



WATER MANAGEMENT REPORT

Calala Battery Energy Storage System

57 Burgess Lane, Calala, known as 474 Calala Lane, Calala NSW 2340

PREPARED FOR

Equis Energy (Australia) Projects (Ngumi 4) Pty Ltd
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Ref: 222337-CR01

Water Management Report: Calala BESS

Revision Schedule

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1. INTRODUCTION

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Equis Energy (Australia) Projects (Ngumi 4) Pty Ltd as trustee for the Equis Energy Australia Ngumi 4 Asset Trust to prepare a Water Management response to Secretary's Environmental Assessment Requirements (SEARs) for the proposed Calala Battery Energy Storage System (BESS) development at 57 Burgess Lane, Calala known as 474 Calala Lane Calala NSW 2340.

1.2 Secretary's Environmental Assessment Requirements (SEARs)

This report covers the following water management considerations for the development of the site as listed in the SEARs, including:

- An assessment of the likely impacts of the development (including flooding and groundwater contamination) on surface water and groundwater resources and measures proposed to monitor, reduce and mitigate these impacts
- Details of any water requirements and supply arrangements for construction and operation
- A description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004)

1.3 Related Reports and Documents

This report supports an Environmental Impact Statement (EIS) for the proposal, and is to be read in conjunction with the following

- Feature and level survey - Bath Stewart Associates
- Civil Engineering Design by Sky Civil Engineering, incorporating Erosion and Sediment Controls

1.4 The Development

The Calala BESS proposal includes the following:

- The construction and operation of a BESS with an estimated capacity of up to 300 MW / 1200 MWh, and
- Associated infrastructure, including grid connection to the Tamworth 330kV substation

Figure A in Appendix A shows a concept plan of the proposal.

1.4.1 Site and Surrounds

The site is located just east of the township of Calala, which is itself located approx. 7km southeast of Tamworth CBD. The site has been selected owing to its close proximity to an electrical zone substation approximately 1.25km to the west of the site (Figure A in Appendix A).

The total site area is approximately 36 Ha, however, the footprint of the proposed facility will cover a total area of 8.9 Ha. This figure relates to the footprint of the BESS only and excludes the access road to the facility and any easements associated.

The land use on and surrounding the site is agricultural zoned Primary Production. The site is currently used for cropping and grazing. It is serviced by local roads and is fenced. Adjoining properties are similarly zoned with the same land use. Some rural residential land use is present to the west of the site, the township of Calala is further to the west.

1.4.2 Proposed Development

In order to meet Australia's commitment to CO₂ emissions reduction, Australia's energy systems are transitioning to provide a broader range and capacity of energy sources. Renewable energy sources are increasingly coming on-line providing dispatchable energy. Without a means to temporarily store this energy, it may not be able to be integrated into the energy market effectively. Batteries provide a means of storage for renewable energy so it can be fed back into the system to meet demand. The Calala BESS is one such large battery providing this key infrastructure.

The intent is to transfer excess dispatchable energy to the site *via* electrical infrastructure and to store it in a series of units forming a large battery storage facility.

The Project involves the construction and operation of a large-scale Battery Energy Storage System (BESS) at Calala, NSW. The BESS will be up to 300 Megawatts (MW) and would provide up to 1200 Megawatt hours (MWh) of battery storage capacity or up to 4 hours of storage duration. The proposal will comprise the following:

- Large-scale BESS including battery enclosures, inverters and transformers
- 33/330 kV switchyard
- Underground transmission line connection between the BESS and the nearby TransGrid Tamworth 330 kV substation
- Ancillary elements including site access from Calala Lane, internal access roads and parking, control room and amenities, stormwater and fire management infrastructure, utilities, signage, fencing, security systems and landscaping.

Figures 1 and 2 show render depictions of the completed site. Figure B in Appendix A shows the Project Site Plan, while Figure C in Appendix A shows the Site Layout.



Figure 1 Render of the facility – note the gravel pavements



Figure 2: Render showing firefighting tanks on the site

2. Existing environment

2.1 Climate and Hydrology

The project site is within the Peel River catchment which flows generally to the northwest past Tamworth (Figure 3).

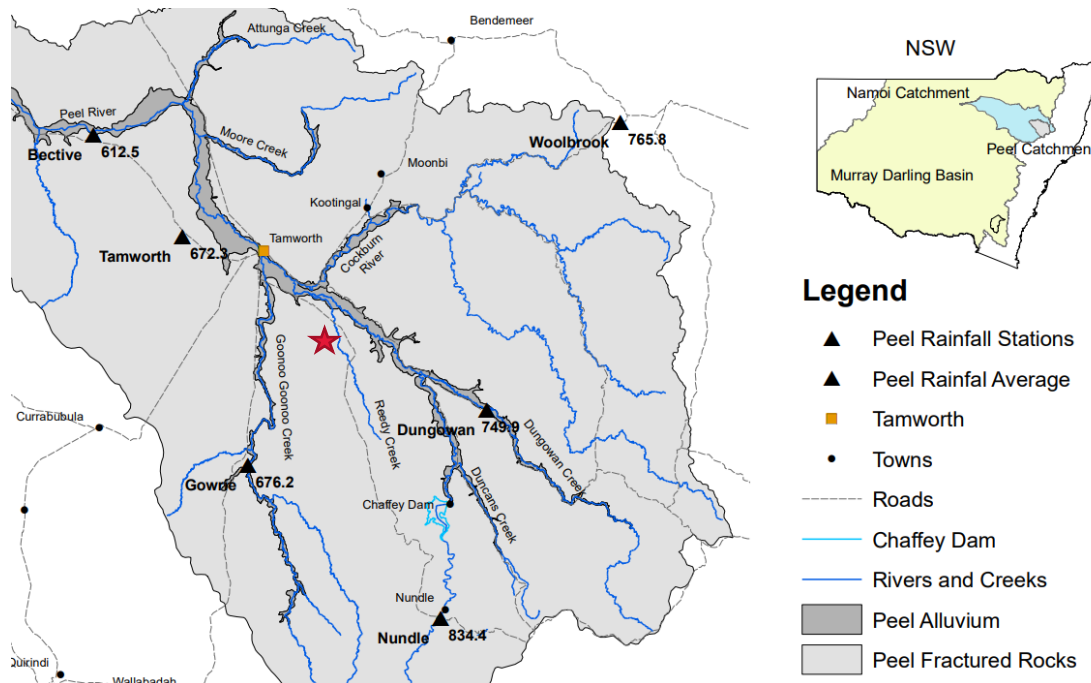


Figure 3: Peel River catchment and rainfall. Project site shown as red star. (Source: O'Rourke, 2010)

On-line weather database Weather Spark states the following in relation to Tamworth's climate.

... the area can be classified as sub-humid with a summer dominant rainfall distribution. Average annual rainfall in Tamworth (1889-2010) is 667 mm, with just 40% of the annual total occurring in Autumn-Winter and the wettest months being December and January (Figure 4).

