Appendix E – Consolidated Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed below. These measures have been derived from the assessment in Sections 6.0 to 17.0 of the EIS and those detailed in appended consultants' reports.

Ref No.	Mitigation Measure	Stage of Project
Biodiversity		
BD-1	Environmental induction will be provided for all workers covering ecological values and protection measures.	Prior to construction
BD-2	Regular inspection and maintenance of erosion and sediment control measures will be carried out.	Prior to construction
BD-3	Delineation and signage of surrounding retained native vegetation will be implemented.	Prior to construction
BD-4	Stockpiles to existing cleared areas will be restricted.	Construction
BD-5	Water will be applied to stockpile areas during windy conditions.	Construction
BD-6	Dust suppression measures will be implemented during earthworks.	Construction
BD-7	Hygiene protocols will be used to prevent the spread of weeds or pathogens.	Construction
BD-8	Waste bins and waste covers will be used. There will be appropriate removal and disposal of waste.	Construction
BD-9	An Erosion and Sediment Control Plan (ESCP) will be implemented consistent with *Managing Urban Stormwater: Soils and Construction (Landcom 2004)*	Prior to construction
BD-10	Stormwater runoff will be managed during operation to maintain pre-Project runoff quality and volume	Operation
BD-11	Directional, shielded luminaires will be used to minimise light spill and skyglow	Operation
Soils, Groundwater and Contamination		
PSI-1	An Acid Sulfate Soils Management Plan (ASSMP) will be prepared for the Project.	Prior to Construction
PSI-2	Any soil requiring excavation and offsite disposal will be classified in accordance with *NSW EPA Waste Classification Guidelines Part 1: Classifying waste (2014).*	Construction

Ref No.	Mitigation Measure	Stage of Project
PSI-3	A site specific 'Unexpected Finds Protocol' will be made available for reference for all occupants and/or site workers in the event unanticipated contamination is discovered, including asbestos.	Prior to Construction Construction
PSI-4	The demolition of structures and excavation activity on site will be undertaken in accordance with relevant Australian Standards, SafeWork NSW codes of practice and any other applicable requirements.	Construction
Surface Water and Flooding		
FL-1	A detailed Construction Environmental Management Plan (CEMP) and SWMP will be prepared and implemented for the Project and specifically address the following: • Minimising the risk of erosion and sedimentation • Handling of soils, including the management of unexpected finds of contaminated materials • Handling of hazardous materials and procedures to manage spills to reduce and address soil and water contamination, including fuel storage and management of transformer oils • Handling and interactions with potential ASS (via an ASSMP) • Emergency response procedures during flood conditions • While groundwater monitoring is not anticipated to be required, contingency measures should be put in place in the unexpected event that groundwater is intercepted. Consideration of nearby projects and monitoring of conditions upstream during any overlapping construction periods.	Prior to Construction
FL-2	The detailed design of the stormwater management system, including maintenance, would be undertaken following Project approval and should include the following: • Confirming the sizing and appropriate number of at-source gross pollutant traps (pit baskets). • Detailed design of drainage infrastructure, perimeter bund and any water transfer infrastructure associated with fire management as outlined in the WIA to be provided around the Project Area to manage potentially contaminated fire water. The height of the bunding should be based upon ability to contain the maximum quantity of fire water able to be supplied, with a freeboard if a storm event coincides or follows a fire-water event. This approach would be finalised as part of the Fire Safety Study. • Confirmation that the outcomes of the flood assessment can be met based upon the final site layout. This should include quantitative re-simulation of flood models (if needed).	Detailed Design
FL-3	A site-specific Operational Environment Management Plan (OEMP) will be prepared for the site including the following measures: • Procedures to maintain drainage features at the site, including existing open channels, any onsite culverts, proposed water quality controls (including maintenance of stormwater controls) and all outlets. These should be maintained in accordance with the manufacturer's specifications and kept free-draining	Prior to Operation

