



Water Assessment

Panorama Battery Energy Storage System (BESS), Bathurst, NSW

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Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Panorama BESS SubCo Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.



Executive Summary

This Water Assessment is for a proposed State Significant Development (SSD) located at 800 Mid-Western Highway, Evans Plains, NSW (Lot 2 DP 864272) and (Lot 521 DP 603541) at 749 Mid-Western Highway (the Project) and has been prepared for inclusion in the Environmental Impact Statement (EIS) for the Project. The Project involves establishing a new Battery Energy Storage System (BESS) adjacent to the existing TransGrid substation.

The assessment seeks to identify potential water impacts of the Project, and then outline requirements for water management and construction methods that can satisfactorily mitigate the identified potential impacts.

Water quality related issues identified in the Secretary's Environmental Assessment Requirements (SEARs) have been addressed. This assessment should be read in conjunction with related assessments, in particular SLR report 'Panorama BESS – Land & Soil Capability Assessment-R01-v1.2' dated March 2024 (SLR, 2024a).

The site is located within the Evans Plains Creek catchment which is a subcatchment of the Macquarie Bogan-River catchment. Construction, operational and closure activities have potential for environmental impact on the downstream environment. However, with implementation of environmental controls and management practices, these risks can be satisfactorily mitigated.

Construction Phase

Construction activities involving temporary disturbance of soils have the potential to result in short term adverse impacts on the surrounding environment, including sediment transport and turbidity in Evans Plains Creek. However, these potential impacts can be effectively mitigated with environmental controls, and with rigorous management during construction, the environmental impacts are likely to be short term and manageable. Environmental controls and management during construction will include:

- A Construction Environmental Management Plan (CEMP) which will detail environmental controls and processes to follow during construction;
- An Erosion and Sediment Control Plan (ESCP), which, at a minimum will prescribe limiting the area and time for disturbed areas (staging the work), sediment controls including sediment sumps (including appropriate drainage), clean water diversions and sediment fencing. Minimum requirements for the ESCP are detailed in this assessment; and
- All fuels and other chemicals used during construction must be stored in a bunded area away from any flowpath; appropriate spill kits will be located on site at all times; and a Spill Management Plan will be included in the CEMP.

Operational Phase

The Project does not involve operational activities other than maintenance of the BESS. The facility will include infrastructure such as batteries and transformers which include materials with potential to cause pollution if there are events which lead to leakage. However, since all of this infrastructure will be designed with features such as containerisation and bunding there is negligible risk of leakage reporting to the environment.

Minor earthworks disturbances associated with facility maintenance are possible during the operational phase, but are unlikely to have any impact on overall site water quality. Erosion and sediment control measures will be implemented as warranted in accordance with Managing Urban Stormwater: Soils & Construction (Landcom 2004) (further discussed in this assessment) to minimise potential for sediment export.



Environmental management practices will be documented in an Operational Environmental Management Plan (OEMP). Key aspects that should be included are:

- Training of staff in acceptable work practices and operation of the environmental controls, spill management and reporting requirements;
- Hazardous materials stored within bunds and under roof;
- Requirements for maintenance and cleaning of water quality controls;
- A Spill Management Plan; and
- Monitoring and reporting requirements.

Additional measures such as the following will also help mitigate any impacts from maintenance activities:

- Some sections of access tracks may be unsealed with potential for dust generation. This could potentially result in an increase in turbidity and sediment loads in downstream waterbodies. This potential impact is mitigated by low traffic volumes and the following measures:
 - A site speed limit of 40 km/hr to reduce dust generation.
 - Application of binders to road surfaces to reduce dust (where applicable).

Flooding Assessment

The environmental impact of the Project on flooding and water resources is considered to be low risk and readily manageable. The flooding assessment suggests that flooding is not a likely issue at the site.

Closure Phase

At the closure phase of the Project, surface infrastructure will be removed and the site regraded to grades compatible with the closure land-use. Topsoil will be replaced and the surface revegetated. An ESCP will be prepared to manage the closure activities



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1.0 Introduction

1.1 Purpose of this Document

Panorama BESS SubCo Pty Ltd (Panorama) is seeking planning approval for a Battery Energy Storage System (BESS) facility located near Bathurst.

SLR has prepared this Water Assessment as a technical study to append to the EIS required to accompany the Development Application. The report provides an environmental assessment of the surface and groundwater aspects of the proposed Project during the construction, operation, and decommissioning phases.

1.2 Project Description

The proposed Bathurst BESS consists of SolBank BESS containers (or enclosures) with a total delivery capacity of 100 Megawatts (MW) and useable capacity of 200 MWh to be located at 800 Mid-Western Highway (Lot 2 DP864272) (the Lot) adjacent to the existing TransGrid substation (Lot 521 DP 603541) at 749 Mid-Western Highway. Access to the site is via an existing road off the Mid-Western Highway and the proposed development will occupy a total area up to 3.5 ha within the Lot. The Project site is located approximately 6 kilometres south-west of Bathurst.

The key elements of the Project include:

- Installation and operation of a SolBank BESS including lithium iron phosphate (LiFePO₄) batteries, enclosures, inverters and transformers.
- Associated ancillary infrastructure including:
 - A 132 kV underground cable connecting a 132/33 kV switch building to the existing substation;
 - Formalisation of existing access from the Mid-Western Highway and existing access road within Lot 2 DP 864272 to accommodate heavy vehicles;
 - Proposed access road from the BESS to connect to the existing access road within Lot 2 DP 864272;
 - Operations and Maintenance (O&M) building;
 - Stormwater management infrastructure, lighting, and security fencing; and Construction laydown areas.

Decommissioning of the SolBank BESS at the end of life (EOL) including disassembly and removal of associated infrastructure from the site, to be returned as close as possible to its existing condition.

Construction of the Project is anticipated to take approximately 14 to 15 months and it is expected that the operational life of the Project would be approximately 20 years, after which the BESS would be decommissioned and the infrastructure removed, returning the site to its original use.

During the operational phase, activities on site will generally involve monitoring, testing and maintenance of equipment as well as receipt of goods, removal of waste and other general site maintenance (such as care of groundcover). It is anticipated that the site will be monitored and controlled remotely with a few people coming to site periodically for other activities.

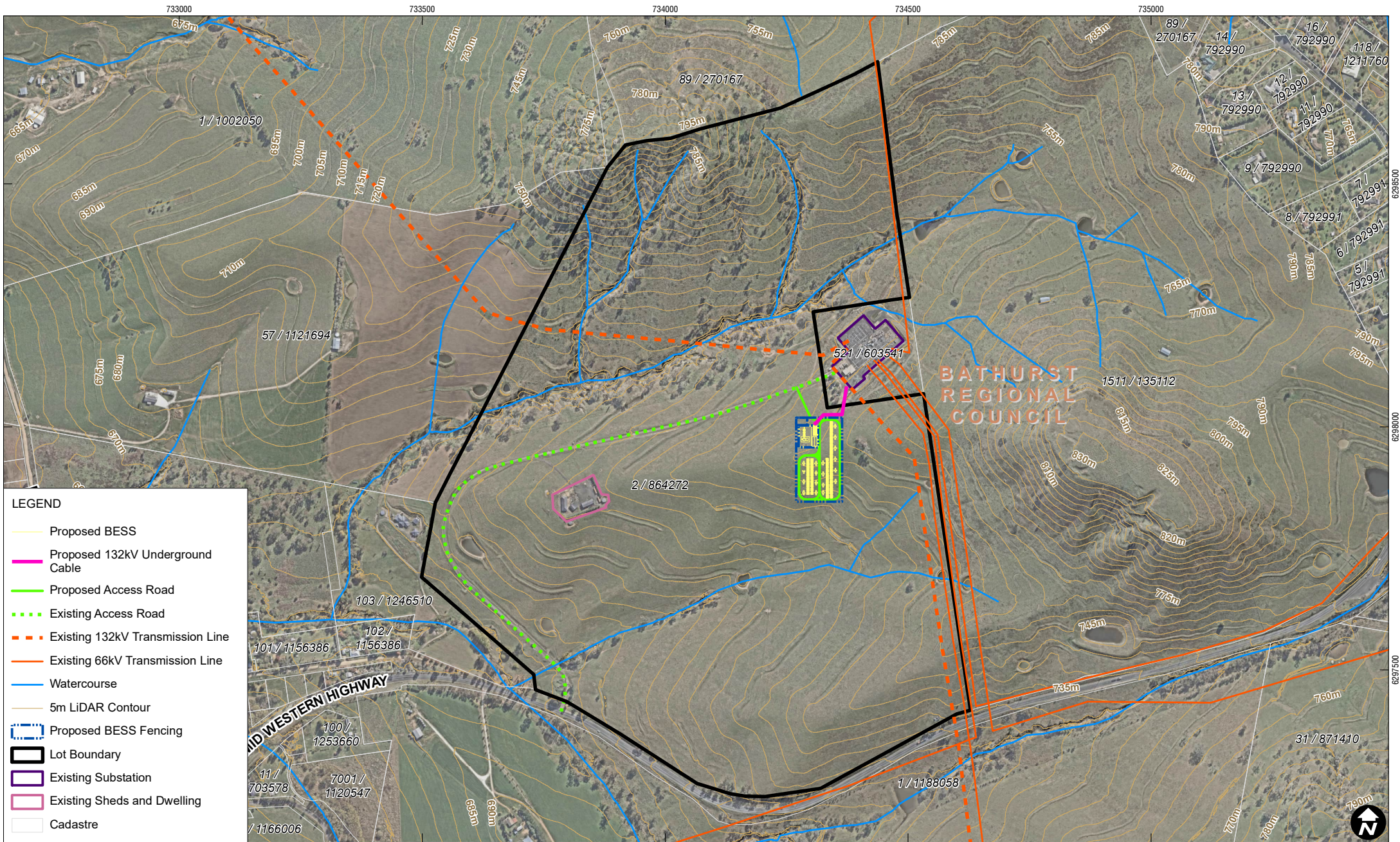
The proposed arrangement of infrastructure and facilities is shown on **Figure 1**.