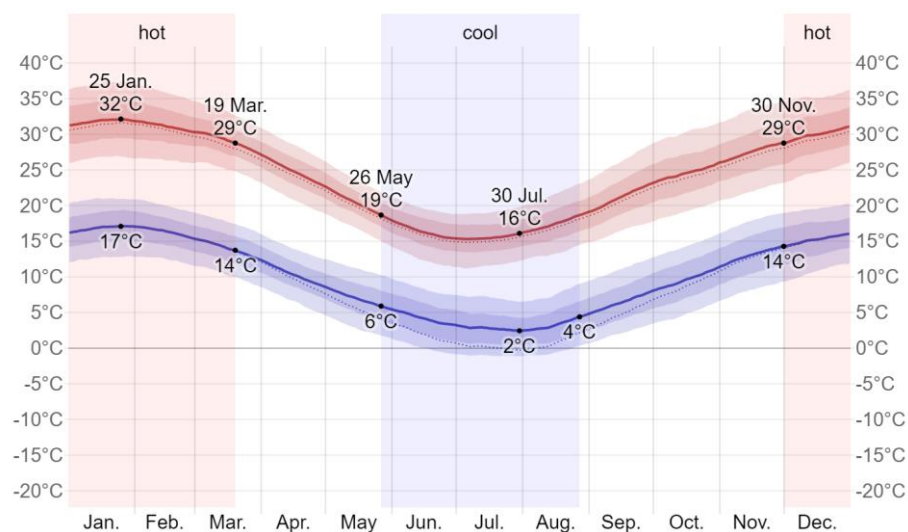


Figure 4: Tamworth climate summary (Source: <https://weatherspark.com/y/144513/Average-Weather-in-Tamworth-Australia-Year-Round>)

The landscape at and upstream of the site has been modified significantly by the installation of graded banks. These are installed as an erosion control measure typically on farms. They are formed by earthworks to push soils into a bank offset from the contour so that runoff is intercepted and diverted to a stable feature such as a swale, creek or dam. There are graded banks on the subject property and immediately upstream of it which has modified the local hydrology.

2.2 Catchment analysis

The site sits within the catchment of Calala Creek. Calala Creek flows into the Calala Anabranh (just north of Calala suburb, approx. 5.8 km downstream of the site), which in turn flows into the Peel River 2.2 km further downstream. The Peel River is a major river system flowing into the Namoi River, which in turn flows into the Barwon River near Walgett. All these waterways form part of the Murray Darling catchment.

Calala Creek is approximately 13 km in length from its headwaters to its discharge point in Calala Anabranh. The subject site is located approximately at the halfway point of Calala Creek. Calala Anabranh is part of the floodplain of the Peel River.

An unnamed tributary of Calala Creek flows into Calala Creek on the subject property. This is the closest waterway to the proposed development site. The catchment area of the unnamed tributary upstream of the site is approximately 130 Ha.

The immediate catchment of the proposed battery site is shown in Figure D in Appendix A. The upstream catchment is very small in area, owing to the presence of graded agricultural banks upstream of, and surrounding the site.

2.3 Riparian corridors

The Water Management Act 2000 stipulates that waterways in NSW are subject to protection from development in order to retain the various functions of waterways. The state government has published *Guidelines for Controlled Activities on waterfront land* (DPIE, 2018) which defines a method for determining the width of riparian corridors based on the Strahler system of stream categorization.

There are two relevant waterways at the site – the small drainage line to the west of the facility, and Calala Creek to the east and north of the facility (Figure E in Appendix A). The only encroachment created is where the road entrance from Calala Lane crosses over the Calala Creek channel in a culvert.

2.4 Water and sewer supply

There is no existing water supply or sewerage system to/from the site, nor in close proximity. It is not proposed to connect to mains water or to connect to sewer during construction or operation of the facility.

2.5 Soils

The Soil landscapes of the Tamworth 1:100,000 Map (Banks R.G., 2001) has been used to derive details about the soils of the site. There are two different soil landscapes on the site, detailed below:

- **Duri** This soil landscape covers the majority of the site. The limitations are described as being complex soils; localised poor drainage; localised engineering hazard; gully erosion risk; inherent erosion risk; localised permanently high water tables; localised known discharge area; localised known recharge area; localised high run-on; localised dryland salinity; localised seasonal waterlogging; localised shallow soils; sheet erosion risk; localised wind erosion risk. .
- **Warral Station**. This soil landscape applies to the land on both sides of Calala Creek. It is described as being associated drainage plains, alluvial plains, fans and drainage depressions with

slopes typically ranging between 0.2–2%. The limitations are described as being localised poor drainage; flood hazard; localised engineering hazard; gully erosion risk; localised permanently high watertables; localised known discharge areas; localised known recharge area; high run-on; localised dryland salinity; localised seasonal waterlogging; sheet erosion risk.

The on-line NSW Soil and Land Information System (known as eSpade) shows that the property containing the site has one soil profile report. This soil profile is immediately north of the proposed project site. The soil characteristics are as follows:

SITE DETAILS

Site Location:	PAD 23: SW QUAD, 60MW & 40MS OF CORNER	
Map Reference:	MGA Grid Reference: Zone 56, 306185E, 6553069N. 9035 TAMWORTH (1:100000) map sheet.	
Profile Details:	SOIL SURVEY OF TAMWORTH ARC Survey (1000976), Profile 204, collected by Miss Belinda Lake on 01 July, 1979	
Physiography:	other lithology and used for cropping. elevation 408.0 m, aspect south east. Surface condition is recently cultivated, profile drainage is well drained, erosion hazard is high	
Soil Type:	Uf6.31 (PPF)	
Base of observation:	layer continues	
Profile Field Notes:	Red brown earth, Haplic phaeozem. Pedologist: Alex Riddler.	Parent material: Clg, C-Dt, arenites.

To summarise, the soils on the site can be described as having moderately fertility, however, the limitations of stoniness and hard setting surfaces limit its rural land capability to grazing of cattle and some cultivation, but not suited to continuous cropping.

In the context of water management, soil type and characteristics are important. From the characteristics listed above, the most important elements for this assessment are light-medium clays, non-saline, high erodibility, well-drained profile. There are no known acid sulphate soils in the vicinity of the development.

2.6 Flooding

Tamworth Regional Council completed the *Tamworth City-wide Flooding Investigation* (Lyll & Associates, 2019) and the flood modelling undertaken includes the site, as shown in Figure 5.

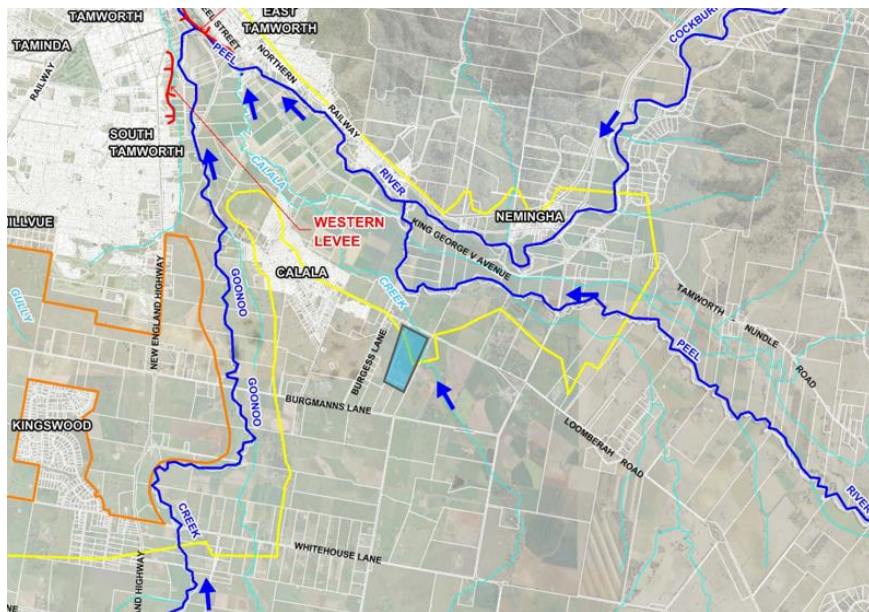


Figure 5: Tamworth City-wide flood Investigation extents in relation to the site (property of site shown in aqua)