Ref No.	Mitigation Measure	Stage of Project
	• Procedures to manage fire water contained within the bunds and on-site, in the event of a fire where fire water must be applied to the ancillary buildings. Fire water should be tested for potential contaminants that may be mobilised from surfaces when water is applied in consultation with statutory authorities (including the NSW EPA). Water should either be discharged to the site stormwater system if it is of suitable quality, or tankered offsite to an appropriately licensed disposal facility • Identifying procedures to appropriately handle hazardous materials such that they can be contained within the site. Specified responses to a pollution incident should be documented for the unlikely event that hazardous materials are conveyed outside of the site boundary • Outlining responses for personnel that may be onsite during flood events. This should consider the Australian Government Business emergency management plan template (business.gov.au) to help protect operations before, during and after an emergency.	
Aboriginal Heritage		
ACHAR-1	The Project must be contained within the assessed study area for this Project. If there is any alteration to the boundaries of the Project to include areas not assessed as part of this archaeological investigation, further investigation of those areas will be completed to assist in managing Aboriginal objects and places which may be present in an appropriate manner.	During Construction
ACHAR-2	Should unanticipated Aboriginal archaeological material be encountered during site works, all work must cease in the vicinity of the find and an archaeologist contacted to make an assessment of the find and to advise on the course of action to be taken. Further archaeological assessment and Aboriginal community consultation may be required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW. In the unlikely event that suspected human remains are identified during construction works, all activity in the vicinity of the find must cease immediately and the find protected from harm or damage. The NSW Police and the Coroner's Office must be notified immediately. If the finds are confirmed to be human and of Aboriginal origin, further assessment by an archaeologist experienced in the assessment of human remains and consultation with both Heritage NSW and the RAPs for the Project would be required. This recommendation will be included in any Construction Environmental Management Plan (CEMP) developed for the site.	During Construction
ACHAR-3	One digital copy of this report will be forwarded by Apex Archaeology to Heritage NSW for inclusion on the Aboriginal Heritage Information Management System (AHIMS). One copy of this report will be forwarded by Apex Archaeology to each of the registered Aboriginal stakeholders for the Project.	Prior to Construction
Noise and Vibration		
NV-1	A Construction Noise Management Plan (CNMP) will be prepared and implemented for the Project, including feasible and reasonable safeguards to manage noise emissions from the Project. The CNMP should include: • identification of nearby residences and other sensitive land uses • description of approved hours of work • description and identification of all construction activities, including work areas, equipment, and duration • description of what work practices (generic and specific) would be applied to minimise noise	Prior to Construction

Ref No.	Mitigation Measure	Stage of Project
	• a notification and complaints handling process a monitoring program to assess performance against relevant noise criteria	
NV-2	Construction work will be planned and carried out during standard construction hours where possible. Work generating high noise levels would be scheduled during less sensitive time periods as far as practicable. This would include the use of demolition saws, coring machines, grinders, impact drills and jackhammers.	Construction
NV-3	Periodic notification via a letterbox drop and website notification, detailing any night-time works, with the exception of electrical fitout works, will be provided at least seven days prior to the commencement of works.	Prior to Construction and Construction
NV-4	All employees, contractors and subject would receive an environmental induction.	Construction
NV-5	Quieter construction methods will be used where feasible and reasonable (e.g. rubber wheeled instead of steel tracked plant). Equipment would be regularly inspected and maintained to ensure it is in good working order.	Construction
NV-6	The noise levels of plant and equipment would have operating sound power or sound pressure levels that would meet the predicted noise levels.	Construction
NV-7	The offset distance between noisy plant and adjacent sensitive receivers would be maximised. Plant used intermittently would be throttled down or shut down. Plant and vehicles would be turned off when not in use. Noise-emitting plant would be directed away from sensitive receivers where reasonable and feasible.	Construction
NV-8	Traffic flow, parking and loading/unloading areas would be planned to minimise reversing movements within the site. Truck drivers would be advised of designated vehicle routes, parking locations, acceptable delivery hours or other relevant practices (i.e. minimising the use of engine brakes and no extended periods of engine idling).	Construction
NV-9	Non-tonal reversing beepers (or an equivalent mechanism) would be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out-of-hours work.	Construction
NV-10	Loading and unloading of materials/deliveries would occur as far as possible from sensitive receivers. Dedicated loading/unloading areas would be shielded if close to sensitive receivers. Delivery vehicles would be fitted with straps rather than chains for unloading, wherever possible.	Construction
NV-11	Where possible, noise from mobile plant would be reduced through additional fittings including: • residential grade mufflers silencing air parking brake engagement.	Construction
NV-12	Vehicle movements would be routed away from sensitive receivers and scheduled during less sensitive times where possible. The speed of vehicles would be limited and the use of engine compression brakes would be minimised.	Construction