1.3 Assessment Methodology

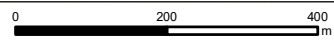
This assessment has been prepared to address the requirements of the SEARs. The assessment was completed by desktop assessment to define existing conditions, an identification of potential impacts, and then identification of Project features to mitigate and manage those impacts.





LEGEND

- Proposed BESS
- Proposed 132kV Underground Cable
- Proposed Access Road
- - - Existing Access Road
- - - Existing 132kV Transmission Line
- Existing 66kV Transmission Line
- Watercourse
- 5m LiDAR Contour
- Proposed BESS Fencing
- Lot Boundary
- Existing Substation
- Existing Sheds and Dwelling
- Cadastre



Scale: 1:10,000 at A4
 Coordinate System: GDA 1994 MGA Zone 55

Date Drawn: 22-Jun-2023
 Project Number: 660.30234.00000

Data Source: Basedata NSW SS, December 2021
 Aerial imagery supplied by Nearmap (May, 2023)
 Elevation data supplied by DCS Spatial Services (July, 2019)



PROJECT OVERVIEW

FIGURE 1

2.0 Requirements

2.1 SEARs

The proposal is classified as a State Significant Development (SSD), and the NSW Department of Planning, Housing and Infrastructure (DPHI) issued Secretary's Environmental Assessment Requirements (SEARs) on December 9 2022 for the Project (DPE, 2022).

SEARs relevant to this study and where they are addressed are listed in **Table 1**.

Table 1: SEARs Requirements and Where Addressed

Relevant SEARs Requirements	Report Section Where Addressed
An assessment of the likely impacts of the development (including flooding) on surface water and groundwater resources and measures proposed to monitor, reduce and mitigate these impacts	Section 6, 7 and 9
Details of water requirements and supply arrangements for construction and operation	Section 10
A description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with <i>Managing Urban Stormwater: Soils & Construction</i> (Landcom 2004)	Section 6

2.2 Relevant Legislation

2.2.1 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) is administered by the Environment Protection Authority (EPA). Since the proposed activity is not a 'scheduled activity' an Environment Protection License (EPL) is not required.

Notwithstanding that site activities do not require an EPL, the POEO Act imposes a strong duty of care not to pollute or cause pollution of waters, and to maintain and operate any pollution control equipment installed at the premises in a proper and efficient condition or manner.

2.2.2 Water Management Act 2000

The *Water Management Act 2000* enables allocation of water for the environmental health of NSW's rivers and groundwater systems, while also providing licence holders with secure access to water and the opportunity to trade water.

No change to water entitlements is proposed as part of the Project since the Project does not involve any harvesting of surface waters or use of groundwater from bores.

2.3 Standards and Guidelines

The following standards and guidelines are relevant to the proposed development:

- *Managing Urban Stormwater: Soils & Construction* (Landcom 2004).
- *Floodplain Development Manual: The management of flood liable land* (FDM 2005).
- *Liquid Chemical Storage, Handling and Spill Management: Review of Best Practice Regulation* (DEC 2005).



- Storing and Handling liquids: Environmental Protection: Participant's Manual (DEC 2007).
- Large-Scale Solar energy Guideline, NSW Department of Planning and Environment (DPE, 2022).



3.0 Existing Water Environment and Site Soils

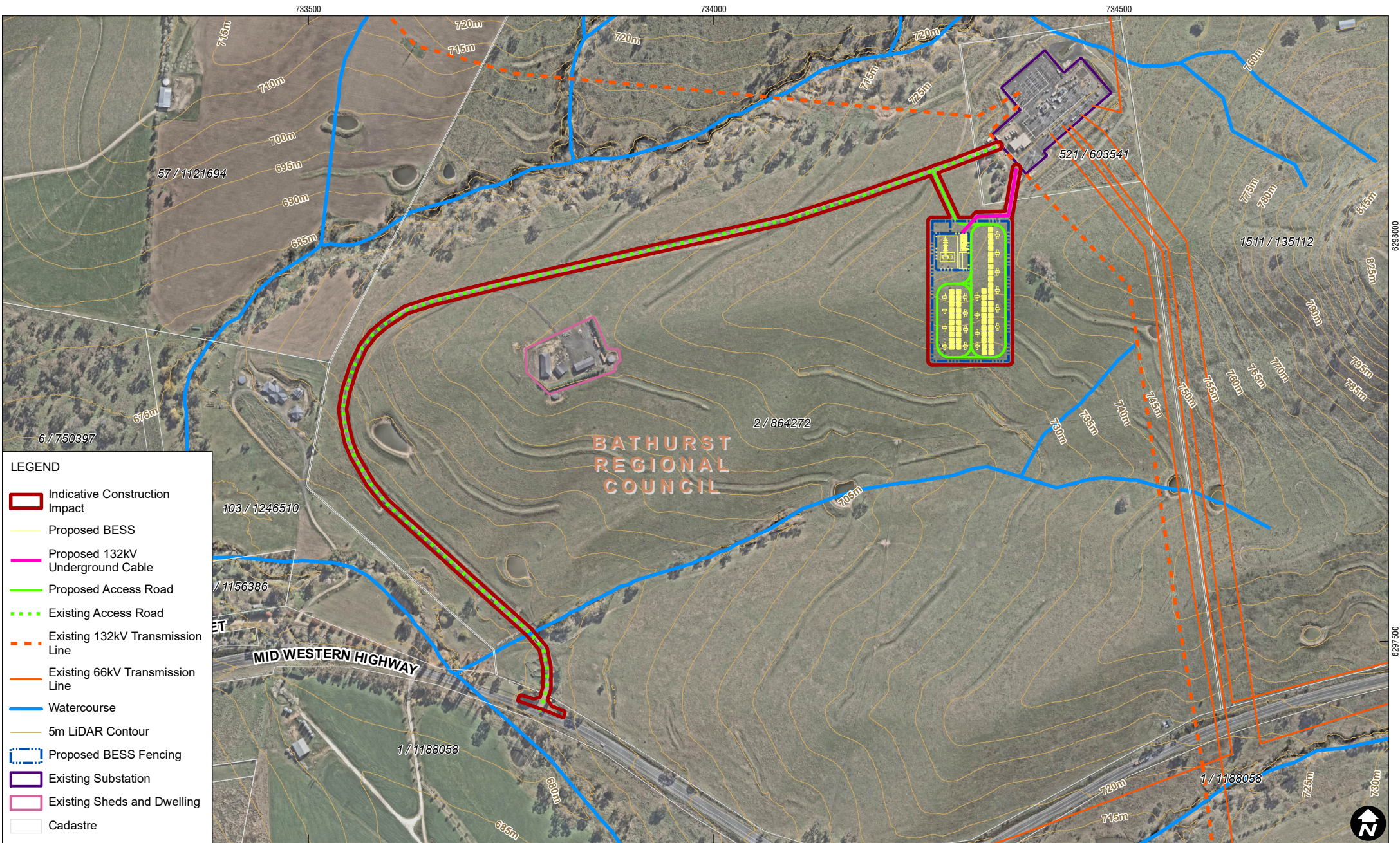
3.1 Site Topography and Drainage Patterns

There are several drainage paths directly downstream of the Project which drain to Evans Plains Creek approximately 1 km west of the Project. No named watercourses intersect the Project as shown in **Figure 2**.

Elevation across the Lot ranges between approximately 680 to 780 metres Australian Height Datum (mAHD), generally sloping east to west and down towards the Mid-Western Highway. The BESS facility is proposed on a slope less than 100 m southwest of the existing substation. The proposed BESS footprint is roughly 95 m wide (east-west) and 170 m long (north-south). Natural elevation over the footprint falls between 0 to 10 m east to west, and roughly 20 to 30 m along the north to south length. The majority of the Lot is at slope greater than 10%.

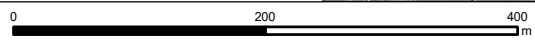
Drainage infrastructure at the TransGrid substation consists of minor channels and culverts which direct runoff to tributaries of Evans Plains Creek. At the Lot, contour banks are the primary means to control surface water discharge which reports to tributaries of Evans Plains Creek or small onsite dams. Evans Plains Creek joins the Macquarie River about 5 km north of the site.