North of the site is the Peel River floodplain which is the major determinant of flooding around Tamworth. The floodplain of Calala Creek is on the property which will house the Calala BESS site. Calala Creek flood extents are shown for the 1% Annual Exceedance Probability and Probable Maximum Flood in Figure 6. This shows that the BESS facility is unaffected by flooding. Further, the site will be raised by an earthworks pad. Flooding is highly unlikely to impact the facility, and the earthworks to create the facility are highly unlikely to cause flood impact.

Note that the access road to the site from Calala Lane needs to cross over Calala Creek, and this will be subject to flooding. In response, Sky Civil Engineering has designed a culvert crossing of the Creek.

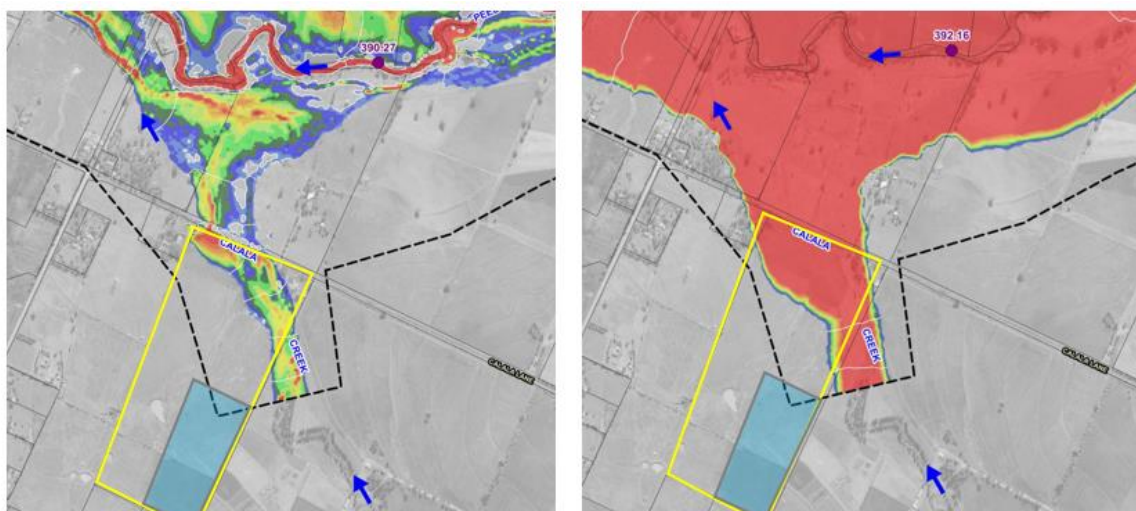


Figure 6: 1% AEP (LHS) and Probable Maximum Flood extents in relation to the property (yellow shape) and the project site (aqua shape)

2.7 Groundwater

The NSW Office of Water regulates and monitors groundwater in the Peel River valley. In 2010 they compiled a groundwater status report (O'Rourke, M., 2010) with the following findings.

The geological formations which occur in the Peel Valley catchment are shown in Figure 7. The geology is complex with structures and an extensive fault system (not shown on map) which has influenced the development of the drainage pattern.

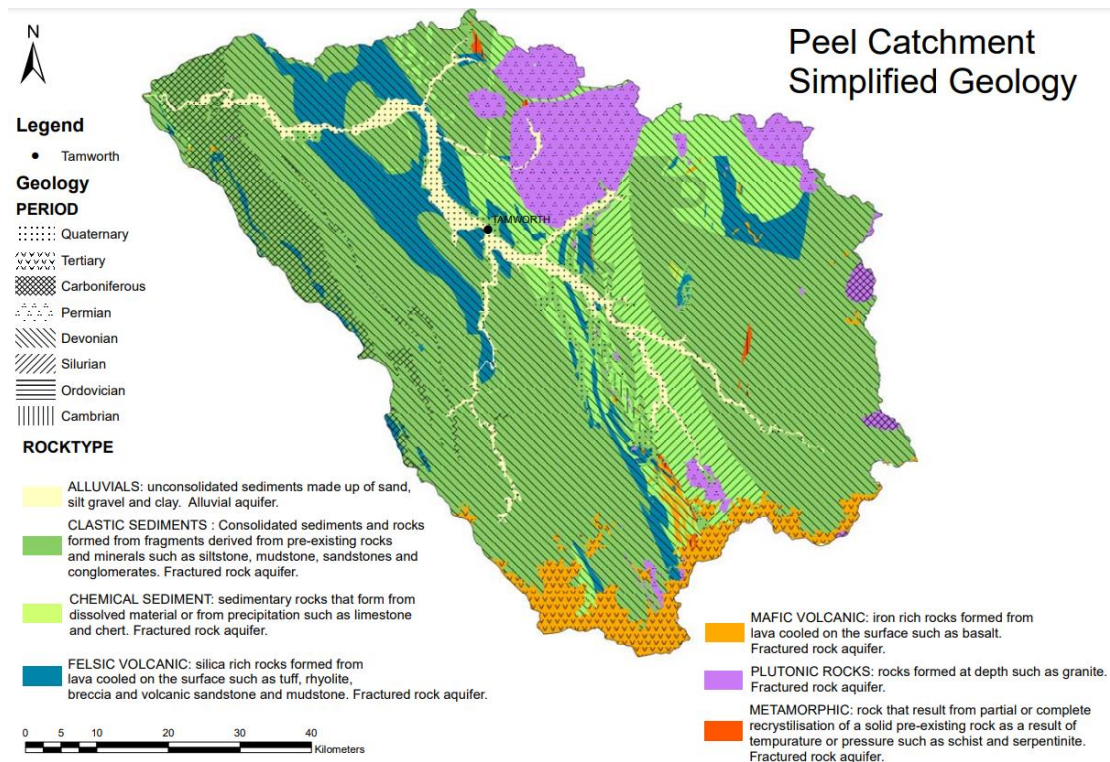


Figure 7: Geology (which influences groundwater) of the Peel catchment

The Calala BESS site is on the edge of the Peel Regulated River Alluvium Management Zone. *The groundwater in this zone is recharged from direct rainfall infiltration, river leakage and some side slope seepage. The groundwater levels along the regulated Peel River are maintained at a reasonably constant level by leakage from the regulated river flows. But they are also significantly influenced by flood events rising with a flood event and falling rapidly after the flood.*

The hydrogeology can be split into two dominant aquifer types, the alluvial aquifers and the fractured rock aquifers. The alluvial aquifers occur along the valley floors associated with rivers and creeks, e.g. Calala Creek. The alluvial aquifers overlie the fractured rock aquifers. The fractured rock aquifers form the valley slopes, the hills and ranges and cover most of the catchment.

