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Attention: Jonatan Thovar and Stuart Nahajski
Shizen Energy Inc.

Delivered by email to: Jonatan.thovar@shizenenergy.net and Stuart.Nahajski@shizenenergy.net

Dear Jonatan and Stuart

ENVIRONMENTAL ASSESSMENT ADVICE - SHIZEN REGANS FORD BATTERY ENERGY STORAGE SYSTEM

1 INTRODUCTION

This document provides an environmental assessment for the proposal by Shizen Energy to utilise a portion of an existing olive plantation at 237 Orange Springs Road (herein known as 'the site') for the development of a utility-scale Battery Energy Storage System (BESS) (the Project). The Project comprises 12.7 hectares (ha) within the Shire of Gingin, Western Australia. The purpose of this assessment is to provide an overview of environmental, land use, and heritage considerations relevant to the proposed development within the site.

1.1 Purpose and scope

The purpose of this document is to assess potential environmental, heritage, and land-use constraints and opportunities associated with the Project to inform planning, design, and regulatory processes. The assessment has been undertaken via the following:

- Desktop review of environmental, heritage, and planning data.
- Site inspection to verify existing land use and site conditions (conducted 5 February 2026 by a qualified ecologist and bushfire consultant)
- Identification of potential environmental values, including remnant vegetation and conservation areas.
- Evaluation of land tenure, zoning, and surrounding land uses.
- Preliminary overview of heritage considerations based on available records.

This assessment is intended to support informed decision-making and future approvals for the proposed BESS.

1.2 Limitations

This assessment is intended to support planning framework approvals and the following limitations apply to the Project:

- The findings are based on a review of publicly available environmental, planning, tenure, and heritage datasets current at the time of assessment.

- The site inspection (conducted on 5 February 2026 by a qualified ecologist) did not constitute a comprehensive seasonal flora and fauna survey. The observations reflect site conditions at the time of inspection. Environmental values, including flora, fauna, and surface water conditions, may vary seasonally and over time.
- This assessment does not include targeted flora and fauna surveys, threatened species surveys, detailed vegetation mapping, geotechnical investigations, contamination assessments, Aboriginal heritage surveys, or detailed hydrological studies. Further specialist investigations may be required to support development applications or statutory approvals.
- Planning and environmental approval pathways may change over time. This report provides a preliminary overview only and should not be relied upon as a definitive statement of statutory requirements.
- This document is current as of the date of issue and should not be relied on after a period of 12 months without review of the content. Changes in site conditions, legislation, policy, or surrounding land uses may affect the findings and recommendations.

2 SITE DESCRIPTION AND PLANNING CONTEXT

2.1 Site Location

The Project is located within the site at 237 Orange Springs Road in the Shire of Gingin, Western Australia. The site is legally described as Lot 1001 on Plan P429000 and has an area comprising 491.3 hectares (ha). The Project comprises 12.7 is situated approximately 85 km north of Perth. This location is within the northern rural area of the Perth metropolitan region, within the Wheatbelt (Figure 1).

The site is currently developed as an active olive plantation and is accessed via Orange Springs Road at its intersection with Brand Highway.

2.2 Land Tenure and Zoning

The site is zoned General Rural under Shire of Gingin Local Planning Scheme No. 9 (LPS 9). The General Rural zone provides for agricultural, conservation and other low-intensity rural land uses. The site is also subject to Restricted and Additional Use - A19, which applies specific use provisions in accordance with LPS 9 which relates to tourism activities. The property will require appropriate zoning in accordance with the Shire of Gingin's LPS 9 for this development approval and it is understood Shizen is undertaking planning investigations into this requirement.

Surrounding land is similarly zoned General Rural and is characterised by agricultural activities (including grazing, horticulture and cropping), large rural residential holdings, areas of remnant native vegetation and limited rural-based commercial uses. A review of aerial imagery (conducted March 2026) demonstrates that the locality has dispersed settlement consistent with a low-density rural environment and infrastructure typical of non-urban areas. The site is also located adjacent to an existing Western Power substation which is part of the South West Interconnected System (SWIS).

2.3 Project overview

The Project proposes the establishment of a SWIS-connected, utility-scale battery energy storage system (BESS) with a capacity of approximately 300 MW / 2250 MWh of storage. An existing 330 kV Western Power transmission corridor (Pinjar–Cataby) traverses the site, and Western Power has completed the connection options assessment (August 2025) and the project has now progressed to the initiation stage as part of Western Powers Critical Projects Framework (CPF).

The Project will undergo a dual approval process:

- Development Application (DA) with the Shire of Gingin for the proposed works.

- Western Power approvals under the SWIS, including CPF assessments, as the Project connects into their transmission network.

Overall, the Project will contribute to a more sustainable, resilient, and efficient energy network for the region.

3 LEGISLATIVE AND CONTEXT FRAMEWORK

A high-level overview of the key Commonwealth, State and Local legislation and policy frameworks relevant to the Project are provided below.

3.1 Commonwealth

3.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) establishes the Commonwealth framework for the protection of Matters of National Environmental Significance (MNES). MNES include, but are not limited to, listed threatened species and ecological communities, listed migratory species, Commonwealth land, and (where relevant) water resources in relation to certain developments.

Under the EPBC Act, it is an offence to undertake an action that has, will have, or is likely to have a significant impact on MNES without approval from the Commonwealth Minister for the Environment. Proponents may refer a proposed action to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) where it is considered that the action may have a significant impact on MNES.

Following referral, DCCEEW determines whether the proposal is a 'controlled action'. If determined to be a controlled action, the proposal is subject to assessment under the EPBC Act and cannot proceed until formal approval is granted.

3.2 State

3.2.1 *Biodiversity Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) provides for the protection and management of native flora and fauna, threatened species, threatened ecological communities, and biodiversity in Western Australia. The BC Act also establishes provisions for the listing of threatened and priority species and ecological communities and regulates activities that may impact protected flora and fauna.

3.2.2 *Rights in Water and Irrigation Act 1914*

The *Rights in Water and Irrigation Act 1914* (RIWI Act) regulates the abstraction and use of surface water and groundwater in Western Australia. A licence issued by the Department of Water and Environmental Regulation (DWER) is required to take groundwater or surface water within proclaimed areas.

3.2.3 *Environmental Protection Act 1986*

The Environmental Protection Act 1986 (EP Act) provides the primary legislative framework for environmental protection and environmental impact assessment in Western Australia. The EP Act establishes the Environmental Protection Authority (EPA) and sets out the processes for assessment of proposals and planning instruments that may have a significant effect on the environment.

3.2.3.1 *Part IV of the EP Act: Environmental Impact Assessment*

Under Part IV of the EP Act, any proposal that is likely, if implemented, to have a significant effect on the environment may be referred to the EPA by the proponent, a decision-making authority, or any other person. The EPA determines whether the proposal requires formal environmental impact

assessment and, if so, the level of assessment to be applied. Where formal assessment is required, the proposal cannot be implemented until the Minister for Environment has granted approval.

3.2.3.1 *Part V of the EP Act: Environmental Regulation and Clearing*

Part V of the EP Act regulates environmental protection through works approvals, licences (for prescribed premises), and clearing permits. Clearing of native vegetation is prohibited unless undertaken in accordance with a clearing permit or an exemption under Schedule 5 of the EP Act. Applications to clear native vegetation are assessed against the 10 clearing principles.

3.2.3.2 *Referral of Planning Scheme Amendments*

Under section 81 of the EP Act, all amendments to a local planning scheme must be referred to the EPA for consideration. The EPA determines whether the amendment requires formal assessment under Part IV of the EP Act. If the EPA determines that the amendment is unlikely to have a significant effect on the environment, it may be set aside from formal assessment. If formal assessment is required, the amendment cannot be finalised until the environmental assessment process is completed and the Minister for Environment has issued a decision.

Accordingly, if the Project requires an amendment to the applicable local planning scheme (for example, a rezoning or introduction of additional land use permissibility), the amendment would be subject to mandatory referral to the EPA prior to finalisation.

3.2.4 *Planning and Development Act 2005 (PD Act)*

For this Project, the development approval would be determined by the Shire of Gingin in accordance with local planning scheme and associated policies. This would primarily include the key considerations of zoning and land use permissibility, amenity impacts and bushfire planning.

An amendment to the local planning scheme may be required if the proposed BESS is not permissible under the current zoning such as the existing amendment under Restricted and Additional Use - A19, which applies specific use provisions in accordance with LPS 9 relating to tourism activities for the site.

4 ENVIRONMENTAL CONSIDERATIONS

4.1 Landform and Topography

Topographic mapping using Department of Primary Industries and Regional Development (DPIRD) 2 m wide contours indicates that the site is located on gently undulating terrain with elevations ranging approximately between 82 m and 86 m Australian Height Datum (AHD) (DPIRD 2019) (**Figure 2**). Contours within the site are widely spaced. The landform is relatively uniform and lacks steep slopes, defined drainage lines, or pronounced depressions within the site. This differs to the surrounding land to the east and southeast which rises more steeply, with closely spaced contours ascending to over 140 m AHD, indicating a prominent hill or ridge system. Overall, the site occupies a lower slope or valley floor position within a broader undulating landscape and is characterised by gentle topography typical of modified agricultural land.

4.2 Geology and Soils

The Project is located on the northern extent of the Swan Coastal Plain.

Soil landscape mapping provided by DPIRD presents the site as predominantly situated within the Moore River System (DPIRD 2022) (**Figure 2**). This is characterised by alluvial flats with wet to semi-wet soils and pale to yellow deep sands, supporting woodlands and heath vegetation adapted to these conditions (Table 1). A small portion of approximately 0.5 ha extends into the Bassendean System (**Figure 2**), which comprises sand dunes and sandplains with pale, deep sands that are semi-wet to wet, supporting Banksia-paperbark woodlands and mixed heath communities. Across the site,

soils are predominantly sandy, reflecting the natural landforms of alluvial flats and sandplains, which may influence drainage and foundation conditions.