LEGEND

- Indicative Construction Impact
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Scale: 1:6,000 at A4
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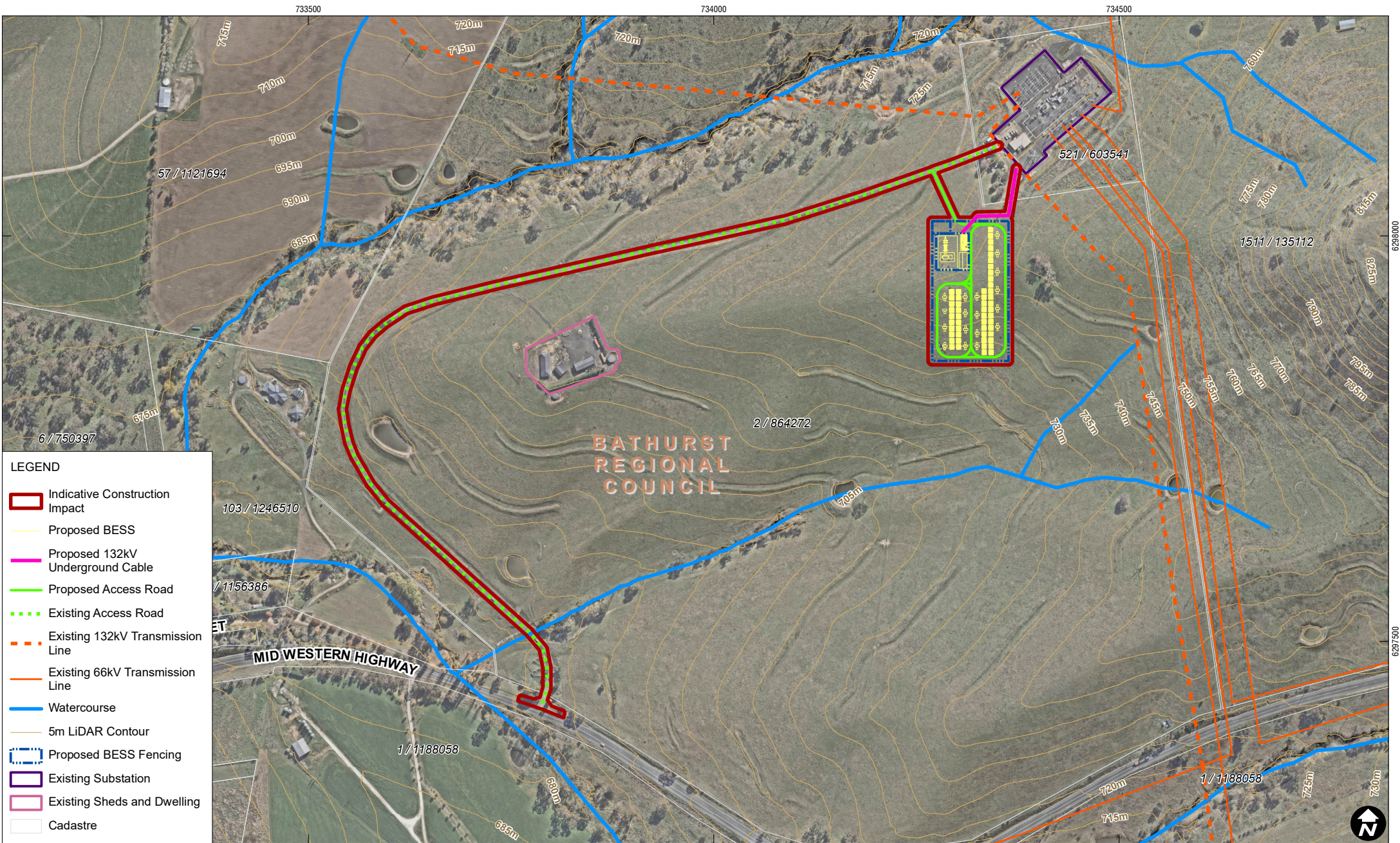
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SITE LOCALITY AND STUDY AREA

FIGURE 2



LEGEND

- Indicative Construction Impact
- Proposed BESS
- Proposed 132kV Underground Cable
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SITE LOCALITY AND STUDY AREA

FIGURE 2



The Lot currently contains one residential dwelling within the central west portion of the land that is not permanently inhabited. Cattle are kept at the Lot and allowed to graze and roam within the property bounds. Overall, the land is mostly unused and hosts substantial vegetation cover with well-established trees along natural drainage lines (see **Photo 1**). Some trees also occur separate to apparent drainage lines.

Photo 1: Existing Site



3.2 Site Soils

Information on site soils was derived from SLR report 'Panorama BESS – Land & Soil Capability Assessment-R01-v1.1' dated March 2024 (SLR, 2024a).

SLR completed a Land and Soil Capability (LSC) Assessment consistent with *The Land and Soil Capability Assessment Scheme; Second Approximation* (OEH, 2012). The LSC Assessment found the entire Project area to be LSC Class 4 (moderate capability land) and LSC Class 8 (extremely low capability land).

A preliminary Biophysical Strategic Agricultural Land (BSAL) found the entire Project area is non-BSAL, and was verified as non-BSAL due to slopes greater than 10% and being less than 20 hectares contiguous area.

The Project area is not considered highly productive agricultural land as defined in *The Land and Soil Capability Assessment Scheme; Second Approximation* (OEH 2012).

Two Soil Map Units (SMUs) were identified within the Project area, dominated by a Eutrophic Brown Dermosol (2 hectares) and an Anthroposol (1.5 hectares) and were mapped according to the dominant Australian Soil Classification (ASC) soil type (refer 'Panorama BESS – Land & Soil Capability Assessment-R01-v0.1') using a combination of



the soil survey and laboratory analysis results. The Eutrophic Brown Dermosol is classed as non-dispersive to slightly dispersive and poses a minimal risk for erosion during construction, operation and decommissioning.

Further detail on site soils is described within SLR report 'Panorama BESS – Land & Soil Capability Assessment-R01-v1.1' dated March 2024 (SLR, 2024a).

3.3 Salinity

General information on site salinity was reviewed through the Sharing and Enabling Environmental Data (SEED) database (NSW Government, 2022). The salinity mapping from SEED suggests that salinity does not pose development implications towards the Project.

Laboratory tested Electrical Conductivity (EC) values were used to determine salt store, all of which were non-saline. Further information regarding salinity is provided in SLR report 'Panorama BESS – Land & Soil Capability Assessment-R01-v1.1' dated March 2024 (SLR, 2024a).



4.0 Climate Information

4.1 Rainfall

The closest Bureau of Meteorology (BoM) station to the Project site recording daily rainfall is Bathurst Agricultural Station (Station ID: 063005). This station is approximately 3.5 km east of the Project site and has been recording rainfall data since 1908 with limited disruptions/data gaps. Rainfall for the Project site is based on BoM data from the Bathurst Agricultural Station. **Table 2** provides a summary for the station.

Table 2: BoM Rainfall Station Summary – Bathurst Agricultural Station (Station ID: 063005)

Station	Station Number	Distance from Project (km)	Data availability
Bathurst Agricultural Station	063005	3.5	1908 - Present

Average annual rainfall at Bathurst Agricultural Station is 642.1 mm. Seasonal rainfall variance is apparent, with highest rainfall occurring across October-March as typical for eastern Australian climates. Average monthly and annual average rainfall depths are shown in **Table 3**.

Table 3: Average Rainfall Depths – Bathurst Agricultural Station (Station ID: 063005)

Month	Average Rainfall (mm)
January	68.4
February	57.6
March	53.6
April	41.5
May	41.4
June	44.1
July	48.2
August	50.1
September	47.1
October	59.3
November	63.3
December	65.2
Average Yearly Rainfall	642.1

The station indicates there can be considerable fluctuation in the depth of rainfall from year to year at Bathurst. The lowest recorded annual rainfall was 214.2 mm in 1982, and the highest annual rainfall was 1,275.2 mm measured in 1950. In particular, there are stark differences in summer rainfall between dry and wet years.

For example, the 10th percentile rainfall in February is 5.6 mm, while the 90th percentile rainfall is 143.7 mm.



Rainfall statistics for the Bathurst Agricultural Station are summarised in **Table 4**. The statistics include the mean and annual monthly rainfalls, as well as information for minimum, median, and maximum recorded rainfall months/years, and the 5th, 10th, 90th and 95th percentile months/years. Data accessed from the BoM website, 6th June 2023.

Table 4: Detailed Monthly and Annual Rainfall Depths

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	68.4	57.6	53.6	41.5	41.4	44.1	48.2	50.1	47.1	59.3	63.3	65.2	642.1
Minimum	1.4	0	0	0.4	1	0.8	3.7	1.4	3.8	2.3	0.8	0	214.2
5th %ile	6.2	3.3	3.1	2.3	4.9	10	8	10.5	12.5	8.9	10.6	5.1	415
10th %ile	13.8	5.6	6.3	4.6	8.5	15.9	14.4	16	16	17.5	17.8	12.3	438.6
Median	57.9	47.2	41.8	36.5	34.8	36.8	41.7	46.9	44.4	54.6	56	58.1	629
90th %ile	132	127.1	123.5	84	80.6	88.6	92.1	90.4	80.3	106.7	115.7	134.8	857.4
95th %ile	156.3	143.7	139.4	107	95.4	101.7	108.6	103	94.1	118.3	136.6	149.8	933.2
Maximum	223.7	235.5	205.3	166	115	193.1	154.7	163.2	130.1	215.8	242.4	218.5	1275.2

Intensity-Frequency-Duration (IFD) information for the site was sourced from the BoM website (2016 IFD data), accessed 6th June 2023. Rainfall depths for various Annual Exceedance Probability (AEP) and storm durations are shown in **Table 5**.