The general direction of the groundwater flow in the alluvials is down gradient parallel to direction of the river or creek flow.

Currently all bores are licensed under the Water Act 1912. The Peel Regulated River Alluvium Management Zone has groundwater extraction entitlements of 32.5GL while the entitlement for the entire Peel catchment is 62GL.

Groundwater usage grew steadily up until the 2002/03 water year (Figure 8). For the whole of the Peel Alluvial aquifers the maximum usage was 10,337 ML in 2002/03 and for the Fractured Rock aquifers the maximum usage was 1,740 ML in 2002/03. In August 2005 groundwater allocations rules were enacted due to the ongoing drought. The announced groundwater allocation was linked to surface water allocations. This resulted in a drop in overall usage. In August 2009 a state-wide

groundwater trading policy for the inland aquifers was introduced. This included the Peel Valley aquifers.

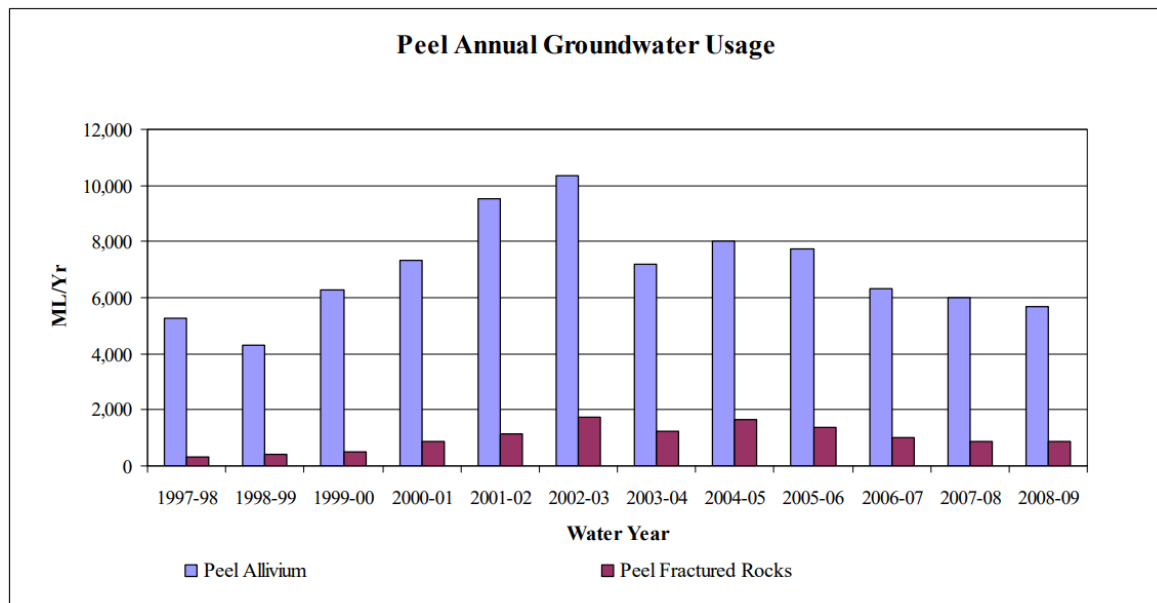


Figure 8: Peel annual groundwater usage

The following conclusions can be made about the Peel catchment groundwater sources:

- The alluvial aquifers of the Peel catchment are highly connected to the surface water system.
- The regulated Peel River loses water to the groundwater over most of its length. The smaller tributaries are largely ephemeral. The larger tributaries of the Cockburn River and the Goonoo Goonoo Creek are largely perennial.
- Groundwater usage has historically been considerably less than entitlement levels.
- Groundwater level fluctuations reflect seasonal conditions and stream flow conditions and there is no evidence that the current levels of pumping are causing long term declining groundwater levels.
- Groundwater levels recover quickly after the return of good seasonal conditions.

2.8 Summary of water management context for site

The previous sections provide a range of findings that describe the water management characteristics of the site. These are summarised in Table 1>

Table 1: Summary site and environmental factors relevant to water management:

Characteristic	Summary Description	Implications
Climate and hydrology	The site experiences a sub-humid climate with a summer dominant rainfall distribution. Average annual rainfall in Tamworth is 667 mm, and the wettest months being December and January.	This is important for erosion and sediment control monitoring and maintenance
Catchment	The widespread installation of graded agricultural banks upstream of the site means that the contributing catchment area is very small	Diversion of run-on waters from upstream is in place and deemed to be adequate to afford the site protection.
Soils	Soils on site are light-medium clays, non-saline, high erodibility, well-drained profile.	This will influence Erosion and Sediment Controls, noting infiltration measures will be feasible.
Regional Groundwater	- Alluvial aquifers are highly connected to the surface water system - Groundwater usage occurs and often below entitlements - Groundwater level fluctuations reflect seasonal conditions and stream flow conditions and there is no evidence that the current levels - Groundwater levels recover quickly after the return of good seasonal conditions.	Usage of groundwater for the site is not proposed. Pollution control measures for surface water should afford the groundwater protection
Flooding and Riparian corridors	The actual facility is unencumbered by these characteristics The access road traverses Calala Creek which is subject to flooding and is a highly modified riparian corridor	Road (culvert) crossing to be based on flood flows and designed in accordance with legislation and Guidelines*
Water supply and sewer	No mains water or sewerage system is present in the vicinity of the site Water is required during construction and for emergency fire suppression during operations	Water for construction and operational stages will need to be trucked in. Sewer will be septic system

*Water Management Act 2000 and *Guidelines for controlled activities on waterfront land*, and associated *Guideline for the design and construction of watercourse crossings* (DPIE, 2018)

3. Assessment of potential impacts

3.1 Construction stage impacts

The likely sequence of construction will be as follows:

1. Clear and strip the project area of vegetation in accordance with the approved plans
2. Set up site including temporary access roads/culvert, compounds and establish works demarcation with fencing, signage, etc.
3. Install erosion and sediment and other environmental controls, including sediment control basin/s
4. Install infrastructure to service site during construction, e.g. temporary water tanks, on-site sewer, power, comms, etc.
5. Trench and install electrical connection from zone substation to site
6. Import earth material to form up pad for battery and switch yard
7. Install drainage to cater for runoff from the pad and surrounds
8. Install pavements - unsealed gravels
9. Install all switching/electrical and battery infrastructure
10. Install temporary fire suppression water tanks and hydrants
11. Install transmission line connecting site to zone substation
12. Install permanent services – septic on-site sewer, power, comms
13. Install all ancillary buildings, access roads, car parking, etc
14. Test and commission equipment
15. Convert sediment basin to permanent water management basins, ready for operational stage

The main water-related risks arising from construction are erosion and subsequent sediment deposition. Water erosion could be associated with any cleared land, but especially in creating the pad and trenching any services. Any impacts would be felt in downstream waterways where sediment and associated pollutants (e.g. nutrients, organic matter, etc.) would enter aquatic ecosystems. Sediment tends to smother aquatic habitats. Nutrients tend to favour the growth of weeds and algae – the latter which can potentially bloom in waterways.

Sediment may also be released when trucks deliver soil/spoil to the site to create the earthworks pad for the batteries.