The site is also largely mapped as having low salinity risk (DPIRD 2025), with less than 3% of the site associated with moderate to high salinity risk or currently saline conditions, indicating that salinity is unlikely to be a significant constraint for development.

A review of the Department of Mines, Industry Regulation and Safety (DMIRS) Geo-heritage mapping indicates that there are no significant geo-heritage features or formations within or surrounding the site (DEMIRS 2026). No limitations or issues are likely to arise within the site associated with geo-heritage features.

Table 1: Soil landscape map unit descriptions

Map Unit	Description
Bassendean System	Swan Coastal Plain from Busselton to Jurien. Sand dunes and sandplains with pale deep sand, semi-wet and wet soil. Banksia-paperbark woodlands and mixed heaths.
Moore River System	Alluvial flats; Swan Coastal Plain west of Gingin; wet soil, semi-wet soil, pale and yellow deep sands; Woodlands and heaths

Source: DPIRD (2025)

4.3 Acid Sulfate Soil

Acid sulfate soils (ASS) are naturally occurring soils and sediments that contain iron sulphides, typically in the form of pyrite. When disturbed or exposed to oxygen, these sulphides can oxidise, producing sulfuric acid, which can acidify soils and water, harm vegetation, and corrode infrastructure.

The site is not covered by the current Department of Water and Environmental Regulation (DWER) ASS risk mapping, and no high-to-moderate or moderate-to-low risk areas have been identified within 5 km. However, ASS potential remains a consideration due to the regional geomorphology. Subsurface conditions of concern typically include anaerobic, waterlogged environments, such as wetlands or former lake sediments, where fine-grained, organic-rich sands or dark grey-to-black silts and clays may occur below the permanent groundwater table. If such soils are encountered, further testing may be required to determine their acid-buffering capacity and actual acidity.

The site is situated on gently undulating terrain at approximately 82–86 m AHD, well above the low-lying coastal or estuarine elevations where ASS is commonly found. The landform consists predominantly of alluvial flats and sandplains, with no mapped wetlands, estuarine environments, or low-lying depressions within the site. Soils are dominated by sandy substrates (Moore River and Bassendean Systems), which generally have low risk for sulfidic soils, with only limited areas of clay or organic-rich sediments. Historical mapping and aerial imagery show no evidence of former wetlands or swampy areas within the site. As such, these factors indicate that the presence of acid sulfate soils in the site is not expected and is therefore not a consideration for this Project.

4.4 Contamination

A review of the DWER Contaminated Sites Database (DWER 2026) indicates that the site is not registered as a contaminated site pursuant to the *Contaminated Sites Act 2003* (CS Act).

Historical land use includes predominantly cleared land in 1962–1963, with adjacent clearing for the Regans Western Power substation, and from 2000 to the present, the area has been cultivated as an olive plantation. An adjacent parking bay along Brand Highway is located outside the site on the eastern boundary. Based on this information, there is no evidence of significant contamination, though there may be minor residual effects from agricultural activities associated with the olive plantation.

4.5 Groundwater and Public Drinking Water Source Areas

A review of the DWER Water Register demonstrates that the site is located within the Gingin groundwater area, which is proclaimed under the RiWI Act, specifically the North Moore River Park groundwater subarea, part of the Perth Superficial Swan aquifer system (DWER 2026) (**Figure 3**).

There is one registered groundwater licence (Licence Number: 83817) held by Kallamar Estate Pty Ltd, with an allocation of 3,100,000 kL, issued on 2 March 2016 and expiring on 1 March 2026. However, this licence does not cover the entire site, indicating that parts of the Project may not be subject to existing groundwater extraction rights.

Surface water within the site falls under the Lower Moore surface water area (**Figure 3**). The Project is not located within a designated Public Drinking Water Source Area (PDWSA) and therefore is not subject to specific PDWSA protection measures.

Available information indicates limited regional water availability data. The superficial aquifer within the site is the Perth-Superficial Swan aquifer; however, all reviewed DWER monitoring bores at this location are screened within the Perth-Yaragadee Aquifer, except for Gillingarra Line - GL5W (Site ID 61730054), which is completed in the Perth-Leederville Aquifer. Consequently, the available monitoring data does not provide a reliable indication of superficial groundwater levels or flow conditions. The GL5W bore was monitored between 1982 and 2016, with the most recent recorded groundwater level at 3.4 m below ground level (mbgl). At a local scale, groundwater flow within the superficial system would be expected to trend northwards towards the Moore River; however, at a broader regional scale, the overall groundwater flow regime is understood to be towards the coastline.

4.6 Wetlands and Surface Water Drainage

Wetlands include 'areas of seasonally, intermittently or permanently waterlogged soils or inundated land, whether natural or otherwise, fresh and saline, e.g. waterlogged soils, ponds, billabongs, lakes, swamps, tidal flats, estuaries, rivers and their tributaries' (Wetlands Advisory Committee 1977). Wetlands can also be recognised by the presence of vegetation associated with waterlogging or hydric soils such as peat, peaty sand, or carbonate mud (Hill *et al.* 1996)

Wetlands of international significance, such as Ramsar wetlands, are protected under the EPBC Act. A search using the DCCEEW Protected Matters Search Tool (PMST) (DCCEEW 2026) confirmed that no Ramsar wetlands occur within 10 km the site. (DBCA 2025)

At a regional level, the Department of Biodiversity, Conservation and Attractions (DBCA) maintains the Geomorphic Wetlands of the Swan Coastal Plain dataset (DBCA 2025), which classifies wetlands into management categories to guide land use and conservation. Wetland types are based on landform shape and water permanence, while management categories consider hydrological, biological, and human use characteristics.

No geomorphic wetlands are identified within the site. The nearest conservation category wetland lies approximately 280 m east of the Project. Several resource enhancement wetlands are also nearby, with the closest located 150 m east of the site. A large palusplain wetland is situated roughly 460 m north of the Project. Additionally, the Moore River National Park wetland is located approximately 1.2 km south of the site.

Although wetlands are not present within the site, nearby wetlands should be considered in planning and management to avoid potential indirect impacts on their ecological and hydrological values and as such adequate buffers for the project from conservation category wetlands can be significantly achieved.

4.7 Flora and Vegetation

A site inspection was completed 5 February by a qualified ecologist to assess the flora, vegetation and fauna values within the site. **Sections 4.7** and **4.8** present the findings of the assessment.

4.7.1 Threatened and priority flora

No threatened or priority flora species were recorded during the site inspection. Given the high level of disturbance and ongoing agricultural land use, no threatened or priority flora species are expected to likely to occur within the site.

4.7.2 Introduced flora

The site is predominantly comprised of planted olive trees over non-native grasses and forbs associated with the active plantation. Introduced flora is widespread and reflects long history of clearing and cultivation.

4.7.1 Threatened and priority ecological communities

No threatened (TECs) or priority ecological communities (PECs) were recorded within the site. Given the extent of clearing, vegetation modification, and degraded condition of the remnant patch, no TECs or PECs are considered likely to occur within the site.

4.7.2 Vegetation

The vegetation within the site is highly modified because of historical clearing and ongoing agricultural land use. Most of the site (12.58 ha) comprises completely degraded, non-native vegetation associated with planted olive groves and cleared access tracks (**Table 2**). One native vegetation unit (JA) occupies 0.09 ha and is classified as degraded in condition (**Table 3**). No vegetation in pristine, excellent, very good, or good condition was recorded. Overall, the site retains only a small and disturbed patch of native vegetation, with limited structural complexity and biodiversity values.

The native vegetation unit mapped on the site (JA) was likely historically contiguous with the intact patch of Banksia woodland TEC located immediately east of the site within the Brand Highway reserve. However, disturbance associated with construction of internal roads and fencing has removed any mature Banksia overstorey that may previously have occurred within this portion of the site. The current regrowth lacks a Banksia overstorey, exhibits low species diversity and a simplified structure, and therefore does not meet the diagnostic criteria for the Banksia Woodland of the Swan Coastal Plain TEC.

Table 2: Description and extent of vegetation units identified within the site

Unit	Description	Extent within the site boundary (ha)
JA	Shrubland of <i>Jacksonia</i> spp., <i>Adenanthos</i> spp. and Myrtaceae spp. over native grassland and forbland.	0.09
Non-native/cleared	Areas of planted olive groves and cleared tracks.	12.58

The extent of vegetation by condition category is detailed in Table 3.

Table 3: Extent of vegetation condition categories within the site

Condition category	Total area (ha)
Pristine	0.00
Excellent	0.00
Very good	0.00
Good	0.00
Degraded	0.09

Condition category	Total area (ha)
Completely degraded	12.58

Source: Categories listed are in accordance with Keighery (1994)

4.8 Terrestrial Fauna

4.8.1 Presence of fauna habitat

The site provides limited fauna habitat due to extensive historical clearing and agricultural land use. Habitat is largely restricted to planted olive trees and degraded vegetation. No mature native trees suitable for breeding or roosting of conservation-significant fauna were identified within the site (**Figure 5**).

Higher quality fauna habitat is present within the adjacent Brand Highway reserve vegetation to the east, which supports native overstorey species however this is outside of the site.

4.8.2 Conservation significant fauna

One threatened fauna species, *Zanda latirostris* (Carnaby's black cockatoo), listed as Endangered under the EPBC Act and the *Biodiversity Conservation Act 2016*, was identified as having potential to occur within the site. Approximately 0.01 ha of secondary native foraging habitat (*Eucalyptus tottiana*) is present. However, no suitable breeding or roosting trees were recorded (**Figure 5**).

The balance of the site is expected to support habitat for common and widespread fauna species.

4.9 Bush Forever and Regional Ecological Linkages

A review of the Bush Forever dataset (DPLH 2026) and regional ecological planning information indicates that the site is not located within, nor adjacent to, any Bush Forever Site. There are also no mapped regional ecological linkages or conservation corridors identified within or immediately surrounding the site.