Table 5: BoM 2016 Rainfall Depths – Frequent to Rare Storms

Duration	Annual Exceedance Probability / (Average Recurrence Interval)		
	10% / (1 in 10)	2% / (1 in 50)	1% / (1 in 100)
30-min	23.8	32.6	36.6
1-hour	29.6	40	44.7
2-hour	36.2	48.3	53.7
3-hour	40.8	54.4	60.5
6-hour	51.1	68.2	76
12-hour	64.8	86.9	97.1
24-hour	81	109	121
48-hour	97.6	129	144
72-hour	107	140	155
96-hour	113	148	163
120-hour	119	155	170
144-hour	124	162	178
168-hour	129	170	187

4.2 Climate Change and Effect on Rainfall

There is now widespread recognition that human activities are contributing to observed climate change.

Climate change (warming) has the potential to increase the prevalence and severity of rainfall extremes and needs to be considered in flood planning for long term projects. The



State of the Climate 2022 report published jointly by *CSIRO and the Bureau of Meteorology* indicates that for the southeast of Australia:

There is very high confidence in continued substantial increases in projected mean, maximum and minimum temperatures, with a corresponding decline in mean annual rainfall depths.

There is high confidence that there will be future increase in the intensity of extreme rainfall events.

In a warming climate, rainfall depths in extreme events are expected to increase mainly due to a warmer atmosphere being able to hold more moisture (Sherwood et al., 2010). Given the design life of the facility, short-term impacts of climate change on local rainfall may be observed.

This assessment adopts the 'simplified method' as described in Australian Rainfall and Runoff (ARR 2016) to estimate the impact of climate change on rainfall depth.

The simplified method accounts for the effects of climate change in design rainfall and flood estimation by modelling of the 0.5% (1 in 200) AEP in lieu of the 1% (1 in 100) AEP event. For a 24-hour rainfall event in vicinity of the Project, this would represent an increase in rainfall of 12.5% (1% AEP = 121 mm to 0.5% AEP = 136 mm).



5.0 Water Quality

5.1 Existing Water Quality

No existing water quality data is available for the Project site. Given the highly ephemeral nature of the Project site channels and surrounding watercourses, and the low impact of the proposal, it is intended for the proposal to include best practice water quality control measures, with any water quality monitoring required (e.g., in the event of an incident) to be assessed against the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018) water quality criteria.

5.2 Water Quality and River Flow Objectives

The NSW Water Quality and River Flow Objectives are the agreed environmental values and long-term goals for NSW's surface waters. Water Quality and River Flow Objectives for most catchments in NSW are published on the Department of Environment Climate Change and Water website (<http://www.environment.nsw.gov.au/ieo/>).

The Project site's contributing catchment is located to the east of Evans Plains Creek which ultimately discharges into the Macquarie River. During rainfall events, runoff from the site drains to tributaries of Evans Plains Creek via overland flow, culverts and channels/swales.

The relevant agreed Water Quality Objectives and River Flow Objectives for Uncontrolled Streams within the Macquarie-Bogan River catchment are detailed in **Table 6**.

Table 6: Environmental Values and River Flow Objectives for Uncontrolled Streams within the Macquarie Bogan River Catchment

Water Quality Objectives	River Flow Objectives
Aquatic Ecosystems	Protect pools in dry times
Visual Amenity	Protect natural low flows
Secondary contact recreation	Protect important rises in water levels
Primary contact recreation	Maintain wetland and floodplain inundation
Livestock water supply	Manage groundwater for ecosystems
Homestead water supply	Minimise effects of weirs and other structures
Drinking water at point of supply-Disinfection only	
Drinking water at point of supply-Clarification and disinfection	
Drinking water at point of supply-Groundwater	
Aquatic foods (cooked)	

River Flow Objectives suggest that the natural regime of flows from the Project site should be retained as far as practically compatible with other requirements, mimicking natural flow patterns as closely as possible.

5.3 ANZG 2018 Default Water Quality Trigger Values

ANZG 2018 advocate a risk-based approach to water quality assessment and management. That is, the intensity of assessment of current water quality status or impacts on water quality should reflect the risk of impacts on the achievement/protection of the Water Quality Objective.



For Protection of Aquatic Ecosystems in NSW, and for irrigation water used in primary production, the ANZG 2018 Guidelines refer to the Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) default trigger values for major physicochemical stressors, which are used to assess whether the condition of an ambient water body supports the environmental values. These values, summarised in **Table 7**, provide typical values which if exceeded warrant investigation, and could adversely impact downstream environments and/or water uses.

With regards to the preservation of water quality for the purposes of livestock drinking water the revised guidelines have not been published yet, and will be available via the following weblink, (<http://www.waterquality.gov.au/anz-guidelines/guideline-values/default/primary-industries/stock-water-guidance>), and may need to be referenced in the OEMP.

Table 7: Trigger Values – Environment and Irrigation Water

Parameter	Default Trigger Value for NSW Lowland Rivers for Aquatic Ecosystems in Slightly Disturbed Ecosystems
Total Phosphorous (TP) (mg/L)	0.05
Total Nitrogen (TN) (mg/L)	0.5
Ammonium (NH ₄ ⁺) (mg/L)	0.02
Total Suspended Solids (TSS)	50 mg/L or 'Professional Judgement'
Turbidity (NTU)	6-50
Salinity (µS/cm)	125-2200
pH	6.0–8.0
Pesticides	Concentrations in discharge water should not exceed the crop injury threshold values in Table 4.2.12 of the ANZECC 2000 Guidelines
Heavy metals and metalloids	Concentrations in discharge water should not exceed the STV values in Table 4.2.10 of the ANZECC 2000 Guidelines
Thermotolerant coliforms (cfu/100mL)	<1000



6.0 Impact Assessment – Surface Water

6.1 Construction Phase

The primary risk to surface water quality during construction is ground disturbance associated with site earthworks. Construction works will expose site soils and there is potential for erosion to mobilise sediments into receiving watercourses. Without appropriate controls there is potential for an increase in turbidity and nutrient loads in the receiving watercourses which may cause water quality and ecological impacts.

The potential for erosion will be mitigated by the following factors:

Construction will be sequenced, such that the disturbance area at any one time will be minimised as far as practicable.

Construction areas will be progressively rehabilitated as installation of batteries proceeds across the site. Rehabilitation may include revegetation or other types of stable surfacing as appropriate to the end land-use.

Gentle grades, and a combination of vegetation and surface cover across the site reduce the potential for erosion or sediment transport.

With the implementation of standard erosion and sediment control measures in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004) the potential environmental impact is considered very low and manageable.

A site wide Erosion and Sediment Control Plan (ESCP) will be prepared as part of the Construction Environmental Management Plan (CEMP) for the Project. The ESCP will be prepared in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004), known as 'the Blue Book', and Volume 2A Installation of Services (DECC 2008a). Mitigation measures and site management practices should include:

- Staging of construction works and progressive revegetation to limit the disturbed area.
- Establishment of 'No-go zones' to prevent unnecessary disturbance of site soils by construction vehicles in site areas outside of the construction footprint.
- Diversion of upslope runoff around the areas disturbed by earthworks.
- Installation of sediment fences around the perimeter of disturbance areas.
- Installation of sediment traps with level spreaders at locations where site overland flow paths discharge to the adjacent existing landform.
- Installation of a shaker pad at the site exit to reduce mud or clay on vehicle wheels being tracked onto external roads.
- Appropriate site storage of hydrocarbons within bunded areas, and Spill Management Plan.
- Inspection of erosion and sediment control measures following heavy rainfall.
- Water quality monitoring and reporting requirements.
- Providing an appropriate level of resourcing for environmental management and monitoring.



6.2 Operational Phase

Soil disturbance during operation of the battery systems would be minimal and limited to maintenance activities, which involve very small, localised disturbance areas on an infrequent basis – for example a replacement of one of the battery structures. Water quality impacts from these minor disturbances is unlikely to have any significant impact on overall site water quality. Erosion and sediment control measures will be implemented to minimise the potential for sediment export. These measures would be developed on a case-by-case basis in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) and are likely to include measures such as sediment fencing, sediment traps, and progressive stabilisation with vegetation.

Concentrated runoff from the surface of battery structures falling onto the ground has some potential to cause localised erosion alongside the concrete hardstands of the systems. This potential impact should be mitigated by placement of an erosion resistant surface below the edges of battery structures, such as reinforced concrete or a layer of crushed rock.

Some sections of access tracks may be unsealed, and there is potential for dust generation, mainly when tracks are traversed by site vehicles. Dusts deposited on the ground can be easily washed away during rainfall, increasing the turbidity and sediment loads in downstream waterbodies. This potential impact is mitigated by the low traffic volumes that will utilise the site once established. Additional controls will include:

- A site speed limit of 40 km/hr to reduce dust generation on any unsealed sections of access road.
- When necessary the application of binders to unsealed sections of the site access road to reduce dust.
- If dust generation becomes excessive due to inclement weather, the Project should suspend site activities that may contribute to dust generation.

6.2.1 Proposed Stormwater Strategy

Figure 3 that this strategy is conceptual only to provide context and further design specification will be required during the detailed design phase of the Project.

The proposed stormwater strategy includes:

- Culverts or pipes under site roads/access tracks;
- Table drains to direct runoff around the proposed BESS to the contour banks established at the Lot, and to control runoff within the BESS footprint;
- Compacted or lined sediment sump at the downslope end of the BESS to contain runoff, solids and any potential leakage from infrastructure at the BESS facility within the developed area; and
- Modification of the central and southern access tracks within the BESS to accommodate the sediment sump.