During construction, water will be used on site for the workforce. This would be for consumption and sanitation, but also for small construction tasks that require water. Water may also be used by water carts on site to control dust generation. Returnable drinkable water bottles and potable water in a tank are provided to run additional services. Temporary toilets will be provided in the temporary compound. An on-site sewage system is not proposed. A third-party contractor will manage water and wastewater services.

The access road crossing over Calala Creek will be fitted with a culvert. Installation of this has potential to cause erosion of the creek channel, noting the channel is modified (by many years of cultivation and has only grass/forb vegetation) with no clear bed and bank formation. Operational stage impacts

The facility is designed to be highly resilient and robust to the elements. Operations at the site are expected to include the following:

- Ongoing runoff from the site (from rainfall) that will pass through the gravel pavements, and has the potential to mobilise sediment into the downstream basin
- Regular testing, monitoring and maintenance of equipment and infrastructure – routine schedule of site inspection and minor works
- Unscheduled response to equipment failure – requiring repair or replacement

- Responding to any emergency that might rupture one or more batteries. Fire caused by electrical malfunction is the only imaginable possibility of this occurring, and while this has occurred at least once before in Australia (as a result of human error), it is highly unlikely to occur
- Scheduled (long term) replacement of equipment and infrastructure at the end of its design life

Runoff management is the key ongoing issue for controlling impacts.

In the case of fire – which can rupture one or more batteries – their contents can be exposed to the environment. A fire suppression system will be located at the site comprising water tanks (filled by water carts) and strategically located hydrants. The effect of applying water to a ruptured battery is that the battery contents – including heavy metals – would be mobilised in the water to the downstream basin.

Water is not required for the operation of electrical infrastructure and equipment.

Maintenance and monitoring staff will bring their own drinking water to the site, or go thirsty.

3.2 Decommissioning stage impacts

Decommissioning of the facility is expected to include the following:

- Demolition/recovery of all battery and electrical equipment
- Removal of earthworks pad, if required

The only likely impact is water erosion, as discussed for construction stage impacts.

4. Management of potential environmental impacts

4.1 Runoff controls

4.1.1 Construction runoff

The main water-related risks arising from construction are erosion and subsequent sediment deposition. Protection of downstream waterways is required to prevent sediment from entering aquatic ecosystems.

Sky Civil Engineering have devised erosion and sediment controls for the site comprising the following:

- Diversion of clean run-on waters from upslope using swales to direct flows to stable discharge points
- Sediment fences to filter sediment from runoff
- Hay bales to create check dams in swales, as required (may substitute sediment fences)
- Basin to capture and contain runoff such that sediment can settle out prior to runoff leaving the basin
- Swales and level spreaders to train basin discharge in a stable manner and to provide some filtering

All these devices need to be designed and installed in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) guideline and with Sky Civil Engineering's drawings. The devices need to be maintained through routine (weekly) inspection, and cleaned out by removing accumulated sediment e.g. basin with earthmoving equipment.

The access road crossing over Calala Creek will be fitted with a culvert. Installation of this has potential to cause erosion of the creek channel, noting the channel is modified (by many years of cultivation and has only grass/forb vegetation) with no clear bed and bank formation. Environmental controls would include erosion and sediment controls, which would be included in a Controlled Activity application for the works – submitted to NRAR for assessment.

4.1.2 Operational stage runoff

4.1.2.1 Normal operation

The facility will continue to yield sediment once it becomes operational. The main source of sediment will be from the unsealed (gravel) access roads. The sediment basin used during construction phase will be cleaned out and modified for operation stage, as follows:

- Installation of a sedimentation zone defined by an internal bund. This will be about 20% of the basin area. The base of this zone is to be sealed by compaction the site soils.
- Planting of wet/dry tolerant grass in the remainder of the basin
- (Through earthworks) Lowering of the water level to be 500mm deep in the sedimentation zone and max 300mm deep in the remainder.

In this manner, the operational-stage basin will function as a constructed wetland. It will be a totally passive system where inflows enter the sedimentation basin, before overflowing into the planted wetland zone. Water levels will fluctuate with climate and at times the whole system will be completely dry (as per farm dams nearby), and other time full and overflowing. It will have no moving parts and will be constructed out of earthworks, rock, geofabrics and vegetation. It will require minimal maintenance.

During normal operation, the sediment which accumulates in the sedimentation zone will require monitoring and associated removal. This could be required on a 5-10 yearly basis. The water which overflows from the sediment basin to the planted wetland zone will assist to sustain the plant growth, noting the system is ephemerally wet and dry. Water will be able to infiltrate to groundwater, providing beneficial reuse of this resource.

This constructed wetland is expected to effectively remove most of the sediment and other pollutants that would otherwise be entrained in the site runoff. The overflow from basin/s would enter a swale and/or level spreader which would further filter sediment from the runoff before it enters Calala Creek.

4.1.2.2 Emergency operation

In relation to a fire emergency resulting in rupturing of one or more batteries, the water stored within the firefighting tanks to be supplied on the site will be used to suppress any fire. During such an unlikely event, the contents of the battery – heavy metals - would leak out and be flushed with the fire water. This would enter the basin/s which would capture the fire suppression water, and thus the associated pollutants.

This water and sediments in the basin would need to be recovered to protect Calala Creek from the toxic pollutants. It would be treated as a contamination incident and water would need to be pumped out into tankers and removed for treatment and disposal. The upper 100mm of the base of the basin would also need to be removed and trucked away for remediation/disposal. An Emergency Management Plan for the site will need to be prepared that considers and provides responses to this specific scenario.

The probability of a fire occurring and causing a rupture and leakage is so low as to suggest that no specific controls are required to capture heavy metals contained in fire suppression water. In other words, the presence of a well-designed and maintained basin is considered appropriate without any further design inclusions.

4.2 Flooding and riparian

The access road off Calala Lane crosses Calala Creek and is subject to flooding. Sky Civil Engineering are designing the culvert crossing for the hydraulic conditions in Calala Creek, and they have taken into account the guidelines for watercourse crossings (DPIE, 2018). They have considered erosion and sediment controls associated with the installation of the culvert in the creek.

Once the Calala BESS is approved, the stamped plans will need to be submitted as part of a Controlled Activity Application to DPIE, triggered by works within 40m of a prescribed watercourse. All the hydraulic calculations and erosion and sediment controls plus other information will need to be submitted in support of the application.

4.3 Dust suppression

The site has potential to generate wind-blown dust. Water will be used by water carts on site to control dust generation, as required.

4.4 Sewage management

Temporary toilets will be provided for construction phase with their contents removed and managed by a sub-contractor. During operations, no on-site sewage system is proposed for the site.

5. Conclusions

The proposed BESS at Calala has been assessed in relation to the potential impacts it will cause to flooding, surface and groundwater systems. In addition, water supply requirements have been described. Both construction stage and operational stages of the development have been assessed.

Most of the impacts associated with the proposal relate to erosion (and subsequent sedimentation) and general stormwater runoff. In response, Sky Civil Engineering have devised a range of erosion and sediment controls including:

- Temporary sediment fences, flow diversion mounds etc
- Swales – both temporary and permanent
- Basin – functioning during both construction and operational stages

These are considered appropriate to mitigate construction-stage environmental impacts to a satisfactory level.