As a result, the Project is not expected to directly impact regionally significant vegetation reserves or ecological connectivity. The nearest major conservation area is Moore River National Park, located approximately 2.7 km south of the site.

4.10 Environmentally Sensitive Areas

A review of Clearing Permit System mapping by DWER for Environmentally Sensitive Areas (ESAs) indicates that there are no mapped ESAs within the site (DWER 2025). The nearest ESA is located approximately 220 m east of the Project, associated with a mapped conservation category wetland (**Figure 6**).

Desktop mapping of ESAs confirms that the site does not overlap any high-priority conservation or environmentally sensitive areas. As such, clearing and development within the site is not expected to directly impact ESA values.

4.11 Aboriginal and Historical Heritage

4.11.1 Registered Heritage Sites

The western portion of the site is partially covered by a registered Aboriginal Cultural Heritage Site (ID 20008), known as the Gingin Brook Waggly Site. This site is registered for multiple values, including Camp; Creation / Dreaming Narrative; Historical; Hunting Place; Plant Resource; and Water Source (**Table 4**).

There are no lodged or historic (non-Aboriginal) heritage sites within the site.

The site has not been subject to a dedicated heritage survey. However, adjacent areas have been surveyed in connection with upgrades to the Brand Highway along the eastern boundary of the site.

Adjacent surveys are provided in **Table 4**.

Registered Heritage Sites and survey areas are presented in **Figure 7**.

Table 4: List of Heritage Surveys

Survey Report ID	Survey Area ID	Report Title	Year	Survey Type	Area Description	Field/Desktop
200553	19514	Archaeological and ethnographic site identification heritage survey of Main Roads' Brand Highway upgrade Project Area, conducted with the Yued Traditional Owners	2016	Archaeological/Ethnographic	Brand Highway, 74-77 SLK	Field and Desktop
200738	20289	Report on an archaeological and ethnographic site identification heritage survey of the Brand Highway upgrade at Regans Ford, conducted by the Yued Traditional Owners and Terra Rosa Consulting for South West Aboriginal Land and Sea Council	2016	Archaeological/Ethnographic	Regans Ford on the Moore River on the Brand Highway	Field only

4.11.2 State Heritage Register

Heritage Council of Western Australia State Heritage Places (Heritage Council WA 2022) shows that while there are three registered heritage places in the broader Shire of Gingin, all are located outside the site:

- Heritage Place No. 17901: 76 Fernwood Glen Orange Springs (Fernwood -Site)
- Heritage Place No. 17908: Orange Springs Rd Orange Springs (Old Bridge Site)
- Heritage Place No. 11800: 706 Orange Springs Rd Orange Springs (Orange Springs).

4.12 Incompatible or Sensitive Adjacent Land Uses

Land uses that are generally incompatible with General Rural zoning include high-density residential developments (such as apartments or townhouse complexes), heavy or polluting industries, large-scale commercial or retail centres, major entertainment venues, urban-style infrastructure, and high-impact activities like landfills or hazardous waste facilities. These uses conflict with the primary purpose of rural zoning, which is to protect agricultural land, maintain low-density living, preserve environmental values, and minimise traffic, noise, and pollution. The site has an additional use for tourism purposes under LPS 9 and the existing olive plantation is not considered incompatible with a BESS facility.

The nearest sensitive receptor is located approximately 700 m north of the Project (Regans Ford Holiday Park) and the buildings/infrastructure associated with the olive plantation is approximately 1 km west of the Project boundary. The Western Power substation is to the south and west of the Project on the adjacent lot.

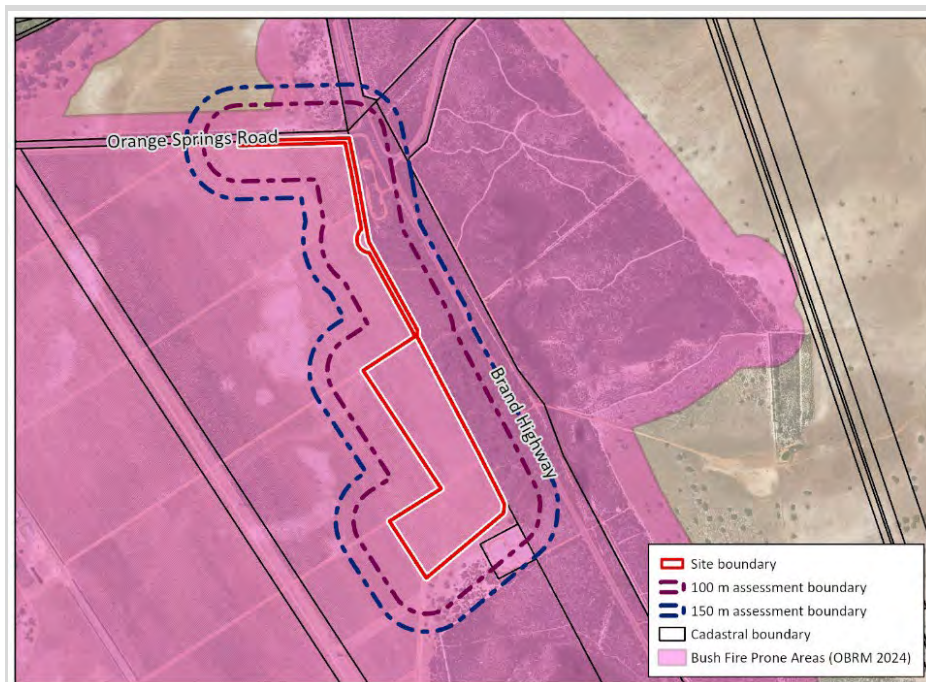
A review of the DWER Offsets Register (DWER-079) indicates that the Brand Highway upgrade (SLK 34.83 to 163.4, including passing lanes and widening) is a registered project. While the Brand Highway upgrade project is external to the site, it may be relevant if access or vegetation clearing is required within the Brand Highway road reserve to support the Project.

Overall, while there are adjacent land uses that could impose operational or planning constraints, no incompatible land uses directly within the site have been identified.

5 BUSHFIRE CONSIDERATIONS

The Project is located within 'Area 2' (designated bushfire prone) on the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire Risk Management (OBRM 2025), as shown in **Plate 1**. The proposal comprises non-habitable infrastructure, specifically BESS units and grid stations.

Typically, for non-habitable infrastructure like BESS units and grid stations, a formal assessment against State Planning Policy 3.7 Bushfire (SPP 3.7) is not a mandatory statutory requirement regardless of siting within a designated bushfire prone area. However, Shizen Energy has elected to opt into an assessment against SPP 3.7 for this project. This decision is driven by the unique technical characteristics of utility-scale battery storage and a proactive intent to mitigate risks to both the facility and the surrounding rural environment, ensuring all potential concerns from the Shire of Gingin and regulatory bodies are addressed early in the planning process.



Source: OBRM (2025)

Plate 1: Mapped bushfire prone areas within the site boundary (State-wide Map of Bush Fire Prone Areas).

5.1 Bushfire Hazard Assessment

A preliminary desktop assessment, supported by a site inspection undertaken on 5 February 2026 by a Level 1 BPAD qualified bushfire consultant, identified classified vegetation surrounding the site that contributes to the bushfire hazard for the proposed BESS facility. These areas represent the permanent vegetation likely to influence bushfire behaviour and therefore, form the primary considerations for development of the Project.

The key vegetation influencing the site includes Class A Forest and Class D Scrub within the Brand Highway reserve to the northeast, Class G Grassland and Class D Scrub within remnant bushland to the southeast, and existing active olive orchards to the west. The olive orchards are currently maintained to a low-threat standard in accordance with AS 3959:2018 Clause 2.2.3.2 and do not contribute to the bushfire hazard.

Key vegetation interfaces and the resulting setbacks required to achieve each individual BAL rating are presented in **Figure 8** as a Bushfire Attack Level (BAL) Contour Plan. As BAL ratings are only relevant to the siting and design of the BESS infrastructure, not the broader site, they have been applied solely to the BESS facility footprint. The access road does not constitute a bushfire-vulnerable or bushfire-sensitive element and therefore, is not subject to BAL assessment requirements. As such, **Figure 8** focuses specifically on vegetation interfaces influencing the BESS layout rather than depicting BAL contours along the full access road alignment.

The BAL ratings used in this assessment represent the following:

- **BAL-LOW:** Very low risk. There is insufficient risk to warrant specific construction requirements.
- **BAL-12.5:** Low risk. Primarily risk of ember attack.
- **BAL-19:** Moderate risk. Increasing levels of ember attack and burning debris ignited by windborne embers, together with increasing heat flux.
- **BAL-29:** High risk. Increasing levels of ember attack and burning debris ignited by windborne embers, together with increasing heat flux.
- **BAL-40:** Very high risk. Increasing levels of ember attack and burning debris ignited by windborne embers, together with increasing heat flux with the increased likelihood of exposure to flames.
- **BAL-FZ (Flame Zone):** Extreme risk. Direct exposure to flames from the fire front in addition to heat flux and ember attack.

While achieving a BAL-29 rating is not a strict requirement for this non-habitable land use, it has been adopted as a siting benchmark. Preliminary modelling indicates that BESS components are currently positioned to achieve BAL-12.5 or BAL-LOW, which is significantly below the BAL-29 benchmark.

Setback distances are outlined in **Table 5**.

