitoring requirements.



Impact	Mitigation Measures and Monitoring Requirements
NV2	The following standard construction hours are proposed for the Project: - Monday to Friday - 7am to 6pm. - Saturday – 8am to 1pm. - Sunday and Public Holidays - No works to be undertaken. No works are proposed to be undertaken outside of the standard construction hours. In the event this is required, out of hours (OOH) approval would be sought, and all works would be undertaken in accordance with the appropriate OOH protocols and approval processes.
NV3	Management of construction traffic noise should include as a minimum: - Scheduling and routing of vehicles movements; - Speed of vehicles; - Driver behaviour and avoidance of engine compression brakes; and - Ensuring vehicles are adequately maintained and silenced.
NV4	Noise controls to be incorporated to the battery and inverter units. The noise impacts from all noise-generating plant items would be reviewed during detailed design stage to confirm unit selections and any mitigation requirements.
Traffic	
TRA1	Two OSOM material transportation assessments (A Route Study) will be conducted for the one-off transportation of the transformer from Glen Waverley (Wilson Transformer Company) and for the switch gear equipment and construction cranes etc from the Port of Newcastle to the development site following the approval of the SSD. These reports will consider all aspects of the preferred route in its entirety, such as bridge and tunnel clearances (from a vertical perspective) and carriageway widths, such as tight turns (from a horizontal perspective).
TRA2	It is recommended that a Basic Left Turn treatment on Stoney Creek Road be constructed at the site access.
TRA3	A Construction Traffic Management Plan (CTMP) will be developed in accordance with the recommendations of the TIA, prior to the substantial commencement of construction activities. The CTMP will outline measures including: - Preparation and execution of Traffic Guidance Schemes (TGS) to enable one-way operation on Stoney Creek Road. TGS plans will be implemented, managing the access and the general public's movement around construction activities. They should identify all reasonably foreseeable hazards, assess them, and manage them as best possible by eliminating or minimising the risks. The TGSs shall be monitored and updated accordingly throughout the project. - Management of transport from workforce accommodation, including the construction program, accommodation availability and the vehicle fleet that will be used.



Impact	Mitigation Measures and Monitoring Requirements
	• Drivers Code of Conduct, consistent with the measures outlined in the TIA. • All vehicles are to park and load/ unload within the site using the designated parking and loading areas where possible. Vehicles are not parked or loading/ unloading within the public road reserve. • Temporary signage must be positioned at critical intersections to inform construction vehicle drivers and to warn the general public about the construction activities in the vicinity. • Residents of the area must be informed prior to the commencement of construction works. • Heavy vehicles should limit the use of engine or compression braking systems where possible and vehicles are to be turned off when not in use. • A risk assessment is intended to identify hazards and risks associated with construction activities. • Incident Management Protocol. • Reporting and monitoring of construction vehicle movements are to be undertaken to ensure that drivers are adhering to restricted times.
TRA4	Prior to commencement of works a dilapidation survey is recommended to assess the condition of the proposed transport route through the town of Narrabri to the project site from the intersection of Newell / Tibbereena Street to the intersection of Stoney Creek Road/ Site Access to identify any changes in road condition before and after the proposed construction works.
Flooding	
FL1	The stormwater basin will be sized to mitigate flows in the 1% Annual Exceedance Probability (AEP) event and to provide treatment of stormwater to mitigate off site impacts from increased levels of pollutants resulting from the BESS site.
FL2	Building floor levels are to be elevated above flood planning levels (flood levels plus appropriate freeboard).
FL3	The footings should be designed to withstand the flood velocities described which are mostly low (<1m/s) in the BESS Site.
FL4	An Emergency Response Plan is to be prepared to consider options where road access is cut off to the site due to severe flooding of local roads.
Surface and Groundwater	
SGW1	Design and construct drainage infrastructure, including the proposed stormwater basin, to manage surface water flows, minimise localised ponding, and reduce pollutant loads to downstream environments.
SGW2	Minimise regrading of terrain for the development pad and install appropriately sized stormwater drainage infrastructure to preserve natural surface flow paths and reduce erosion risks.



Impact	Mitigation Measures and Monitoring Requirements
SGW3	Avoid groundwater extraction during construction where practicable. Minimise groundwater inflows into excavations and manage any encountered groundwater in accordance with best practice.
SGW4	Cover Construction Soil and Water Management within the Construction and Environment Management Plan (CEMP) to manage risks of accidental spills during construction and operation. The stormwater basin must be designed to retain and treat pollutants in the event of accidental spills, using appropriate infiltration media.
ESD1	Construction works and decommissioning works are to be managed under an Erosion and Sediment Control Plan (ESCP). The ESCP should include the following measures: • Before construction begins, establish sediment control measures such as silt fences or sediment barriers around the perimeter of the site to prevent soil erosion and runoff; • sediment fences; • temporary sediment basins; and • shaker grids and/or wash down areas at the vehicle access point.
Bushfire	
BF1	Prior to the commencement of the BESS, APZs shall be implemented, consistent with the recommendations of the BRAR, being a minimum of 17 m from nearest BESS and substation equipment. The APZ will be maintained as either completely cleared land or a mown area with a grass height of less than 100mm.
BF2	Buildings and structures will adopt a Bushfire Attack Level of -12.5, and use non-combustible materials, such as fire-resistant concrete and metal.
BF3	The general principles and RFS-compliant design recommendations made in the BRAR will be applied to ensure that firefighting vehicles are provided with safe, all-weather access to the proposed BESS facility.
BF4	Provide reticulated water supply for the site, in conjunction with a static water supply (e.g. 150kL Fire Water tank).
BF5	The Bushfire Management Plan (BMP) for the facility shall contain a provision preventing any other vegetation from taking hold within the proposed APZ zone around the site, thereby reducing the bushfire hazard risk and maintaining adequate access to firefighting personnel and equipment. The BMP shall include ongoing implementation measures, as outlined in the BRAR including: • Access and Egress for the public and for firefighters and their equipment. • Adequate Water Supply for fire suppression. • Landscape Management.