After construction ceases, the basin would be modified to function as an ephemeral constructed wetland. There would be two zones forming the wetland, i.e. a 500mm deep sedimentation zone (20% of basin area) and a max 300mm deep planted zone (remaining 80% area). It would be constructed entirely of earthworks, rock, geofabrics and vegetation (grasses). The sedimentation zone would be compacted to seal it from infiltration losses.

During normal operation, the only maintenance required would be occasional (e.g. 5-10 yearly) removal of accumulated sediment from the sedimentation zone, and the repair of any erosion of the earthworks forming the basin. The water which overflows from the sediment basin to the planted wetland zone will assist to sustain the plant growth, noting the system is ephemerally wet and dry. Water will be able to infiltrate to groundwater, providing beneficial reuse of this resource.

One unlikely, yet major potential environmental impact was identified as a fire in a battery which could rupture the outer casing. This has potential to release heavy metals which could be mobilised by fire suppression water. In this scenario, the water containing the contaminants would then enter the basin. This would be treated as a pollution incident and the water and sediments and the upper (say 100mm) of compacted base would need to be recovered and disposed of as contaminated material. The use of the basins for this purpose is considered appropriate given the very low likelihood of this emergency arising. In the highly unlikely case of a fire emergency, an Emergency Management Plan shall be prepared which, in part, will seek to mitigate the release of toxic chemicals to the environment, and their clean-up after any such event.

The entrance road crosses Calala Creek and a culvert and associated works - including erosion and sediment controls – would be the subject of a Controlled Activity Application to DPIE (NRAR).

Water supply will be required for both construction and operational stages. There is no nearby mains water connection, and one option will be to truck water to the site. This would apply to dust suppression (using water carts) and the firefighting tanks. A temporary construction stage sewerage system will be provided by the Contractor. Operational stage sewage management not proposed.

I conclude that the water impacts of the proposal have been assessed adequately and that the mitigation measures proposed are appropriate and likely to prevent harm to the environment.

References

DPIE, 2018, *Guidelines for Controlled Activities on waterfront land*

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Weather Spark: <https://weatherspark.com/y/144513/Average-Weather-in-Tamworth-Australia-Year-Round>)

Appendix A

Figure A: Concept Plan

Figure B: Site Plan

Figure C: Site Layout

Figure D: Catchment Plan

Figure E: Riparian Corridors

Figure A: Concept Plan of Calala BESS project



Calala BESS

300MW - 1200MWh

Concept plan

Part of Lot: 17/DP629969

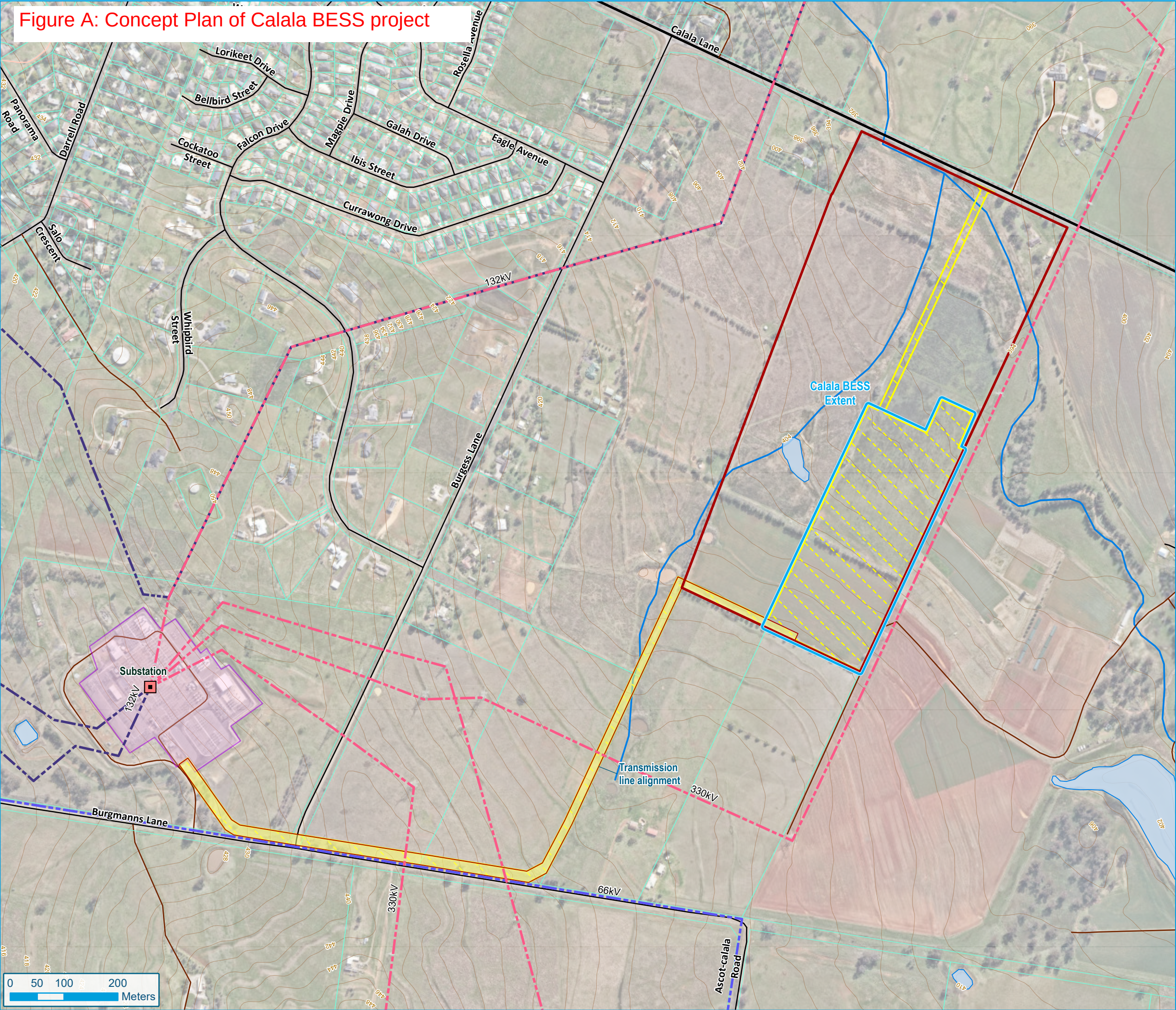
A-104

Legend

- Calala BESS extent
- Existing electricity substation
- Development footprint
- Subject site
- Transmission line alignment
- Property parcel
- Existing substation

Existing transmission line - Capacity (kV)

- 66
- 132
- 330



Scale: 1:6,500 @ A3
Spatial Reference: GDA2020 MGA Zone 56

Notes: This plan is indicative for development approval only and subject to detailed design changes. It contains highly confidential and proprietary information that are of independent, economic value to Equis. This drawing and design shall not be reproduced, amended, disclosed or distributed to others with out the express written consent of Equis.