Ref No.	Mitigation Measure	Stage of Project
	On-site storage capacity would be maximised to reduce the need for truck movements during sensitive times.	
NV-13	Stationary noise sources would be enclosed or shielded to the greatest extent possible whilst ensuring that the occupational health and safety of workers is maintained.	Construction
NV-14	Structures to shield residential receivers from noise such as site shed placement; earth bunds; fencing.	Construction
NV-15	Fan duty cycles of battery units to be restricted during night time periods to comply with Project specific night-time noise criteria.	Operation
NV-16	The Project is to include the installation of 8m high noise walls lined with absorptive material on the internal facing to the equipment along the eastern, northern and western boundaries of the Project.	Construction
Traffic and Transport		
TIA-1	Prior to construction, a pre-condition survey of Captain Cook Drive will be undertaken by the appointed contractor in consultation with Council as the road manager. During construction, Captain Cook Drive is to be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the Project rectified. At the end of construction, a post-condition survey would be undertaken to ensure the road is left in a condition equivalent to that at the start of construction.	Prior to Construction
TIA-2	Neighbours of the Project will be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.	Construction
TIA-3	Traffic management measures will be implemented to ensure the 26 m B-Double/battery container vehicle can safely access the site. These may include: • Scheduling of deliveries to minimise the likelihood of heavy vehicles arriving/departing the site at the same time. • Driver protocols to radio the site manager/other drivers prior to arriving/departing the site to manage vehicle movements at the southern crossover. • Traffic controllers to hold exiting vehicles internally within the site while a 26 m B-Double/battery container vehicle arrives. It is noted that the default arrangement would be to give priority to arriving vehicles to prevent any queuing on Captain Cook Drive.	Construction
TIA-4	OSOM vehicle trips will 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.	Construction
Hazards and Risks		
RH-1	The Project will be surrounded by fencing, locked gates and other security measures as necessary and compliant with relevant standards	Design
RH-2	The Project will be designed to incorporate safety and fire protective systems, such that no single point of failure will result in a significant hazard event	Design

Ref No.	Mitigation Measure	Stage of Project
RH-3	Considering outdoor installations of battery units, appropriate Heating, Ventilation, and Air Conditioning (HVAC) will be designed and installed by the OEM to keep the equipment cool and clean and within a safe operating temperature range. The HVAC system will also prevent the confinement of gases	Design
RH-4	The Project will consider wind action and lightning protection. Lightning protection is included as part of the concept design.	Design
RH-5	The Project will be designed, manufactured and installed to Australian Standards and in particular: • IEC 62485-5: Safety requirements for secondary batteries and battery installations – Part 5: Safe operation of stationary lithium-ion batteries • IEC 62933 Parts 5.1 and 5.2 Electrical energy storage (EES) systems – Part 5-1: Safety considerations for grid-integrated EES systems – General specification, and Part 5-2 Electrical energy storage (EES) systems - Safety requirements for grid-integrated EES systems - Electrochemical-based systems • AS 5139: 2019 Electrical installations - Safety of battery systems for use with power conversion equipment • AS 4681 The Storage and Handling of Class 9 (miscellaneous) Dangerous Goods and Articles.	Design
RH-6	Electronic safety-related systems will be installed at both a hardware and software level, designed to applicable standards, to allow for safe isolation of electrical energy in the event of a failure. These systems will be monitored remotely for life of the operation and shall be subject to regular annual maintenance checks	Design
RH-7	Design of battery units will consist of detection and prevention system for over temperature/cell overpressure, coolant leak, etc.	Design
RH-8	Battery units will be equipped with fire, smoke and flammable gas leak monitoring system.	Design
RH-9	The Project shall be located to be directly accessible to emergency responders through site access points.	Design
RH-10	Coolant leak alarms will be installed.	Design
RH-11	All telemetry, fault monitoring, and electrical safety protection devices will remain active regardless of keylock switch position or system state.	Design and Operation
RH-12	The pyro disconnect's power supply circuit will be actively monitored.	Design
RH-13	The construction contractor will prepare an adequate safety management system and documentation for the Project construction phase (e.g., emergency plans, traffic management plans and a procedure for managing contaminated land.	Prior to Construction
RH-14	Operation and maintenance: • The battery units will be installed correctly and commissioned / tested to ensure safe function • The safety testing of the battery units will be conducted under the guidance of IEC 62619: Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications	Operation

Ref No.	Mitigation Measure	Stage of Project
	• Operators and maintainers of the Project will be adequately trained • Transformers and the switchgear will be installed and maintained as their OEM recommended regime, including regular insulation and function testing • Diesel, design, storage, and handling will be in accordance with AS 1940.	
RH-15	The following safety management plans will be implemented for the Project: • Work Health and Safety Management Plan, compliant with AS 5577: 2013 Electricity network safety management systems • An emergency plan (EP) shall be provided to Fire and Rescue NSW as per the requirements of Regulation 361 of the WHS Regulation • Asset Management Plans and assurance activities shall be developed for the Project. • Stormwater management plan is to be developed • Waste management plan for construction and operation of the Project are to be developed • Provisions are to be in place for the identification and removal of any contaminated land during construction • Housekeeping procedures are to be developed for construction and operation • Development and implementation of plant operating and maintenance procedures • Pest control / management is to be implemented • An audit system shall also be developed to ensure regular review and update of safety management plans.	Prior to Construction/Operation
RH-16	A Fire Safety Study (FSS) will be developed in accordance with the requirements of Hazardous Industry Planning Advisory Paper (HIPAP) No.2 and to meet the operational requirements of FRNSW	Prior to Construction
RH-17	A suitable fire protection system and contaminated firewater system will be designed and installed compliant with the relevant codes, in particular FRNSW guidelines	Prior to Operation
RH-18	A Fire Risk Evaluation will be conducted to provide fire safety recommendation and required firefighting equipment	Prior to Operation
RH-19	An Emergency Plan (EP) and Emergency Services Information Package (ESIP) will be developed and approved by FRNSW post detailed design prior to commencement of operations to comply with the Work Health and Safety Regulations 2025.	Prior to Operation
Bushfire		
BF-1	A Fire Safety Study will be prepared prior to construction to determine the quantum and location of bushfire fighting water supply.	Prior to Construction