A minimum slope of 1.5% towards the sediment sump across the development area is recommended.

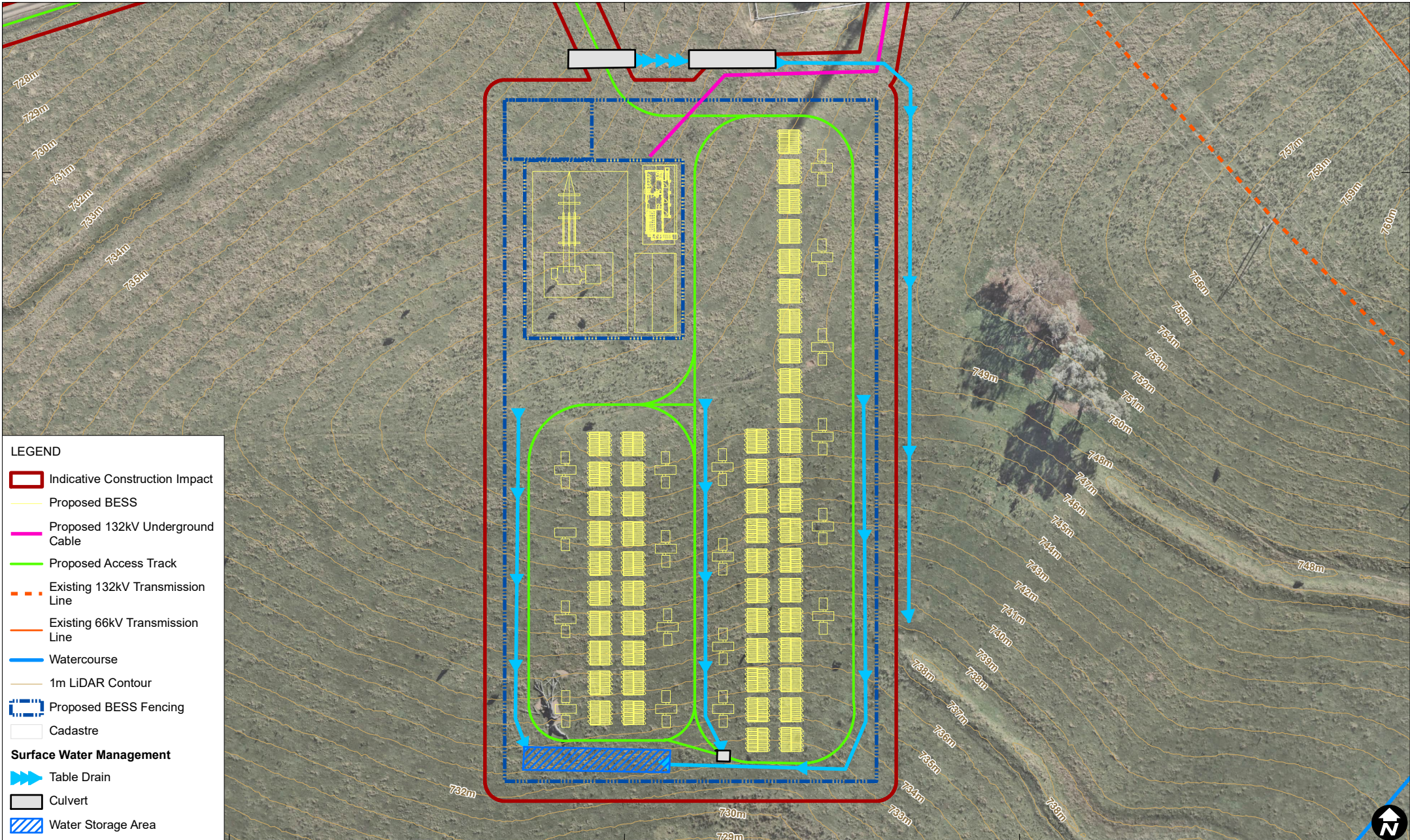
Design specifications for the stormwater management system will be developed at the detailed design stage



734200

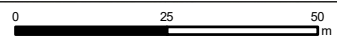
734300

734400



LEGEND

- Indicative Construction Impact
- Proposed BESS
- Proposed 132kV Underground Cable
- Proposed Access Track
- Existing 132kV Transmission Line
- Existing 66kV Transmission Line
- Watercourse
- 1m LiDAR Contour
- Proposed BESS Fencing
- Cadastre
- Surface Water Management**
- Table Drain
- Culvert
- Water Storage Area



Scale: 1:1,250 at A4
 Coordinate System: GDA 1994 MGA Zone 55

Date Drawn: 22-Jun-2023
 Project Number: 660.30234.00000

Data Source: Basedata NSW SS, December 2021
 Aerial imagery supplied by Nearmap (May, 2023)
 Elevation data supplied by DCS Spatial Services (July, 2019)



**CONCEPTUAL SURFACE
 WATER MANAGEMENT SCHEME**

FIGURE 3

6.3 Closure Phase

At the closure phase of the Project, surface infrastructure will be removed and the site regraded to grades compatible with the closure land-use. Topsoil will be replaced and the surface revegetated.

During this phase it is likely that there will be broadscale disturbance of site soils, and there is a risk of soil erosion until an effective vegetative cover is established to stabilise the surface. Potential impacts of erosion include reduced water quality in receiving watercourses, ecological impacts associated with increased sediment load, and a potential loss of future land productivity if topsoil is eroded.

Typical NSW DPHI conditions and rehabilitation objectives include:

- A safe, stable, and non-polluting site.
- Decommissioned and removed battery systems.
- Restoring land use capability to its pre-existing use.
- Ensure public safety in the community at all times.
- An ESCP will be prepared for the closure activities, and will consider controls such as:
 - Staging of works to limit disturbance area.
 - Perimeter sediment controls.
 - Temporary drainage works such as contour banks to limit the lengths of overland flow.
- The use of cover crops and/or mulches to provide temporary ground cover.

6.4 Storage and Use of Hydrocarbons and Chemicals

The storage and use of hydrocarbon fuels and other chemicals on site present a potential risk if spilled substances contaminate site soils or are mobilised and spread to the downstream receiving environment. Chemicals used onsite during both the construction and operational phases may include fuels, lubricants and (minimally) herbicides.

Accidental spill or discharge of hydrocarbons, such as fuels and oils in vehicles and/or earthmoving equipment, has potential to contaminate downstream waterbodies or groundwater.

The batteries proposed on site will be enclosed within a weatherproof enclosure which is self-bunded to provide containment of any chemicals leaking from batteries. Site operation procedures will include regular inspection of batteries which will identify any issues with leakage and prompt remedial action to remove any associated hazard.

Electrical infrastructure on site such as transformers are often oil filled. This infrastructure will be designed, constructed and maintained in accordance with contemporary standards to mitigate risks associated with oil leakage. Controls will include bunding adequate to contain 110% of the volume of contained oil plus an allowance for rainfall. Any oily water removed from bunds must be disposed off-site at a suitably licensed waste facility.

The risk of hydrocarbon contamination will be mitigated by:

- Storage of chemicals in accordance with Australian Standards.
- Storage of hydrocarbon fuels within bunded storage areas.



- Bunding of substations, transformers or other infrastructure that utilise oil.
- Minimise usage of herbicides and avoid spraying when rain is predicted.
- A Spill Management Plan, including emergency response and EPA notification procedures.

Requirements for the storage and use of hydrocarbon fuels and other chemicals on site will be documented in both the Construction and Operational Environmental Management Plans.

Overall, with the implementation of suitable controls these risks are low and considered readily manageable.



7.0 Impact Assessment - Groundwater

Information pertaining to groundwater conditions at the Project was limited to data available in the public domain. The following sections describe data sourced from the SEED database and the WaterNSW realtime database and provides an interpretation of the groundwater regime based on these sources.

7.1 Groundwater Dependent Ecosystems (GDEs)

Groundwater is important in sustaining Groundwater Dependent Ecosystems (GDEs), including aquatic and terrestrial ecosystems such as springs, wetlands, rivers and forests. GDEs can include aquatic ecosystems which rely on the surface expression of groundwater, and terrestrial ecosystems which rely on the subsurface presence of groundwater.

Due to the low risk of the Project to ecological values, a Biodiversity Development Assessment Report (BDAR) Waiver has been prepared to support the EIS documentation (SLR, 2023b). Accordingly, discussion on impacts to GDEs is limited to this report.

GDE mapping was reviewed using the SEED database. No known aquatic or terrestrial GDEs are mapped within the Project boundary as shown in **Figure 4** Evans Plains Creek and some of its tributaries are recognised as High Potential aquatic GDEs derived from broader national assessment, and multiple tree clusters within the Lot boundary are mapped as Low Potential terrestrial GDEs.

The Project is not envisioned to impact baseflow contributions to Evans Plains Creek and therefore does not threaten potential GDEs associated with the creek. With respect to terrestrial GDEs, no additional impacts due to the Project are expected for the trees lining the tributary west of the existing substation as they are outside the receiving environment. Similarly, trees along the drainage line south of the Project are not forecast to experience groundwater impacts.