Figure B: Site Plan of Calala BESS project



Calala BESS

300MW - 1200MWh

Site plan

Part of Lot: 17/DP629969

A-101

Legend

- Calala BESS extent
- Existing electricity substation
- Proposed easement
- Property (parcel)
- Proposed transmission line
- Existing transmission line - Capacity (kV)
 - 132
 - 330
- Proposed design
 - Fence
 - Fence - High Voltage
 - Gate
 - Noise wall
 - Underground cable (330 kV)
 - Access track
 - Auxiliary power
 - Battery enclosure
 - Control room
 - Control room - TNSP
 - Distribution kiosk (33 kV)
 - Harmonic filter - future development
 - High voltage connection asset
 - Inverter station
 - Laydown area
 - Lightning mast
 - Parking
 - Switchroom
 - Temporary office
 - Warehouse
 - Firewater tank
 - Stormwater basin
 - Transmission line alignment

Scale: 1:7,000 @ A3
Spatial Reference: GDA2020 MGA Zone 56

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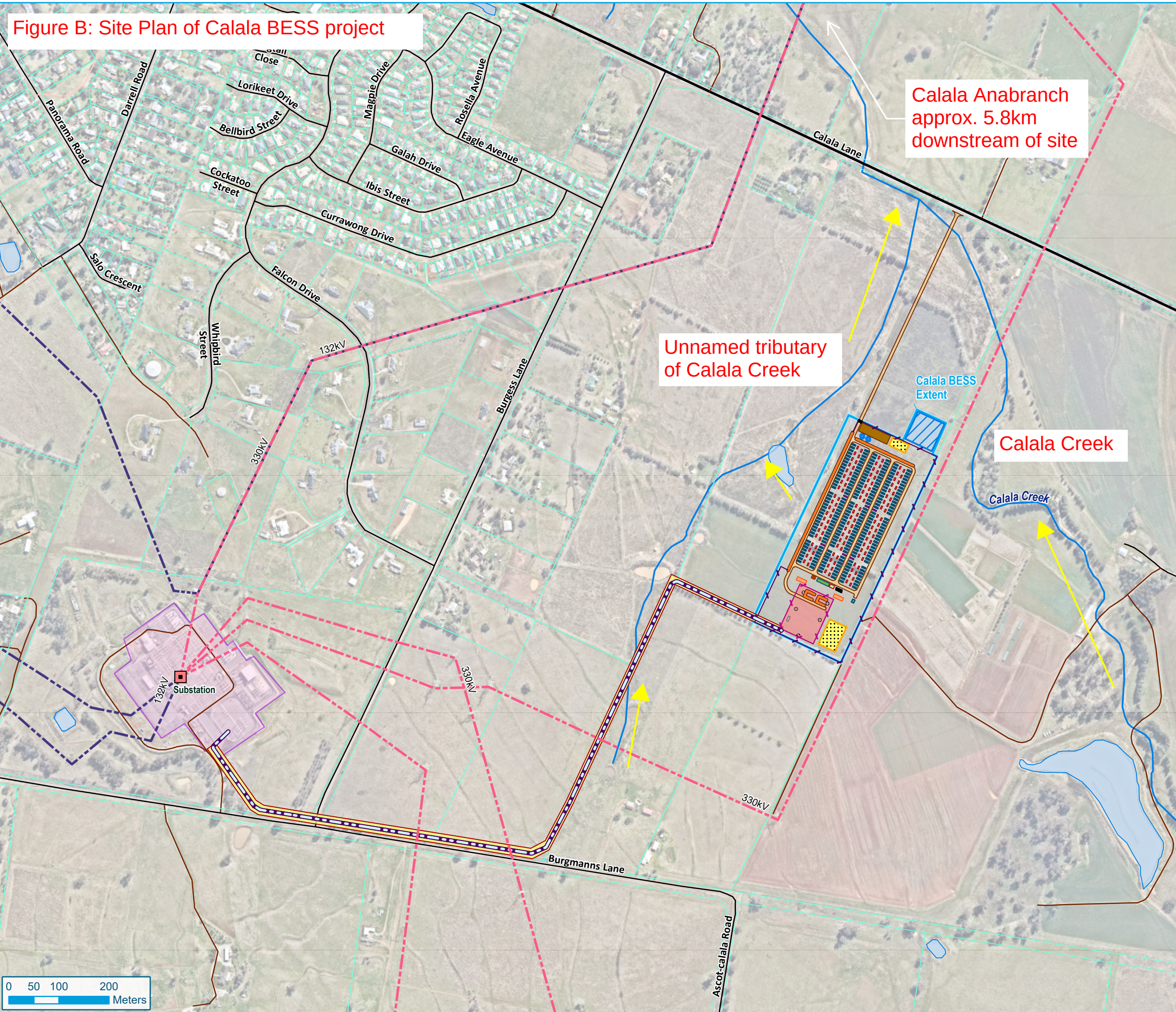


Figure C: Site Layout of Calala BESS project



Calala BESS

300MW - 1200MWh

Site layout

Part of Lot: 17/DP629969

A-102

Legend

- Calala BESS extent
- Subject site
- Property parcel
- Existing transmission line - Capacity (kV)
 - 330
- Proposed design
 - Fence
 - Fence - High Voltage
 - Gate
 - Noise wall
 - Underground cable (330 kV)
 - Access track
 - Auxiliary power
 - Battery enclosure
 - Control room
 - Control room - TNSP
 - Distribution kiosk (33 kV)
 - Harmonic filter - future development
 - High voltage connection asset
 - Inverter station
 - Laydown area
 - Lightning mast
 - Parking
 - Switchroom
 - Temporary office
 - Warehouse
 - Firewater tank
 - Stormwater basin
 - Transmission line alignment
- Flow Direction

Graded banks diverting surface runoff to the west into unnamed tributary of Calala Creek