Table 5: Setback distances based on vegetation classification and effective slope and Table 2.5 of AS 3959, as determined by the method 1 BAL assessment

Vegetation classification (see Figure 7)	Effective slope (see Figure 7)	Distance to vegetation (from Table 2.5 of AS 3959)	BAL rating (see Figure 7)
Forest (Class A)	Flat/upslope	< 16 m	BAL-FZ
		16 - < 21 m	BAL-40
		21 - < 31 m	BAL-29
		31 - < 42 m	BAL-19
		42 - < 100 m	BAL-12.5
		> 100 m	BAL-LOW
Scrub (Class D)	Flat/upslope	< 10 m	BAL-FZ
		10 - < 13 m	BAL-40
		13 - < 19 m	BAL-29
		19 - < 27 m	BAL-19
		27 - < 100 m	BAL-12.5
		> 100 m	BAL-LOW
Grassland (Class G)	Flat/upslope	< 6 m	BAL-FZ
		6 - < 8 m	BAL-40
		8 - < 12 m	BAL-29
		12 - < 17 m	BAL-19
		17 - < 50 m	BAL-12.5
		> 50 m	BAL-LOW

5.2 Technical Risk Mitigation and Design Standards

Given that Western Australia currently lacks specific guidelines for renewable energy facilities, this assessment advice adopts the *CFA Design Guidelines and Model Requirements: Renewable Energy Facilities (2023)* as a best-practice framework. In response to this the following recommendations should be considered as part of finalising design:

- **Isolation and Separation:** To prevent fire escalation, battery units will be isolated with a 10 m separation distance from other critical assets within low-threat land (paved or compacted earth).
- **Fire Suppression Strategy:** The facility is designed to contain any internal thermal event, allowing units to burn out in a controlled manner if necessary.
- **Water Infrastructure:** A dedicated water supply, including a static tank and strategic hydrants, will be integrated into the site design to ensure firefighting services can prevent fire spread into surrounding vegetation.
- **Operational Access:** Site access will be designed to accommodate heavy firefighting appliances, ensuring effective emergency response capabilities. This will require 10 m horizontal clearances with a minimum 6 m wide trafficable surface.

The spatial implications of these requirements, demonstrating how the BESS infrastructure can be accommodated within the site while maintaining the necessary separation from hazardous vegetation and other assets, is also summarised in **Plate 2**.

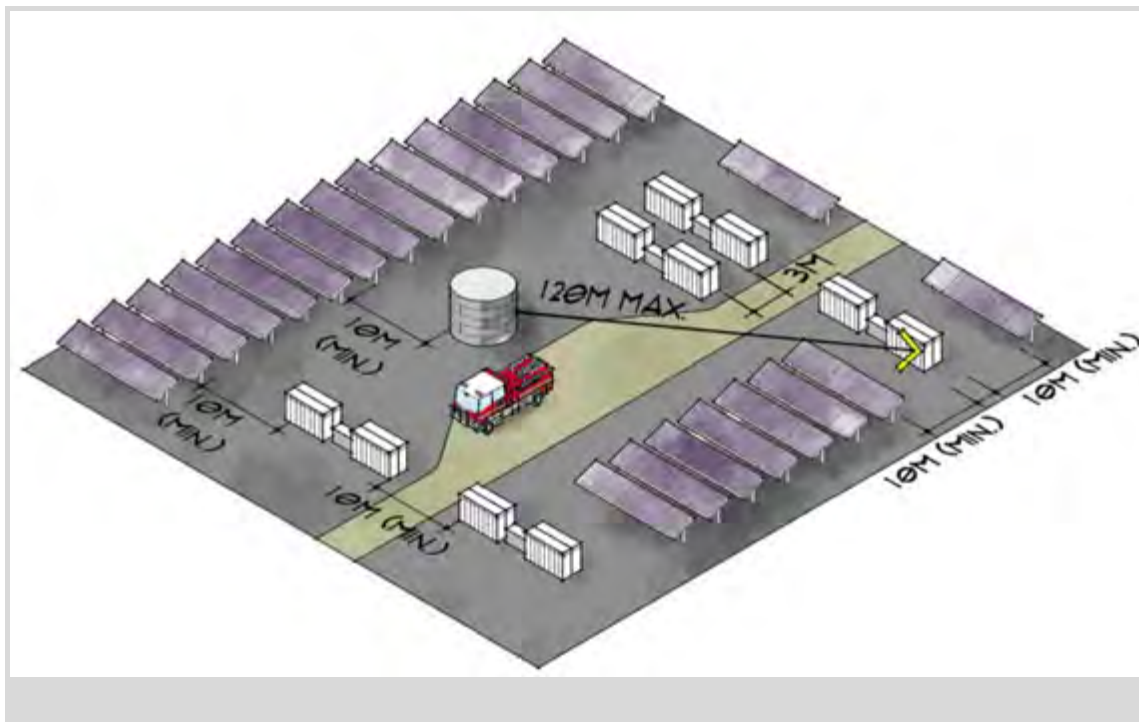


Plate 2: Excerpt from the *CFA Design Guidelines and Model Requirements: Renewable Energy Facilities (CFA 2023)* detailing potential siting considerations with water supply within 120 m of the battery storage area.

6 PRELIMINARY APPROVAL AND REGULATORY IMPLICATIONS

6.1 Planning and Development Act

For this Project, the Shire of Gingin would be responsible for assessing and determining any Development Application (DA) submitted for the proposed BESS facility. Key triggers for development approval include the current zoning of the land, land use permissibility, compliance with scheme requirements such as setbacks, height limits, site coverage, access, and servicing, and potential amenity impacts (including bushfire, noise, visual impacts, and traffic).

6.2 *Rights in Water Irrigation Act (RIWI Act)*

The Project is located within a proclaimed groundwater area. Should groundwater abstraction be required for construction or operational purposes, a Licence to take groundwater under the RiWI Act may be required, depending on the volume of water proposed to be taken and the purpose of use. At this stage, no dewatering is proposed and no impacts to surface water hydrology are anticipated.

As such, the Project is not expected to trigger significant regulatory requirements under the RiWI Act, subject to confirmation of water supply arrangements during detailed design.

There are no mapped watercourses or wetlands within the Project Area and; therefore, a bed and banks permit under the RiWI Act is not required.

6.3 *Biodiversity Conservation Act 2016*

Application for License to take under *Biodiversity Conservation Act 2016* will not be required as no Threatened or Priority species are identified within the site.

6.4 *EPBC Act*

Based on the current understanding of the Project and existing site conditions, which is an established and substantially modified olive plantation, the likelihood of significant impacts on MNES is expected to be low. The historical disturbance associated with agricultural activities has significantly altered the native vegetation and habitat values, reducing the likelihood of ecological communities, threatened species, or migratory species occurring within the site.

While three listed Threatened Ecological Communities (TECs) may occur within 10 km of the Project, the site does not contain suitable habitat to support these communities. The small patch of native vegetation within the site was likely once contiguous with the Banksia Woodland TEC to the east; however, disturbance associated with the construction of roads and fence lines has removed any mature Banksia overstorey. The resulting regrowth lacks the structural and species characteristics required to meet the criteria for the TEC and exhibits low species diversity, and therefore is not considered representative of a Banksia Woodland TEC.

One threatened fauna species, *Zanda latirostris* (Carnaby's black cockatoo) which is listed as 'Endangered' under the EPBC Act and the BC Act, was identified as having potential to occur within the site. A total of 0.01 ha of secondary native foraging plants (*Eucalyptus tottiana*) is present within the site. No trees suitable for roosting or breeding are present within the site.

Nine listed migratory species may have habitat that occur within 10 km of the Project, however, suitable foraging or roosting habitat for these species is not present on site due to extensive vegetation modification.

The likelihood of significant impacts on MNES expected to be low and referral of the Project under the EPBC Act is not expected to be required.

Table 6 presents the potential MNES within 10 km of the Project.

Table 6: Assessment of existing environment on MNES that occur or may occur within 10 km of the Project

MNES	Existing Environment and Likely Impact	Applicable to Project
Listed Threatened Species and Ecological Communities	There are three (3) listed ecological communities that occur or may occur within 10 km of the Project: - Banksia Woodlands of the Swan Coastal Plain ecological community (listed as Endangered) - Empodisma peatlands of southwestern Australia (listed as Endangered) - Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community (listed as Critically Endangered)	No

MNES	Existing Environment and Likely Impact	Applicable to Project
	There are 31 listed threatened species that occur or may occur within 10 km of the Project.	
Listed Migratory Species	There are nine (9) listed migratory species that occur or may occur within 10 km of the Project: • Fork tailed Swift (<i>Apus pacificus</i>) • Grey Wagtail (<i>Motacilla cinerea</i>) • Common Sandpiper (<i>Actitis hypoleucos</i>) • Sharp-tailed Sandpiper (<i>Calidris acuminata</i>) • Curlew Sandpiper (<i>Calidris ferruginea</i>) • Pectoral Sandpiper (<i>Calidris melanotos</i>) • Eastern Curlew (<i>Numenius madagascariensis</i>) • Osprey (<i>Pandion haliaetus</i>) • Common Greenshank (<i>Tringa nebularia</i>)	No
Wetlands of International Importance	There are no Wetlands of National Importance that occur or may occur within 10 km of the Project.	N/A
Commonwealth Marine Area	There are no Commonwealth Marine Areas that occur or may occur within 10 km of the Project.	N/A
World Heritage Properties	There are no World Heritage Properties that occur or may occur within 10 km of the Project.	N/A
National Heritage Places	There are no National Heritage Places that occur or may occur within 10 km of the Project.	N/A
Nuclear Actions	The Project does not involve any nuclear actions.	N/A
Great Barrier Reef Marine Park	The Project is not located within the Great Barrier Reef Marine Park.	N/A

6.5 EP Act – Part IV

A preliminary review of the EPA's Factors regarding the Project is presented in **Table 7**. This review has been undertaken to identify any potential key environmental factors and to determine whether further technical studies may be required to adequately characterise, avoid, minimise and manage potential impacts.