A patch of five trees is located immediately east of the proposed BESS facility which are mapped as Low Potential terrestrial GDEs in SEED. The five trees were identified as Eucalyptus Melliodora during a site visit (SLR, 2023b). This species is recognised as not typically reliant on groundwater; only potentially on a facultative basis when established as open forest on young (Cenozoic) igneous rocks in dryland agriculture areas (Australian Government Bioregional Assessments, 2017). This description is not consistent with the occurrence of the trees at the Project. Any potential groundwater recharge to the trees would be via shallow rainfall percolation to the soil profile, and based on site topography the proposed BESS facility would not intercept such recharge towards the trees.

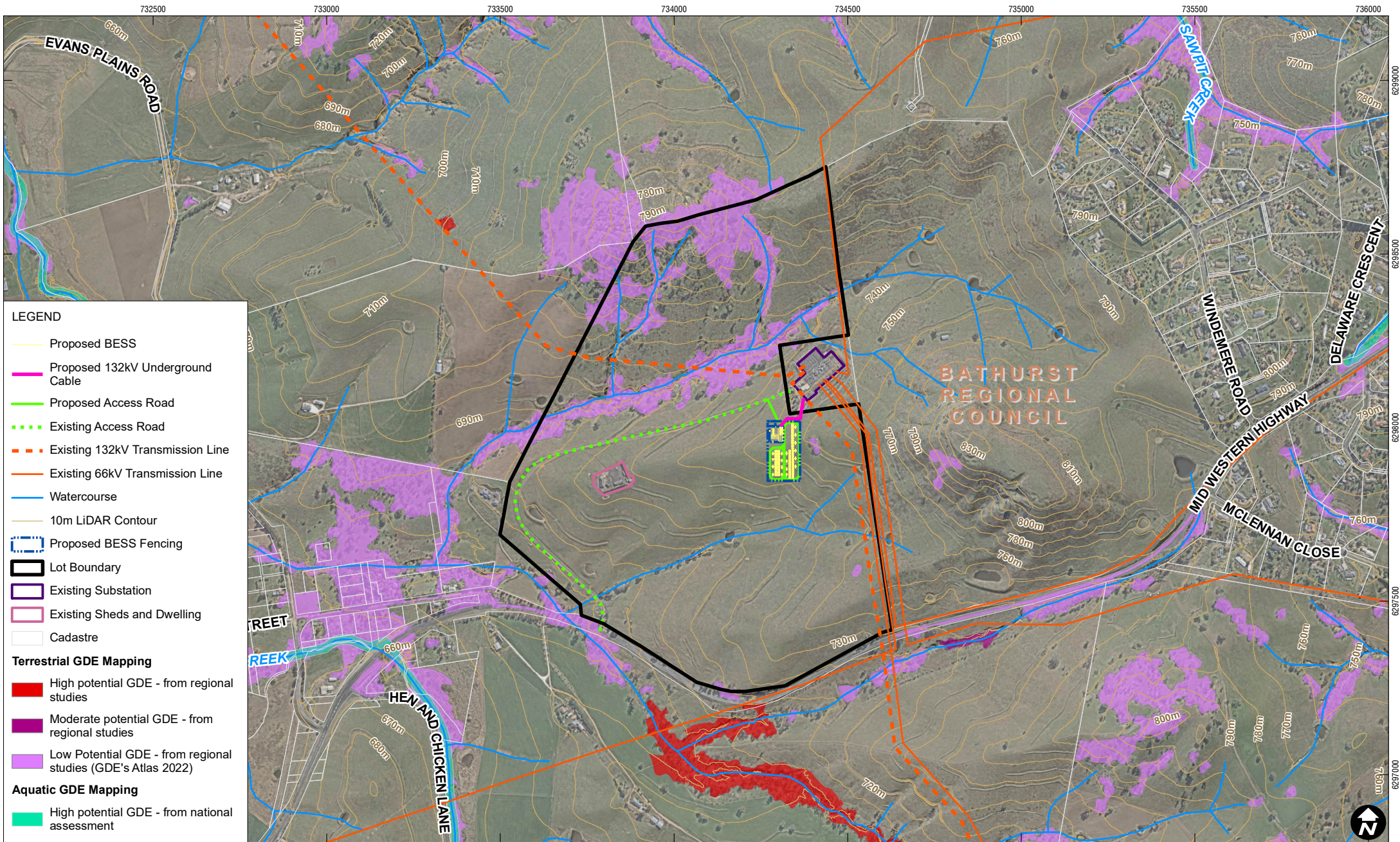
7.2 Existing Water Users

The Project site has no licenced groundwater bores. A review of registered bores in the area was conducted using the WaterNSW realtime database, which showed numerous private bores surrounding the site.

Figure 5 shows registered bores mapped within approximately 2 km of the Project.

Table 8 summarises available information on bores identified within approximately 2 km of the Project.





LEGEND

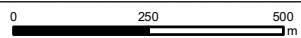
- Proposed BESS
- Proposed 132kV Underground Cable
- Proposed Access Road
- - - Existing Access Road
- - - Existing 132kV Transmission Line
- Existing 66kV Transmission Line
- Watercourse
- 10m LiDAR Contour
- Proposed BESS Fencing
- Lot Boundary
- Existing Substation
- Existing Sheds and Dwelling
- Cadastre

Terrestrial GDE Mapping

- High potential GDE - from regional studies
- Moderate potential GDE - from regional studies
- Low Potential GDE - from regional studies (GDE's Atlas 2022)

Aquatic GDE Mapping

- High potential GDE - from national assessment



Scale: 1:14,000 at A4
 Coordinate System: GDA 1994 MGA Zone 55

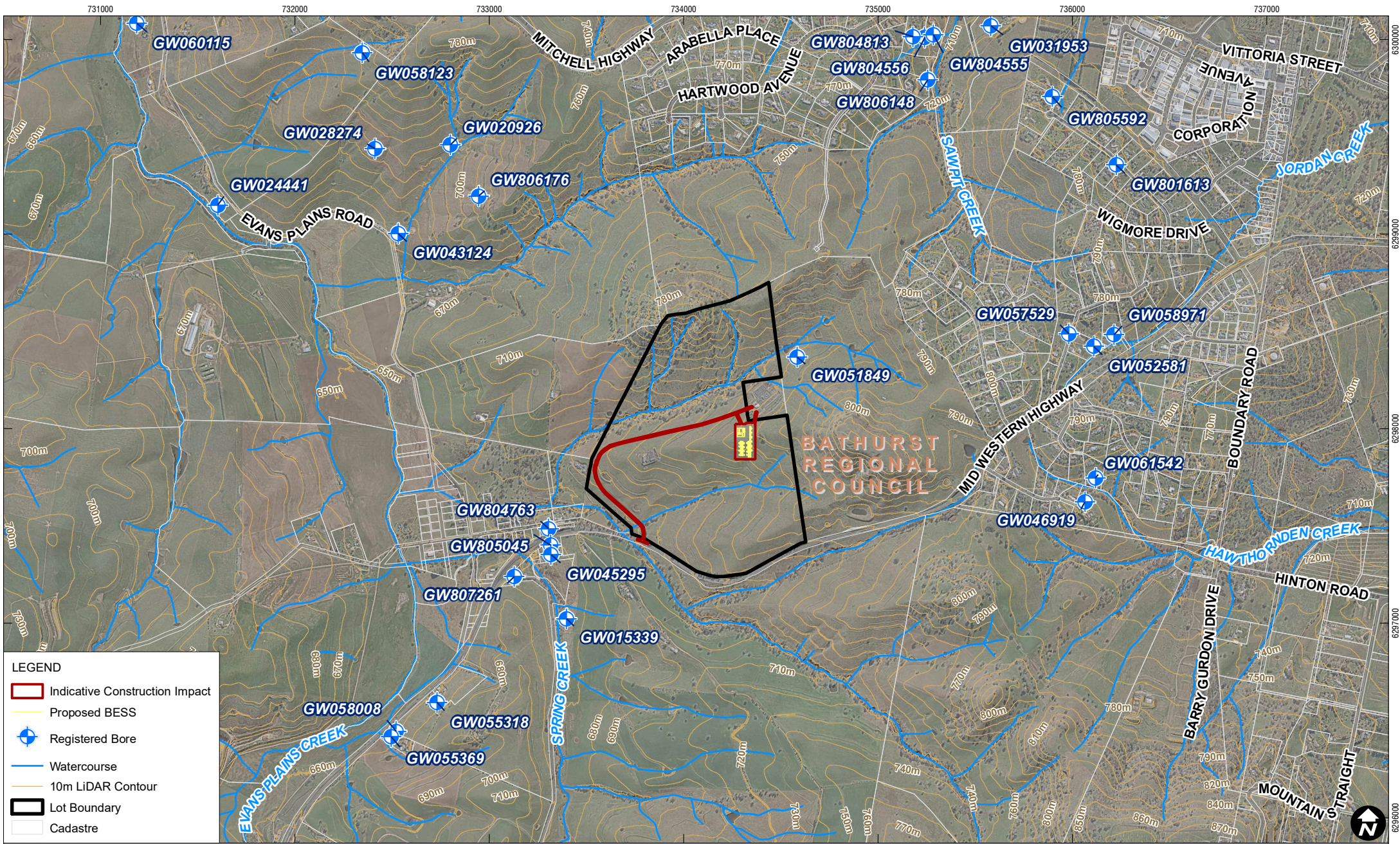
Date Drawn: 22-Jun-2023
 Project Number: 660.30234.00000

Data Source: Basedata NSW SS, December 2021
 Aerial imagery supplied by Nearmap (May, 2023)
 Elevation data supplied by DCS Spatial Services (July, 2019)