Impact	Mitigation Measures and Monitoring Requirements
	Emergency Response and Management – Preparedness and Planning.
Hazard and Risk	
HRA1	Electrical Shock and Arc Flash - An Engineering Operation and Maintenance Management Plan should be prepared for the facility to include all measures aimed at managing hazards and risks, including specific targeted measures detailed in the Project Emergency Response Plan.
HRA2	EMF - The design of the facility will be developed in accordance with (i) Energy Networks Association (ENA), “ENA Policy Statement on Electric and Magnetic Fields”, adopted by the ESAA Board in 1991 and reconfirmed by the ENA EMF Committee, March 2006; and (ii) Nutall, K., Flanagan, P. and Melik, G., “Prudent Avoidance Guidelines for Power Frequency Magnetic Fields”, 23rd Annual Conference of the Australasian Radiation Protection Society, 1998.
HRA3	The integrity of all Project site security fencing will be maintained through the lifetime of the Project to ensure adequate exposure separation for all members of the public.
HRA4	The following management plans will be prepared and included in the CEMP and OEMP: - Bushfire Management Plan (BMP) - Fire Safety Study (FSS) - Emergency Response Plan (ERP)
HRA5	Storage of fuels and pesticides/herbicides at the Project will be as per AS1940-2017 Storage and Handling of Flammable and Combustible Liquids
HRA6	Separation distances of the stored diesel and transformer oil at the site will be as per AS1940-2017 Storage and Handling of Flammable and Combustible Liquids.
HRA7	Substation design to include secondary containment to contain spill. Design to follow guidance in relevant standards such as AS 1940 The storage and handling of flammable and combustible liquids, and AS2067-2016 Substations and high voltage installations greater than 1kV(ac).
Social	
S01	The proponent will develop and execute a Construction Communication and Stakeholder Management Plan to ensure that near neighbours and affected stakeholders are appropriately notification and consulted ahead of planned works or disruptions.
S02	The proponent should prepare a Workforce Management Plan should workforce accommodation be required in Narrabri township
S03	The proponent will coordinate with nearby temporary accommodation businesses to locate willing providers and assess tourism accommodation availability, working to coordinate non-local workforce accommodation needs (when necessary).



Impact	Mitigation Measures and Monitoring Requirements
S04	The proponent will maintain ongoing consultation with near neighbours and community, including appropriate complaint management procedures.
Waste	
WM1	Waste will be managed according to the provisions of the WMP including: • Identification of roles and responsibilities for waste management procedures. Any subcontractors engaged will have roles and responsibilities identified and the Project's waste management system clearly explained. • Methods for managing waste or wastewater including appropriate liquid storage equipment, spill containment kits. • Litter and waste management to mitigate emission of dust, litter, potentially offensive odours, and vermin resulting from improper storage and collection of solid residues and putrescible waste. • Wastewater would be transported by licenced contractors and disposed of at appropriately licensed wastewater treatment plants. • Decommissioning will be managed by a suitably qualified contractor or operator. End of life batteries will be delivered to a facility lawfully able to accept them.
WM2	The WMP will include monitoring and reporting, including: • Monitoring of the waste to ensure waste and recycling management arrangements and provisions for the Project are functional, practical and are maintained to the standard outlined in this development. • Recording of quantities of waste and recycling associated with disposal of waste and recycling, including dockets, receipts and other physical records will be recorded. • Measures to address any deficiencies identified, and methodology to review and update to maintain suitability.
WM3	All staff, including sub-contractors and labourers, employed during the site preparation and construction phases of the Project will undergo waste management induction training for the Project. Induction training will cover, as a minimum: • Legal obligations and targets; • Emergency response procedures on-site; • Waste priorities and opportunities for reduction, reuse and recycling; • Waste storage locations and separation of waste; • Procedures for suspected contaminated and hazardous waste;



Impact	Mitigation Measures and Monitoring Requirements
	• Waste related signage; • Site safety; • The implications of poor waste management practices; and • Responsibilities and reporting, including identification of personnel responsible for waste management and individual responsibilities.
WM4	All materials delivered to the waste storage area or to the other stockpile areas will be inspected. Materials suspected to contain hazardous material will be isolated until they can be inspected and tested.
Land and Soils	
LR1	An Erosion and Sediment Control Plan (ESCP) is to be prepared prior to construction and will address specific soil dispersion risks based on disturbance activity and phase of the Project; • Areas disturbed during construction that are not in active use for over 3 months, should be sown with pasture species with starter fertiliser to provide stabilising ground cover and a healthy topsoil to provide long term protection against erosion. • Standard erosion and sediment control measures should be implemented to minimise the potential for sediment export within areas to be disturbed during operations. These measures would be developed on a case-by-case basis referring to this soil assessment and are likely to include measures such as sediment fencing, localised sediment traps, and progressive stabilisation with vegetation.
LR2	A detailed Decommissioning and Rehabilitation Plan (DRP) should be prepared within 1 year of the planned closure of the Project.