Part IV of the EP Act provides for the assessment of proposals that are likely to have a significant effect on the environment. While the EP Act does not define the terms "significant impact" or "significant effect," the EPA may consider a range of matters when determining whether assessment is required. These include:

- values, sensitivity and quality of the receiving environment
- all stages and components of the proposal (including associated infrastructure and the full life cycle)
- the extent to which predicted environmental outcomes align with the EPA's environmental factor objectives
- cumulative impacts from past, present and reasonably foreseeable future activities
- the level of confidence in predicted residual impacts and the effectiveness of proposed mitigation measures
- the level of public interest in the potential environmental effects of the proposal.

Based on the preliminary review of EPA environmental factors as presented in **Table 7**. The Project is not expected to result in a significant effect on the environment. Potential impacts are limited in scale and extent, and most factors are either not applicable or unlikely to require detailed assessment. While the Social Surroundings factor is relevant due to the presence of a registered

Aboriginal heritage site, impacts can be managed through appropriate avoidance and mitigation measures. As such, the Project does not appear likely to trigger a referral under Part IV of the EP Act.

Table 7: EPA Factors in relation to the Project

Theme	Factor	Existing conditions	Applicable to Project
Sea	Benthic communities and habitats, Coastal processes, Marine environmental quality and Marine fauna	Project locality is land-based.	Not applicable.
Land	Flora and Vegetation	Site inspection did not identify any listed threatened or conservation-significant flora or ecological communities. Vegetation is predominantly non-native (planted olive groves and cleared tracks). Native vegetation comprises 0.09 ha in degraded condition. No threatened or priority ecological communities are present or likely due to extensive historical disturbance.	Not expected to be a factor.
	Landforms	No significant landforms are present within the Project Area. Visual amenity impacts can be addressed under Social Surroundings.	Not expected to be a factor.
	Subterranean Fauna	There are no mapped subterranean fauna within the Project Area.	Not applicable.
	Terrestrial Environmental Quality	The Project does not require dewatering.	Not expected to be a factor.
	Terrestrial Fauna	One threatened fauna species, <i>Zanda latirostris</i> (Carnaby's black cockatoo), has potential to occur. Approximately 0.01 ha of secondary native foraging plants (<i>Eucalyptus tottiana</i>) is present, with no suitable roosting or breeding trees. The remainder of the site supports habitat for common, widespread fauna.	Not expected to be a factor.
Water	Inland Waters	No impacts to surface water hydrology are proposed. If groundwater use is required, investigations and modelling may be considered depending on abstraction volumes and aquifer properties.	Not expected to be a factor.
Air	Air Quality	Closest receptor is about 700 m north of the Project (Regans Ford Holiday Park)	Not expected to be a factor.
	Greenhouse Gas Emissions	Unlikely to be a factor as emissions not expected to exceed 100,000 t CO ₂ -e.	Not expected to be a factor.
People	Social Surroundings	There is a registered Aboriginal Site (Gingin Brook Waggly Site) located within the Project Area. The area has been historically cleared and is currently used as an active olive plantation.	Not expected to be a factor.
	Human Health	No expected health risks. Closest receptor is about 700 m north of the Project (Regans Ford Holiday Park).	Not expected to be a factor.

6.6 EP Act – Part V

The site comprises a historically cleared and actively managed olive plantation. Although broadscale native vegetation is not present, there remains a risk that remnant native vegetation, regrowth, or native species within road reserves or surrounding areas may be impacted by construction activities. If clearing of native vegetation is required, a permit may be necessary under Part V of the EP Act, unless an exemption applies. A total of 0.09 ha of native vegetation in degraded condition is present within the site, associated with the 'JA' vegetation unit located within Orange Springs Road. Should Shizen Energy avoid clearing this vegetation by choosing a cleared area to access the site from Orange Springs Road, a clearing permit will not be required.

The proposed BESS is not a prescribed premises under the Environmental Protection Regulations 1987 and therefore is not expected to trigger licensing requirements under Part V of the EP Act. However, environmental management measures will still be required to address potential localised impacts during construction and operation.

7 RISKS AND UNCERTAINTIES

The primary area of uncertainty relates to Aboriginal cultural heritage values within the Project Area. Although the land has been historically cleared and is currently used for agricultural purposes, there remains a risk that previously unidentified heritage sites or cultural values may be present. It is our understanding that Shizen will consult the 'Yued people' who are the traditional owners of the area. This consultation will follow any framework of approval required under the *Aboriginal Heritage Act 1972*.

Given the presence of native vegetation is located at the northern portion of the Project and likely wholly within the road reserve, it is uncertain whether a native vegetation clearing permit under Part V of the EP Act will be required. Confirmation of the access into Shizen Energy's project to avoid the 0.09 ha of mapped native vegetation in Orange Springs Road, and additional confirmation that adjacent native vegetation in the Brand Highway road reserve will not be impacted, is required to negate the need for a clearing permit.

Groundwater abstraction is not currently proposed; however, the Project is within a proclaimed Groundwater Area. Should groundwater be required for construction or operation, additional investigations would be necessary to understand aquifer characteristics and potential impacts. Confirmation of water supply arrangements during detailed design may be required to inform the development application.

Overall, while environmental risks appear low and manageable, targeted studies and consultation will reduce uncertainty and ensure that any potential impacts are identified early and appropriately mitigated.

8 SUMMARY OF POTENTIAL APPROVALS

Table 8 summarises the key regulatory and environmental considerations for the Project, highlighting potential approvals, permits, and licences that may be required to manage risks and uncertainties associated with environment and heritage with construction activities.

Table 8: Summary of Potential Approvals, Permits, and Licences for the Project and Associated Environmental and Regulatory Considerations

Approvals Mechanism	Applicability to the Project	Further assessment
EP Act – Part V, Environmental Regulation and Clearing	Required if the 0.09 ha native vegetation in degraded condition is required to be removed.	Confirmation of clearing extent required for the Project. Where clearing of native vegetation cannot be avoided, a clearing permit may be required unless an exemption applies specifically for Orange Springs Road.
EPBC Act	Secondary foraging habitat present for Carnaby's black cockatoo.	Preliminary assessment in this letter report indicates no trigger to warrant referral of the Project to the DCCEEW.
EP Act – Part IV	Not expected to be triggered.	Preliminary assessment indicates no significant environmental impact is expected.
EP Act – Part V; Works Approval & Licences.	BESS is not a prescribed premise. Not applicable.	No Part V licensing required for the proposed BESS; standard environmental management measures should be implemented during construction and operation.
Bed and Banks Permit	Not Applicable	Required if works impact watercourses or riverbanks. Not present within the site.

Approvals Mechanism	Applicability to the Project	Further assessment
Licence to Take Groundwater under the RiWI Act	The site is within a proclaimed Groundwater Area.	Licence is required if groundwater is proposed for use in construction or operation. Confirmation of water supply arrangements during detailed design.
Licence to take flora or fauna	Required if any native species or conservation significant species may be impacted	Licences under the <i>Biodiversity Conservation Act 2016</i> may be required for fauna capture/relocation or collection of protected flora. Not expected to be triggered as none were identified in desktop assessment or site inspection.
Section 18 under the <i>Aboriginal Heritage Act 1972</i>	Site-specific heritage surveys recommended	Consult with the traditional owners the Yued people to determine any approvals required under the AH Act.
SPP 3.7 Bushfire and Planning for Bushfire Guidelines (WAPC)	Bushfire Management Plan Development Application	Attach bushfire management plan to development application.
LPS No.9 Shire of Gingin	A development application will be required under the local planning scheme no. 9 for the Shire of Gingin.	Incorporate environmental considerations into development application.

We trust the above assists with providing an environmental assessment for the Project. Please contact Danielle White or Toni Burbidge from Emerge to discuss should you require any clarification.

Yours sincerely
Emerge Associates



Danielle White

SENIOR ENVIRONMENTAL CONSULTANT

cc:

Encl: Figure 1: Site Location
Figure 2: Soils and topography
Figure 3: Groundwater and Surface Water Areas
Figure 4: Wetlands
Figure 5: Black Cockatoo Habitat
Figure 6: Environmental Considerations
Figure 7: Bushfire Attack Level Contour Plan
Figure 8: Bushfire Attack Level Contour Plan

References

Department of Biodiversity, Conservation and Attractions (DBCA) 2025, *Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)*, Perth, WA,
<<https://catalogue.data.wa.gov.au/dataset/geomorphic-wetlands-swan-coastal-plain>>.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2026, *Protected Matters Search Tool*, <<https://pmst.environment.gov.au/>>.

Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) 2026, *Geoheritage Sites*, Western Australia.

Department of Primary Industries and Regional Development (DPIRD) 2019, *2 metre contours (DPIRD-072)*, Perth.

Department of Primary Industries and Regional Development (DPIRD) 2022, *Soil Landscape Mapping - Zones (DPIRD-017)*, Western Australia

Department of Water and Environment Regulation (DWER) 2025, *Environmentally Sensitive Areas Map*
<<https://cps.dwer.wa.gov.au/main.html#{%22xclass%22:%22app.map.Main%22},{%22xclass%22:%22app.Content%22}}>>.

Department of Water and Environmental Regulation (DWER) 2026, *Water Register*, Perth, WA,
<<https://maps.water.wa.gov.au/#/webmap/register>>.

Heritage Council WA 2022, *State Heritage Office database*, Perth, Western Australia,
<<http://www.inherit.stateheritage.wa.gov.au/Public/>>.

Hill, A. L., Semeniuk, C. A., Semeniuk, V. and Del Marco, A. 1996, *Wetlands of the Swan Coastal Plain: Volume 2A - Wetland Mapping, Classification and Evaluation*, Water and Rivers Commission and the Department of Environmental Protection, Perth.

Office of Bushfire Risk Management (OBRM) 2025, *Map of Bush Fire Prone Areas*, Landgate,
<https://maps.slip.wa.gov.au/landgate/bushfireprone/>.

State of Victoria (Country Fire Authority) (CFA) 2023, *Design Guidelines and Model Requirements: Renewable Energy Facilities v4*, Victoria.

Wetlands Advisory Committee 1977, *The status of reserves in System Six*, Environmental Protection Authority, Perth.