POTENTIAL GDEs MAPPED IN VICINITY OF THE PROJECT

FIGURE 4



Data Source: Basedata NSW SS, December 2021
 Aerial imagery supplied by Nearmap (May, 2023)
 Elevation data supplied by DCS Spatial Services (July, 2019)



REGISTERED BORES IN VICINITY OF THE PROJECT

FIGURE 5

Table 8: Summary of Registered Bores in Vicinity of the Site

Bore ID	Licence No.	Depth (m)	Depth to Water (m)	Ownership	Strata Description (m)	Distance from Site (km)
GW051849	-	65.5	18.2	Private	0-0.3 Topsoil; 0.3-13.7 Clay; 13.7-29.8 Granite decomposed; 29.8-65.5 Granite	0.4
GW804763	-	23	15	Private	0-1 Topsoil; 1-22 Granite decomposed; 22-23 Granite (fresh, hard)	1.1
GW805045	-	36	3	Private	0-9 Granite weathered & clay; 9-28 Granite decomposed; 28-36 Granite	1.1
GW045295	-	91.4	-	Private	0-3.7 Clay; 3.7-50.3 Granite decomposed; 50.3-91.4 Granite	1.1
GW015339	80WA713774	17.1	0.9	Private	0-9.5 Clay grey sandy; 9.5-17.1 Sand water supply	1.2
GW807261	-	-	-	-	-	1.3
GW057529	80WA711241	59.7	30.5	Private	0-0.3 Topsoil; 0.3-4.6 Clay; 4.6-20.1 Granite decomposed; 20.1-79.8 Granite	1.6
GW046919	-	99.1	30.5	Private	0-0.9 Topsoil; 0.9-1.8 Clay; 1.8-9.8 Granite decomposed; 9.8-31.7 "Granite broken"; 31.7-99.1 Granite water supply	1.7
GW061542	-	54.9	-	Private	0-0.6 Soil; 0.6-2.0 Clay; 2.0-33.1 Granite decomposed; 33.1-52.0 Granite; 52.0-54.9 Basalt	1.7
GW052581	-	47.5	27.4	Private	0-0.6 Topsoil; 0.6-5.4 Clay; 5.4-45.1 Granite decomposed; 45.1-47.5 Granite hard	1.7
GW058971	80WA711352	55	-	Private	0-4.6 Clay; 4.6-44.0 Granite weathered; 44.0-55.0 Granite	1.8
GW806176	-	-	-	-	-	1.8
GW043124	80WA710032	21.3	5.1	Private	0-0.6 Topsoil; 0.6-13.7 Granite decomposed; 13.7-14.3 Granite weathered; 14.3-21.3 Granite	2.0
GW055318	80WA710995	27.4	12.2	Private	0-0.3 Topsoil; 0.3-0.9 Clay; 0.9-23.4 Granite	2.0



Bore ID	Licence No.	Depth (m)	Depth to Water (m)	Ownership	Strata Description (m)	Distance from Site (km)
					decomposed; 23.4-27.4 Granite hard	
GW806148	80WA725353	-	-	-	-	2.0

The review highlighted that 15 registered bores are present within 2 km of the Project. Each is reported as privately owned, and available lithology data illustrates that a soil profile of varied thickness (0 to 10 m) overlies the granite of the Bathurst Batholith. Numerous water levels are reported for the bores ranging between 0.9 and 30.5 m depth, varying at different locations around the Project.

The bore nearest to the Project is GW051849 located on the property immediately east. GW051849 is not in the receiving environment of the Project, and the water bearing zone for the bore is reported at a depth below

20 m. As such, excavation associated with the Project is not expected to pose a risk to this bore. Water level data is also available for several bores downslope of the Project including GW804763, GW805045 and GW015339. The water bearing zone for each of these bores is logged at depths of 9 m and below – a depth at which the Project is not foreseen to impact groundwater supply. The other bores for which groundwater level information is available access groundwater from the granite at depths of below 10 m, and therefore impacts to groundwater access are not envisaged due to the shallow excavation works forecast for the Project.

7.3 Assessment

The Project is not likely to have an impact on groundwater resources or GDEs. Impacts to groundwater during construction and operation of the battery systems are unlikely to occur due to:

- The pattern of surface drainage and associated groundwater recharge being largely unchanged.
- Soil infiltration across the broader surface of the site being unchanged due to the Project earthworks including benching (which will slow surface runoff velocities) and compacting (which will increase surface runoff velocities). As a result, rates of groundwater recharge are expected to be relatively unaffected.
- The Project does not include excavation with recognised potential to interact with groundwater resources or excavation that may intercept known GDEs.



8.0 Site Hydrology

It is understood that the proposed development will involve constructing concrete pads for the BESS and benching of the site to establish the BESS on level ground. While the site imperviousness may increase runoff volumes, the benching of the site will reduce overland flow velocities. Therefore, SLR estimates negligible effects on downstream surface water hydrology due to the Project. The flooding assessment in Section 9 further explores the site hydrology.

No dams are proposed on site as part of the Project.



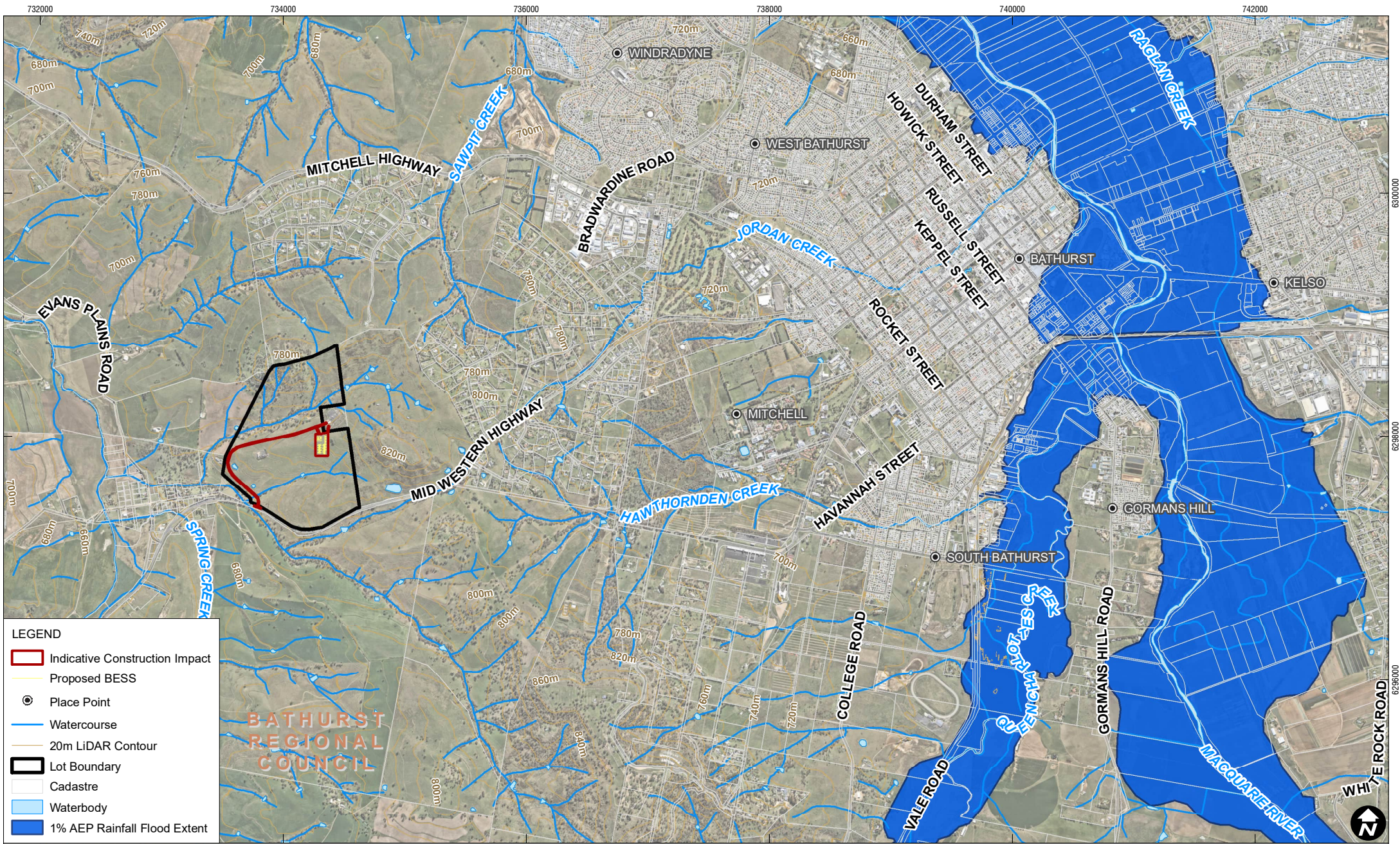
9.0 Flood Assessment

The Bathurst Regional Local Environmental Plan (LEP) 2014 contains a Flood Prone Land Map that identifies the Flood Planning Area (FPA) for the Bathurst township. The FPA pertains to a Flood Planning Level (FPL) corresponding to the 1 in 100 Average Recurrence Interval (ARI)/1% AEP rainfall event. Figure 6 depicts the mapped FPA for Bathurst and its surrounds.