Ref No.	Mitigation Measure	Stage of Project
Land Use Conflict		
LUC-1	Noise barriers of 8m in high will be installed around the western, southern and eastern extents of the battery units.	Design and Construction
LUC-2	Built-in design of the Project will consist of modular, insulated battery units to mitigate against unit failure.	Design
LUC-3	Procedures will be implemented to maintain drainage features at the site and manage fire water	Design
LUC-4	The Project will be designed to incorporate safety and fire protective systems	Design
LUC-5	A fire protection system will be designed and installed to mitigate the consequences of a fire or thermal runaway hazard event.	Design
LUC-6	A Construction Traffic Management Plan will be implemented to manage construction vehicles to and from the site.	Construction
Social and Economic Impact		
SEIA-1	Engagement and communication: The Project will provide clear, coordinated and cumulative impact-aware communication and engagement during construction, including distinguishing between proponents, providing accessible grievance pathways and offering targeted updates to near neighbours.	Construction
SEIA-2	Socially responsive design: The Project will apply landscape and design treatments that support local identity and reduce perceptions of industrialisation, including feasible cultural or environmental interpretation through artwork or planting.	Design
SEIA-3	Community cohesion and wellbeing: The Project will deliver transparent engagement that addresses concerns about cumulative change, safety and character, including opportunities for joint or aligned engagement with other proponents where appropriate	Prior to construction
SEIA-4	Perceptions of safety and emergency response: The Project will provide plain-English information on BESS safety, emergency procedures and multi-agency emergency arrangements to reduce concerns about cumulative safety risks.	All stages
SEIA-5	Workforce and local business participation: The Project will maintain a local procurement focus and monitor workforce accommodation and labour needs to avoid unnecessary cumulative pressure on local businesses or accommodation.	Operation
SEIA-6	Community benefit initiatives: Benefit sharing scheme to local initiatives that respond to cumulative concerns such as landscape greening, environmental improvements and cultural or heritage projects.	All stages
SEIA-7	Cumulative construction impacts: The Project will coordinate construction timing, notifications and communication with other proponents to minimise compounded disruption and ensure residents understand who is responsible for each activity.	Construction
Non-Aboriginal Heritage		
NAH-1	Should unanticipated archaeological material be encountered during site works, all work must cease and an archaeologist contacted to make an assessment of the find. Further archaeological assessment and approvals may be required prior to the recommencement of works. Any historical objects must be reported to Heritage NSW.	Construction

Ref No.	Mitigation Measure	Stage of Project
Visual Impact		
VIA-1	The Project will specify colours consistent with the surrounding landscape and vegetation for the proposed noise and safety walls (specifically the proposed safety wall along Captain Cook Drive).	Design
VIA-2	The Project will provide low level boundary planting along the southern section of the sites Captain Cook Drive interface, using plant species in keeping with the existing roadside vegetation	Design
Waste Management		
WM-1	A detailed Waste Management Plan will be developed and implemented as part of the CEMP.	Prior to Construction Construction
WM-2	Onsite waste management will include the appropriate separation and storage of waste streams to enable recycling and reuse wherever possible to reduce associated environmental impacts and impact to the capacity of local waste management facilities.	Construction
WM-3	All waste will be assessed, classified, managed, and disposed of in accordance with the Waste Classification Guidelines (NSW EPA, 2014) and other relevant legislation.	Construction Operation
WM-4	All generated and regulated waste records will be retained for waste tracking purposes	Construction
Lighting		
LI-1	All luminaires will have a correlated colour temperature (CCT) ≤ 3000K	Design / Operation
LI-2	Luminaires will be installed with zero tilt and no upward light emission	Design / Operation
LI-3	Floodlights and wall-mounted luminaires will incorporate forward-throw optical control.	Design / Operation
LI-4	Where tilt is unavoidable, luminaires will be fitted with glare shields or equivalent accessories	Design / Operation