Department of Primary Industries and Regional Development (DPIRD) 2025, *Soil Landscape Land Quality – Salinity Risk (DPIRD-009)*, Western Australia

Figures



Figure 1: Site Location

Figure 2: Soils and topography

Figure 3: Groundwater and Surface Water Areas

Figure 4: Wetlands

Figure 5: Black Cockatoo Habitat

Figure 6: Environmental Considerations

Figure 7: Heritage Considerations

Figure 8: Bushfire Attack Level Contour Plan

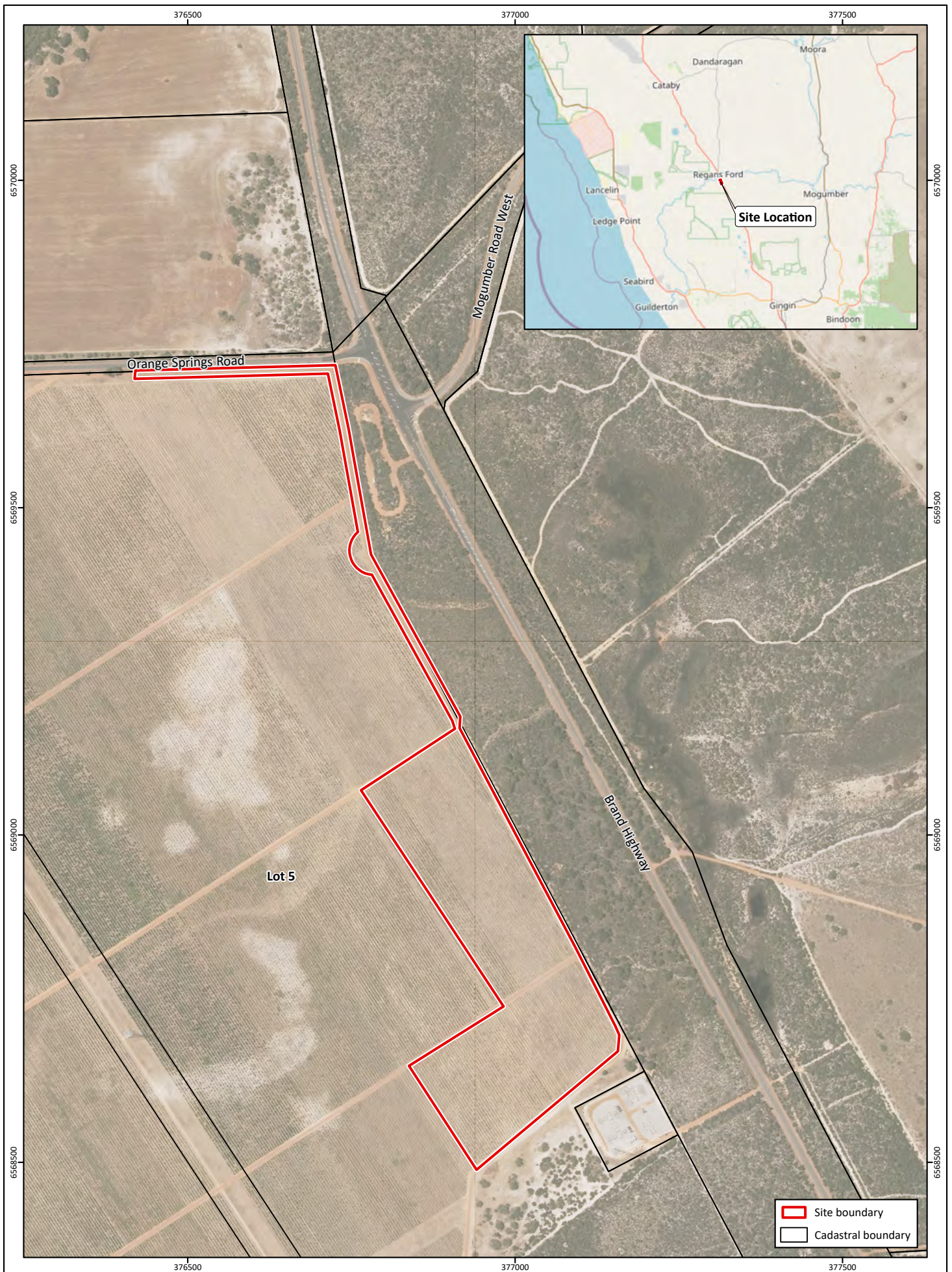


Figure 1: Site Location

Project: Due Diligence Report
Regans Ford BESS Project

Client: Shizen Energy Inc.

Plan Number: EP26-010(01)--F02
Drawn: GAR
Date: 03/03/2026
Checked: DAW
Approved: TB
Date: 04/03/2026



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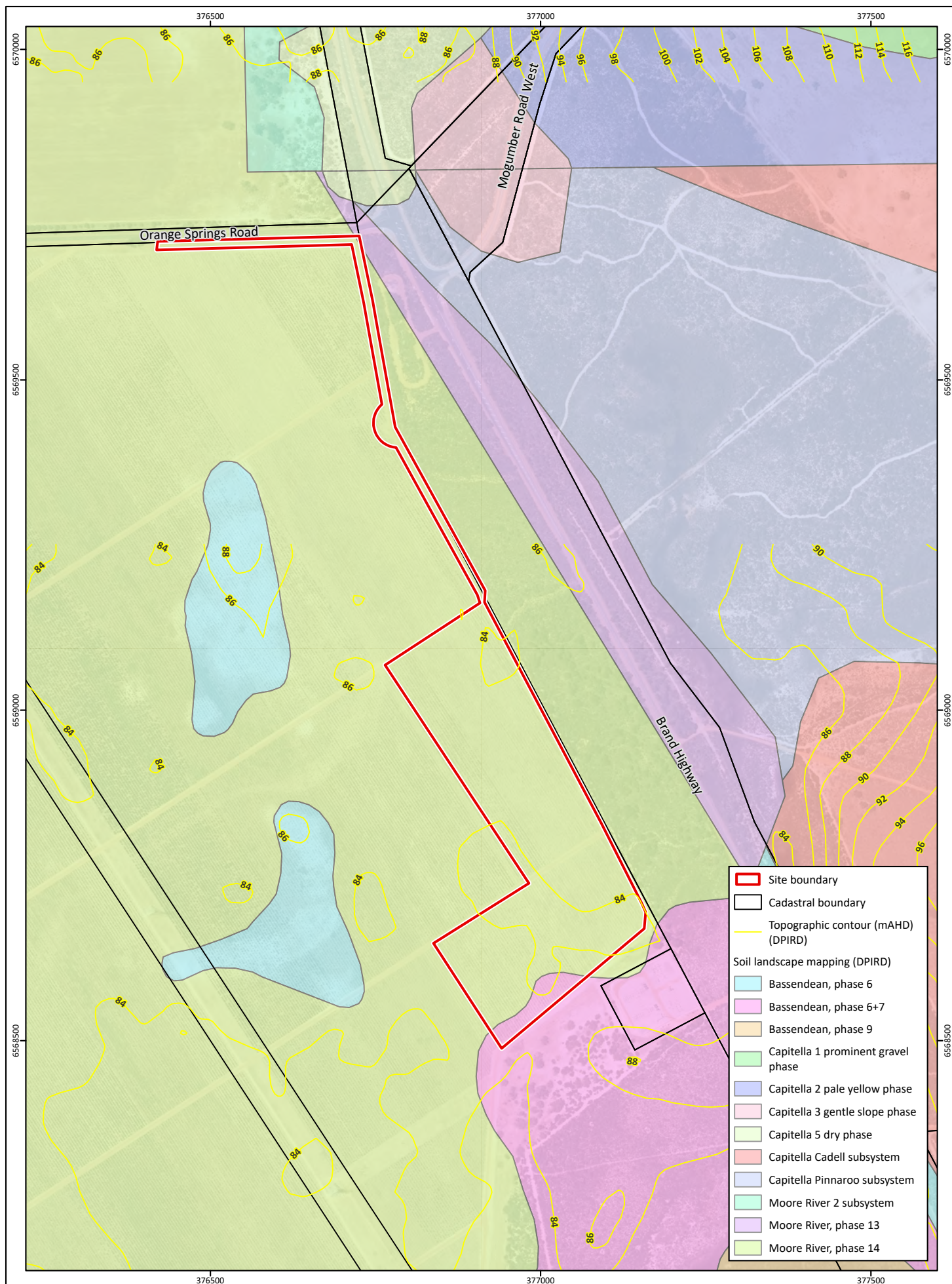


Figure 2: Soils and Topography

Project: Due Diligence Report
Regans Ford BESS Project

Client: Shizen Energy Inc.