Figure 6 illustrates that the Project site is located outside the 1% AEP flood extent. This noted, any major project infrastructure which is sensitive to inundation should be situated away from potential flood prone areas at the site or elevated to avoid inundation (to confirm that there are no localised overland flow paths within the site which could adversely affect infrastructure). The location and elevation of infrastructure will be confirmed during the detailed design phase.

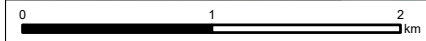
Given the results documented in the LEP, no flood modelling was undertaken to assess flooding at the Project.





LEGEND

- Indicative Construction Impact
- Proposed BESS
- Place Point
- Watercourse
- 20m LiDAR Contour
- Lot Boundary
- Cadastre
- Waterbody
- 1% AEP Rainfall Flood Extent



Scale: 1:40,000 at A4
 Coordinate System: GDA 1994 MGA Zone 55

Date Drawn: 22-Jun-2023
 Project Number: 660.30234.00000

Data Source: Basedata NSW SS, December 2021
 Aerial imagery supplied by Nearmap (May, 2023)
 Elevation data supplied by DCS Spatial Services (July, 2019)



**FLOOD MAPPING - BATHURST
 (1% AEP RAINFALL EVENT)**

FIGURE 6

10.0 Water Supply

10.1 Construction Phase

Water will be used during the construction phase earthworks for dust suppression. This water will be brought to site in water tankers.

Construction water requirements for The Project are estimated between 10,000 to 20,000 L per day. It is intended to source this water from the Bathurst Regional Council's bulk water supply which can be accessed through several water filling stations located in Hereford Street within the Bathurst township. Costs as of 1 July 2022 are set at \$5 per kilolitre (1000 L), and a Bulk Water Permit must be submitted to Bathurst Regional Council to approve access (Bathurst Regional Council, 2022). Water for construction will be tankered to site.

Wastewater during construction will be captured and appropriately removed from site/disposed in accordance with Council/water authority requirements.

Potable water may be transported to site in bottles for use by the construction workforce.

10.2 Operational Phase

During operation of the battery system, water will be utilised for the following purposes:

- Potable water for site offices.
- Cleaning of batteries.
- Dust suppression on site access roads.
- The frequency of dust suppression would be required as necessary to prevent excessive dust generation.
- The demand will be governed by factors including weather conditions, traffic frequency and the nature of the road pavement materials selected at the Project.
- Demands for non-potable water may be met by several methods which are under consideration, including:
 - Small domestic scale water tanks collecting roof water at site facilities.
 - Supplementary water as required via water trucked to site and stored in a water tank.
 - Potable water requirements may be met via reticulated water supply near the Project or trucked into site to refill domestic scale water tanks.
- Operational water requirements for the Project have been estimated at 50 to 200 L per day.

The proposal will include a static water tank for fire-fighting purposes. This water would only be used for firefighting and not for potable water supply nor for general non-potable site water use. The tank levels would be topped up as required from non-potable water supply sources as outlined above. The size and location of the tank will be confirmed during the detailed design stage.

Toilet facilities, if required, will involve waterless toilets which are emptied annually or an alternative equivalent system in accordance with the requirements of Bathurst Regional Council.

The details for provision of potable water, grey water and wastewater infrastructure would be confirmed during the detailed design phase of the Project. Water use approval is not required for State Significant Developments under section 4.41 (1)(g) of the EP&A Act.



11.0 Monitoring, Licensing and Reporting

11.1 Construction Environmental Management Plan (CEMP)

A CEMP will be prepared during the detailed design phase of the Project that will outline the environmental measures, monitoring and reporting required to ensure satisfactory environmental performance.

Minimum requirements for inclusion within the CEMP include:

- Water quality monitoring during the construction phase will be carried out as described below for the OEMP.
- An ESCP for construction activities that is consistent with the measures outlined in this EIS.

11.2 Operational Environmental Management Plan (OEMP)

An OEMP will be prepared during the detailed design phase of the Project that will outline the environmental measures, monitoring and reporting required to ensure satisfactory environmental performance.

Minimum requirements for inclusion within the OEMP include:

- Development of a suitable strategy for monitoring and reporting on water quality.
- A procedure for erosion and sediment controls for ground disturbance activities.
- Requirements for storage and use of hydrocarbons and chemicals, and a Spill Management Plan.

11.3 Water Monitoring

Due to the scope of the proposal, no periodic surface or groundwater monitoring is considered necessary throughout the life of the Project.

In the event of a spill, unplanned site discharge or other incident that has potential to impact receiving water quality, the following response actions will be undertaken:

- A water sample collected and submitted for laboratory analysis. The analytes to assess determined by a suitably qualified third party specialist;
- Photos of the incident captured and the incident documented; and
- If necessary, a suitably qualified third party specialist engaged to investigate potential impacts and accordingly advise of recommended preventative or reparative measures as required.



12.0 Summary of Proposed Mitigation Measures

A summary of the proposed mitigation measures for the Project is presented in **Table 9**.

Table 9: Proposed Mitigation Measures

Potential Impact	Mitigation Measures	Location in Report
Erosion and sediment controls	<ul style="list-style-type: none"> Limiting the area and time of disturbed areas. Gentle grades, and a combination of progressive revegetation and surface cover across the site once disturbed. Sediment sumps (including appropriate drainage). Clean water diversions and sediment fencing. Erosion Sediment Control Plan (ESCP). 	Section 6.1
Spillage of hydrocarbons, chemicals, and fuel	<ul style="list-style-type: none"> Regular inspection of the battery systems, the substation and transformers which will identify any issues with leakages. Storage of chemicals in accordance with Australian Standards. Storage of hydrocarbon fuels within bunded storage areas. Bunding of substations, transformers or other infrastructure that utilise oil. Minimise usage of herbicides and avoid spraying when rain is forecast. A Spill Management Plan, including emergency response and EPA notification procedures. 	Section 6.4
Monitoring, licensing, and reporting during construction and operation	<ul style="list-style-type: none"> Accident documentation. Water quality compliance with SEARs. Construction Environmental Management Plan (CEMP). Operational Environmental Management Plan (OEMP). Regular inspection of the battery systems, the substation and transformers which will identify any issues with leakages. A Spill Management Plan, including emergency response and EPA notification procedures. 	Section 11
Traffic, dust generation	<ul style="list-style-type: none"> Speed limit of 40 km/hr on site. Application of binders to road surfaces as required. Dust suppression via water trucks. 	Section 6.2
Closure and decommissioning	<ul style="list-style-type: none"> A safe, stable, and non-polluting site. Decommissioned and removed battery systems. Restoring land use capability to its pre-existing use. Ensure public safety in the community at all times. ESCP. Temporary ground cover and revegetation after removal of BESS. 	Section 6.3
Wastewater disposal	<ul style="list-style-type: none"> Wastewater during construction will be captured and appropriately removed from site/disposed. If utilised, toilet facilities will involve waterless toilets (or equivalent) that are emptied off-site. 	Section 10
Water Quality	<ul style="list-style-type: none"> Water quality compliance with SEARs. CEMP including an ESCP for construction activities. OEMP to identify requirements for water quality monitoring and reporting. Progressive rehabilitation of surfaces as installation and removal of batteries proceeds across the site. 	Section 5, Section 6



13.0 References

- Australian Government Bioregional Assessments. 2017. Clarence-Moreton Bioregion – Landscape Classification. Available online at: <https://www.bioregionalassessments.gov.au/assessments/23-conceptual-modelling-clarence-moreton-bioregion/2331-landscape-classification> (Accessed January 17 2023).
- Australian Rainfall and Runoff. Institution of Engineers Australia. November 2016.
- Bathurst Regional Council. 2022. Supply of Bulk Drinking Water. Available online at: https://www.bathurst.nsw.gov.au/residents/residents_mm/water-information/supply-of-bulk-filtered-drinking-water.html (Accessed December 8 2022).
- Bureau of Meteorology. 2022. Groundwater Dependent Ecosystems Atlas. Available online at: <http://www.bom.gov.au/water/groundwater/gde/>
- CSIRO / Bureau of Meteorology. 2022. State of the Climate 2022. <http://www.bom.gov.au/state-of-the-climate/>
- Department of Planning and Environment. 2022. Planning Secretary’s Environmental Assessment Requirements – SSD-50587460. Date of Issue 09/12/2022.
- Managing Urban Stormwater: Soils & Construction (Landcom 2004)
- NSW Government, SEED, Online environmental database: <https://www.seed.nsw.gov.au/> (SEED 2022)
- NSW Government / Department of Infrastructure, Planning and Natural Resources, Floodplain Development Manual. The management of flood liable land. (FDM 2005)
- Office of Environment and Heritage. 2012. The Land and Soil Capability Assessment Scheme; Second Approximation. Sydney NSW, Australia.
- Sherwood, S. C., Roca, R., Weckwerth, T. M. & Andronova, N. G. 2010. Tropospheric water vapor, convection, and climate. *Reviews of Geophysics*, 48, RG2001.
- SLR Consulting (SLR). 2024a. Panorama BESS – Land & Soil Capability Assessment. Report No. 660.30234.003 dated March 2024.
- SLR Consulting (SLR). 2023b. Bathurst BESS BDAR Waiver. Report No. 660.30234.00000-R02-v3.0 dated 22 March 2023.
- Timbal, B. et al. 2015, Murray Basin Cluster Report, Climate Change in Australia Projections for Australia’s Natural Resource Management Regions: Cluster Reports, eds. Ekström, M. et al., CSIRO and Bureau of Meteorology, Australia.