Unnamed tributary of Calala Creek

Farm Dams



Figure D:Site catchment analysis



Calala BESS

300MW - 1200MWh

Concept plan

Part of Lot: 17/DP629969

A-104

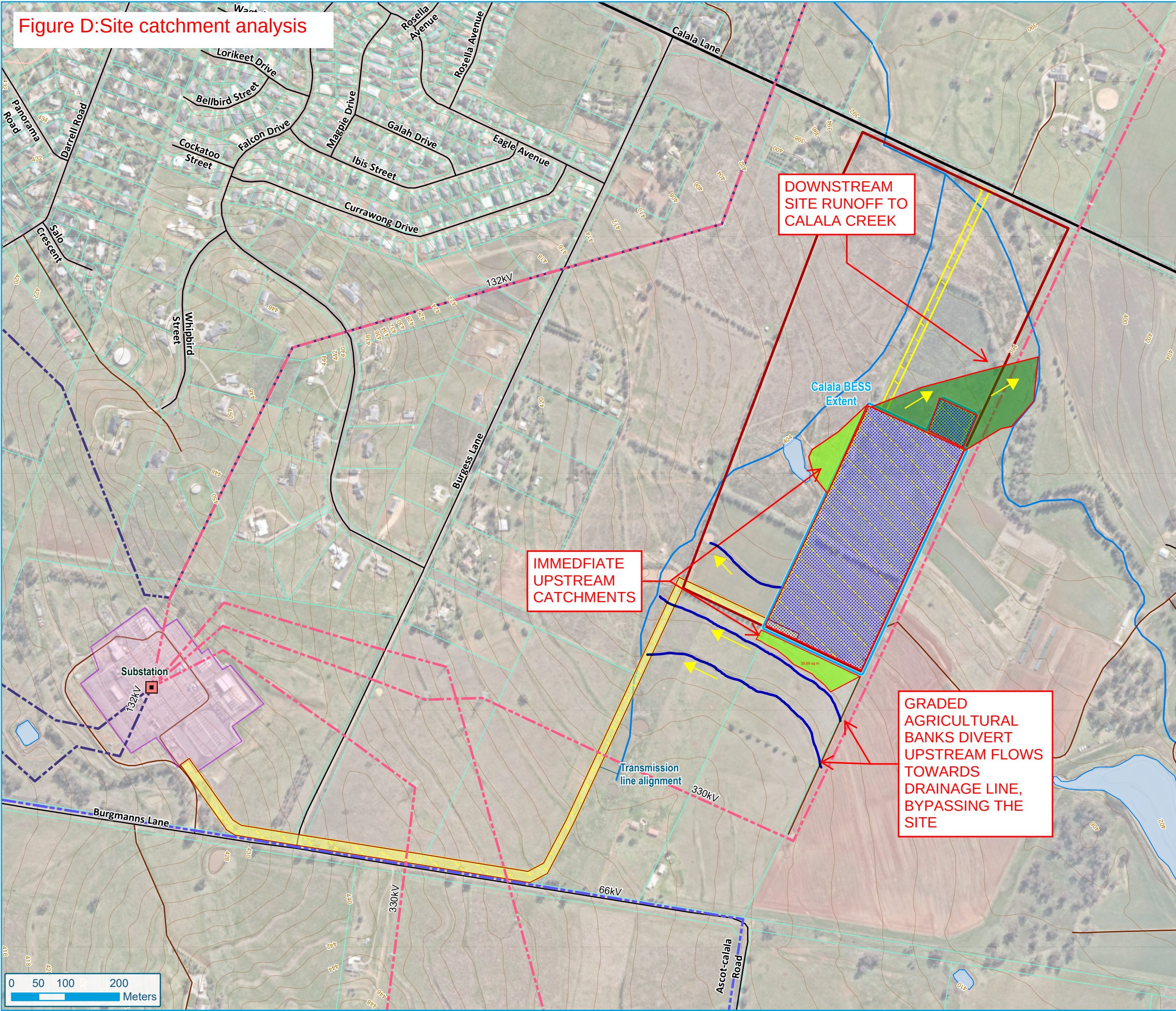
Legend

- Calala BESS extent
- Existing electricity substation
- Development footprint
- Subject site
- Transmission line alignment
- Property parcel
- Existing substation

Existing transmission line - Capacity (kV)

- 66
- 132
- 330

Flow path



Scale: 1:6,500 @ A3
Spatial Reference: GDA2020 MGA Zone 56

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Figure E: Riparian Zones near the site

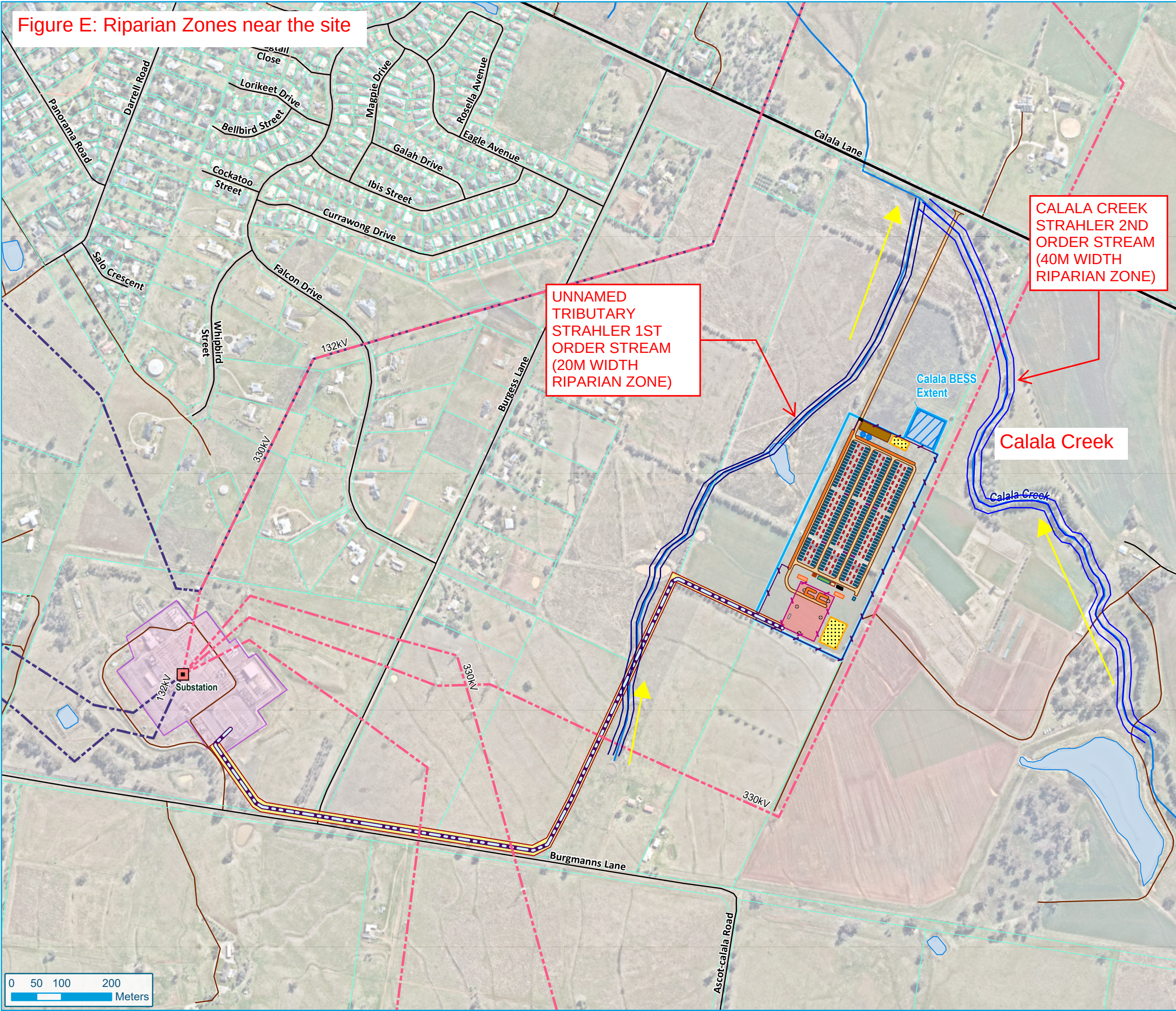


Calala BESS

300MW - 1200MWh

Site plan
Part of Lot: 17/DP629969
A-101

- Legend**
- Calala BESS extent
 - Existing electricity substation
 - Proposed easement
 - Property (parcel)
 - Proposed transmission line
- Existing transmission line - Capacity (kV)**
- 132
 - 330
- Proposed design**
- Fence
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 - High voltage connection asset
 - Inverter station
 - Laydown area
 - Lightning mast
 - Parking
 - Switchroom
 - Temporary office
 - Warehouse
 - Firewater tank
 - Stormwater basin
 - Transmission line alignment



Flow Direction

Scale: 1:7,000 @ A3
Spatial Reference: GDA2020 MGA Zone 56

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