Plan Number: EP26-010(01)--F03
Drawn: GAR
Date: 03/03/2026
Checked: DAW
Approved: TB
Date: 04/03/2026



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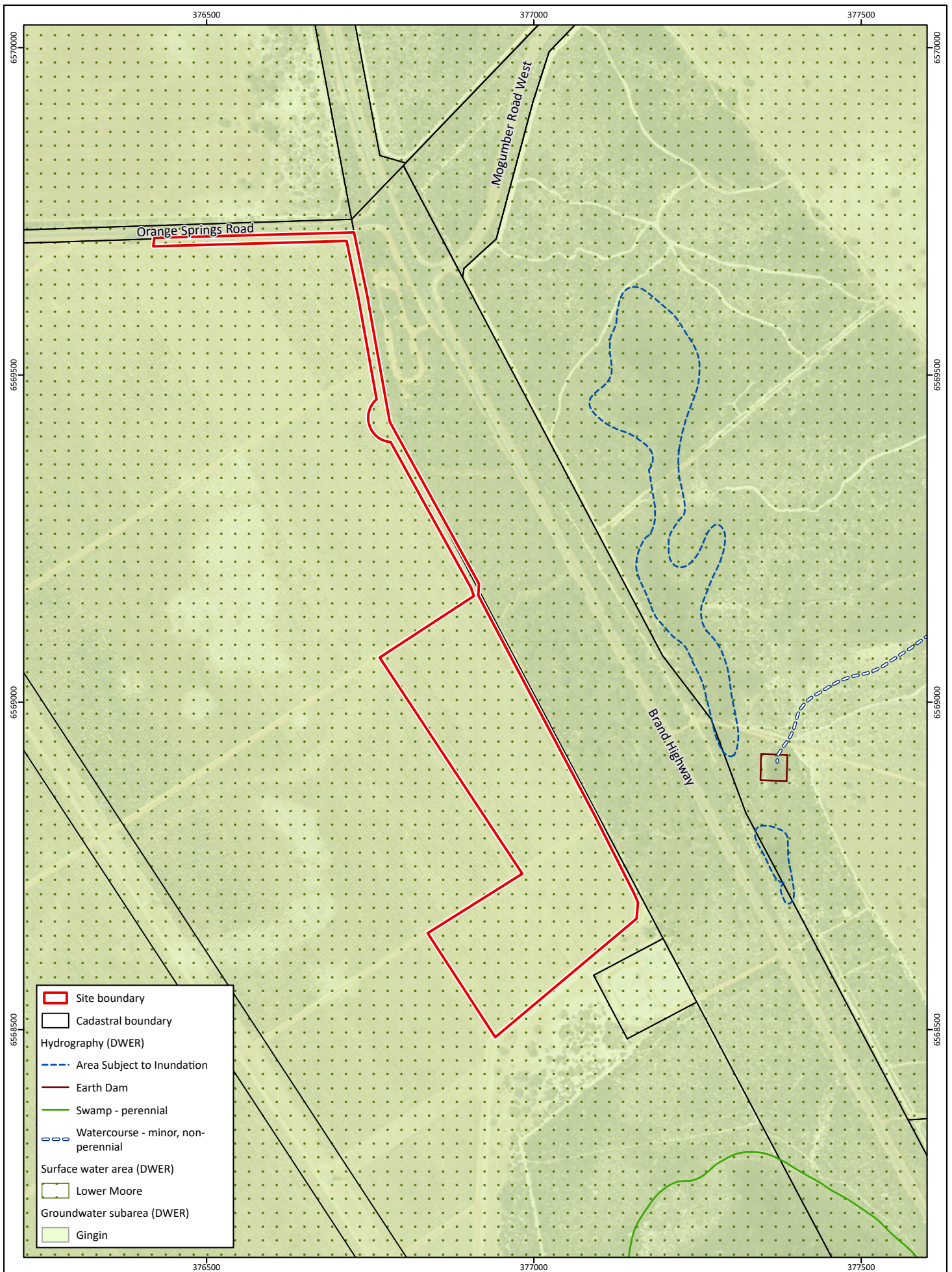


Figure 3: Groundwater and Surface Water Areas

Project: Due Diligence Report
Regans Ford BESS Project

Client: Shizen Energy Inc.

Plan Number: EP26-010(01)--F04
Drawn: GAR
Date: 03/03/2026
Checked: DAW
Approved: TB
Date: 04/03/2026



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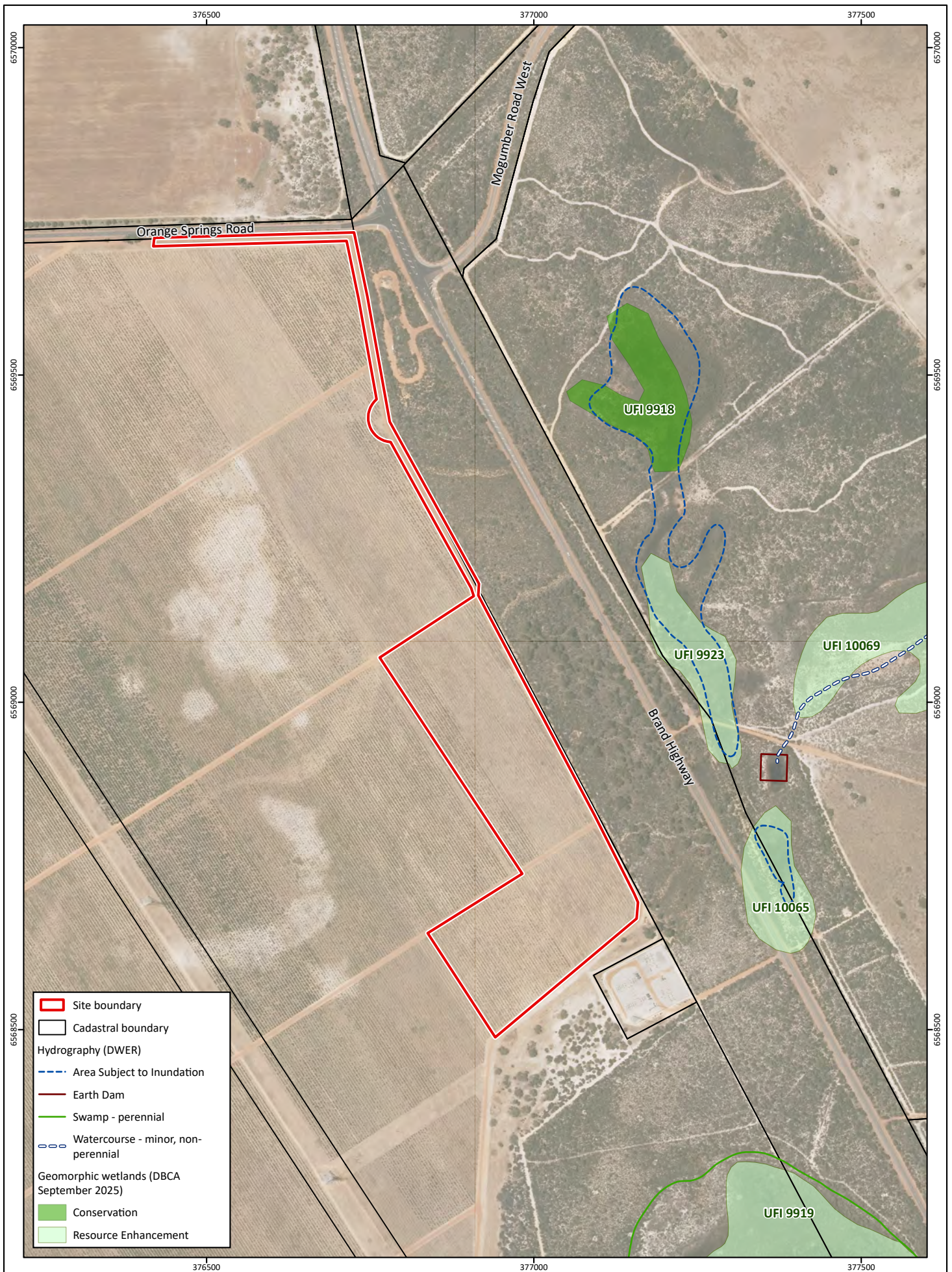


Figure 4: Wetlands

Project: Due Diligence Report
Regans Ford BESS Project

Client: Shizen Energy Inc.

Plan Number: EP26-010(01)--F05

Drawn: GAR

Date: 03/03/2026

Checked: DAW

Approved: TB

Date: 04/03/2026



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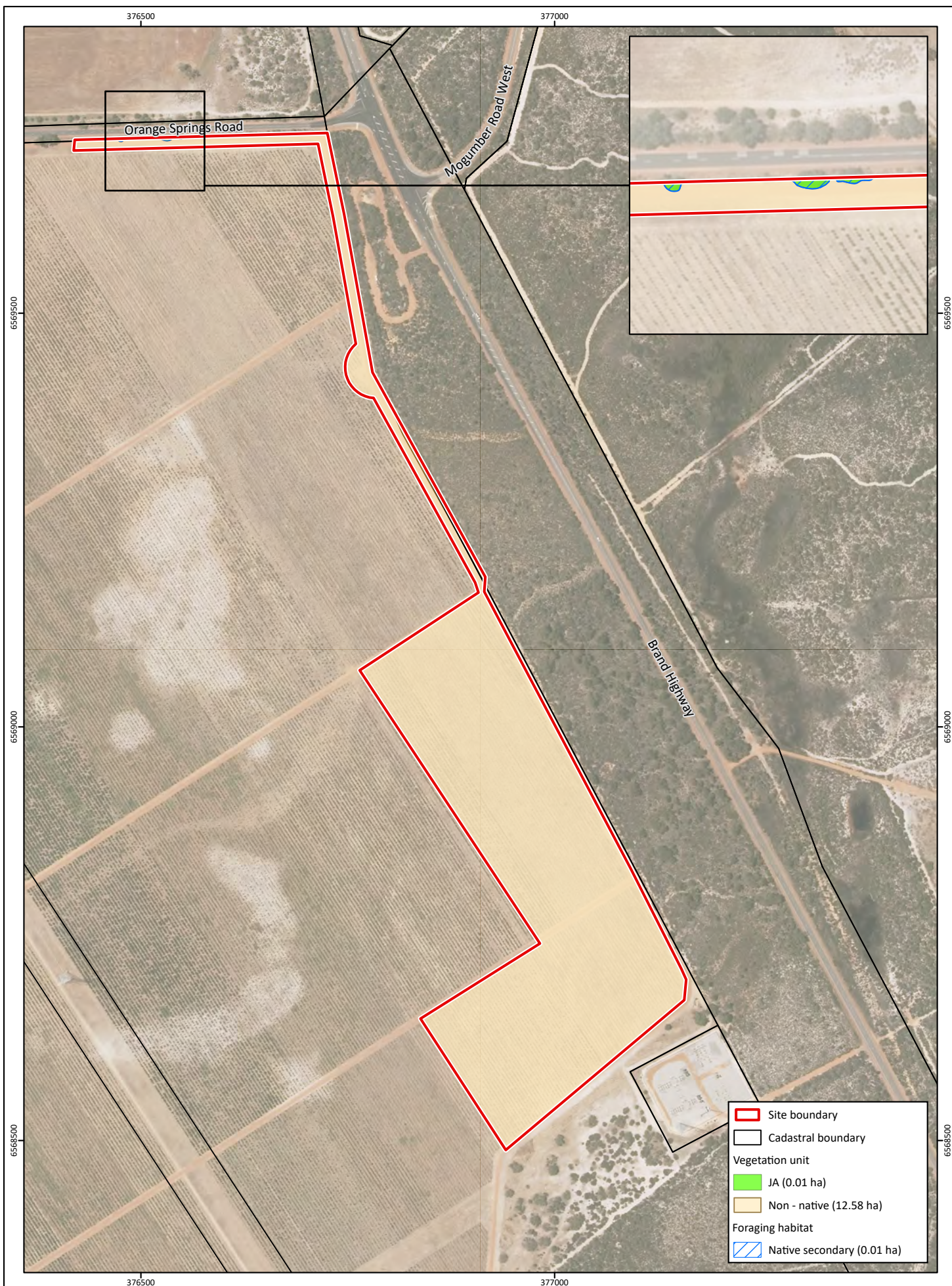


Figure 5: Vegetation Units and Black Cockatoo Habitat

Project: Due Diligence Report
Regans Ford BESS Project

Client: Shizen Energy Inc.

Plan Number:
EP26-010(01)--F06

Drawn: GAR

Date: 03/03/2026

Checked: DAW

Approved: TB

Date: 04/03/2026



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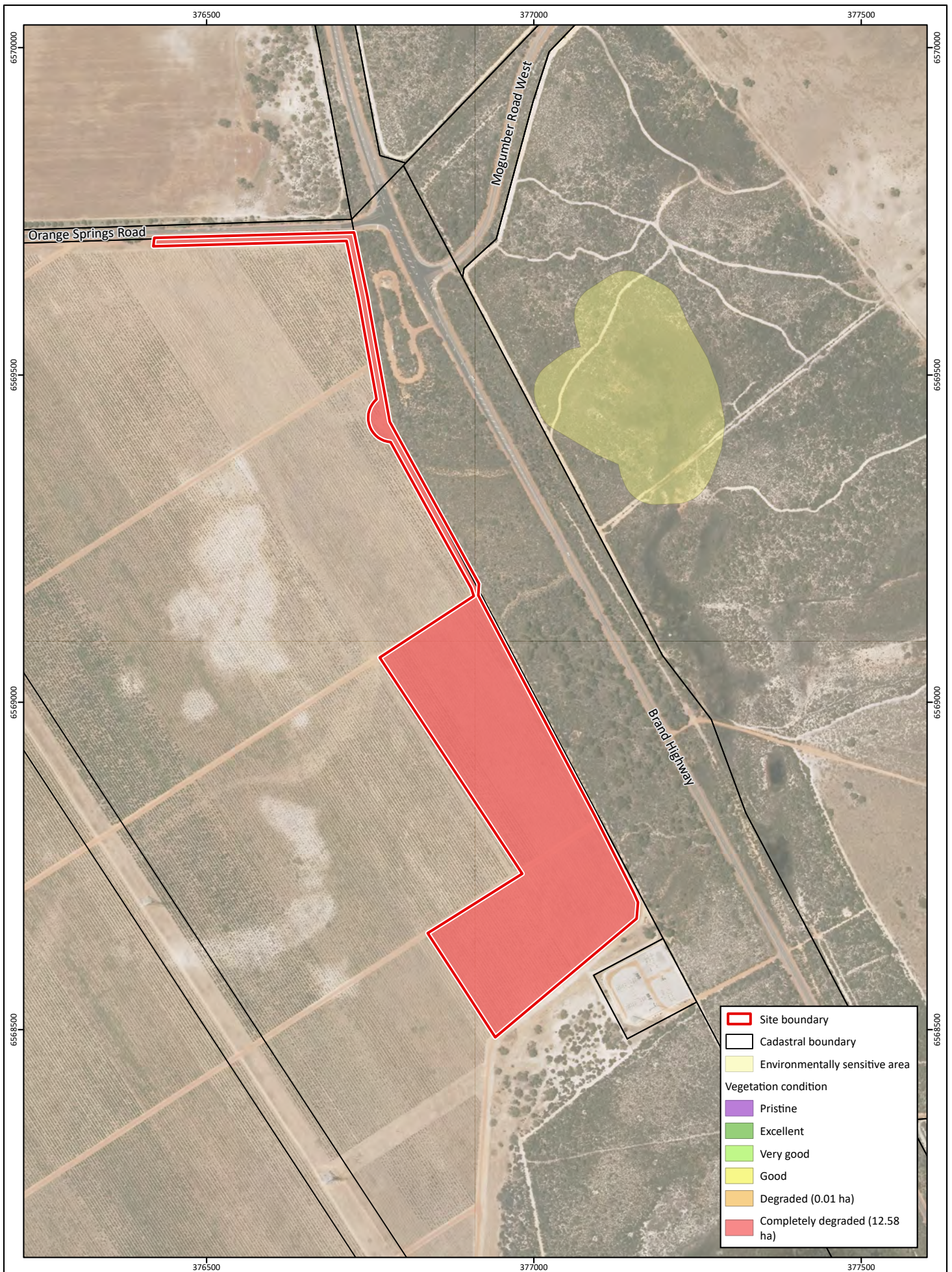


Figure 6: Environmental Considerations

Project: Due Diligence Report
Regans Ford BESS Project

Client: Shizen Energy Inc.

Plan Number: EP26-010(01)--F07
Drawn: GAR
Date: 03/03/2026
Checked: DAW
Approved: TB
Date: 04/03/2026



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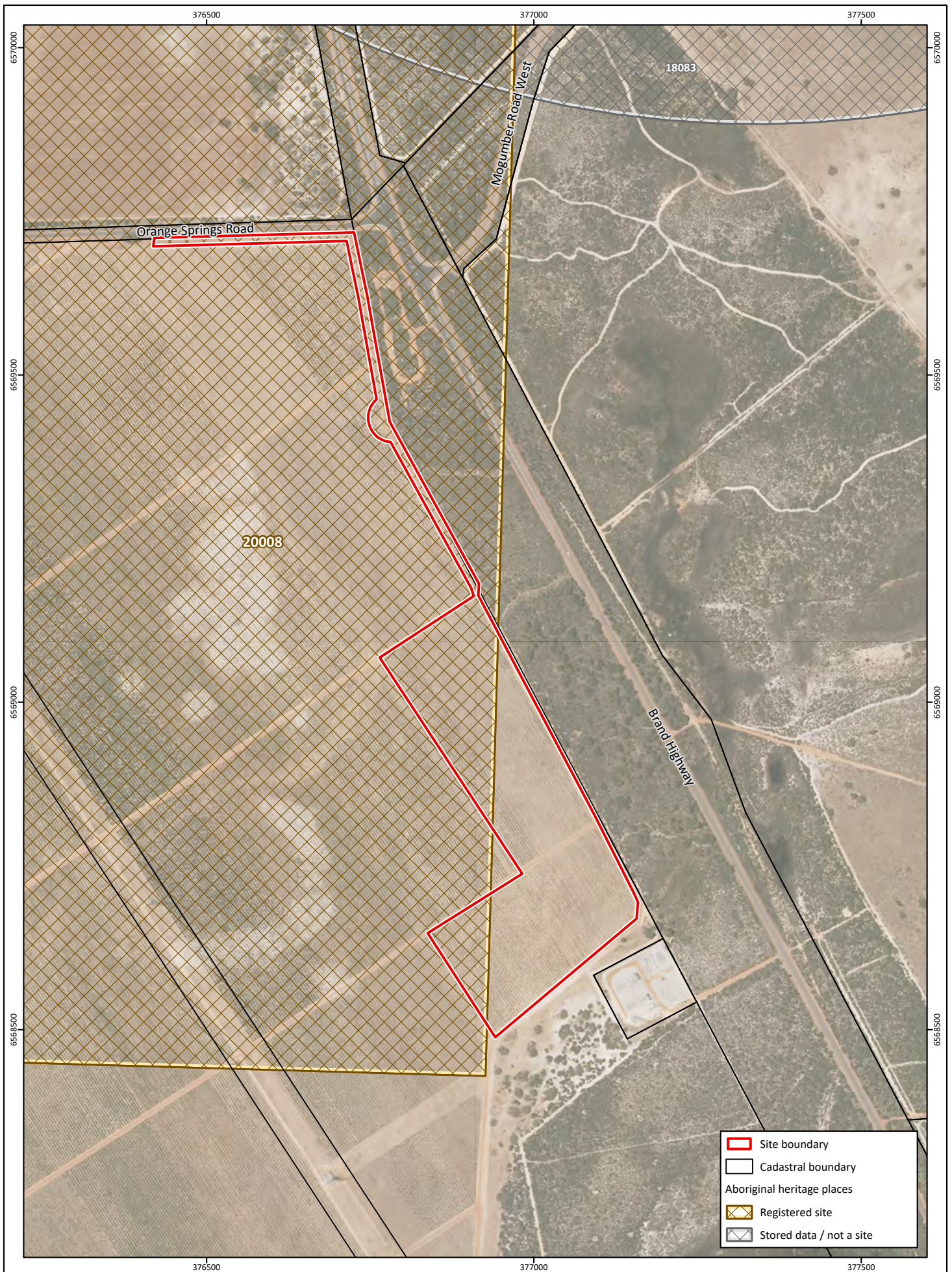


Figure 7: Heritage Considerations

Project: Due Diligence Report
Regans Ford BESS Project

Client: Shizen Energy Inc.

Plan Number: EP26-010(01)--F16
Drawn: GAR
Date: 03/03/2026
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Approved: TB
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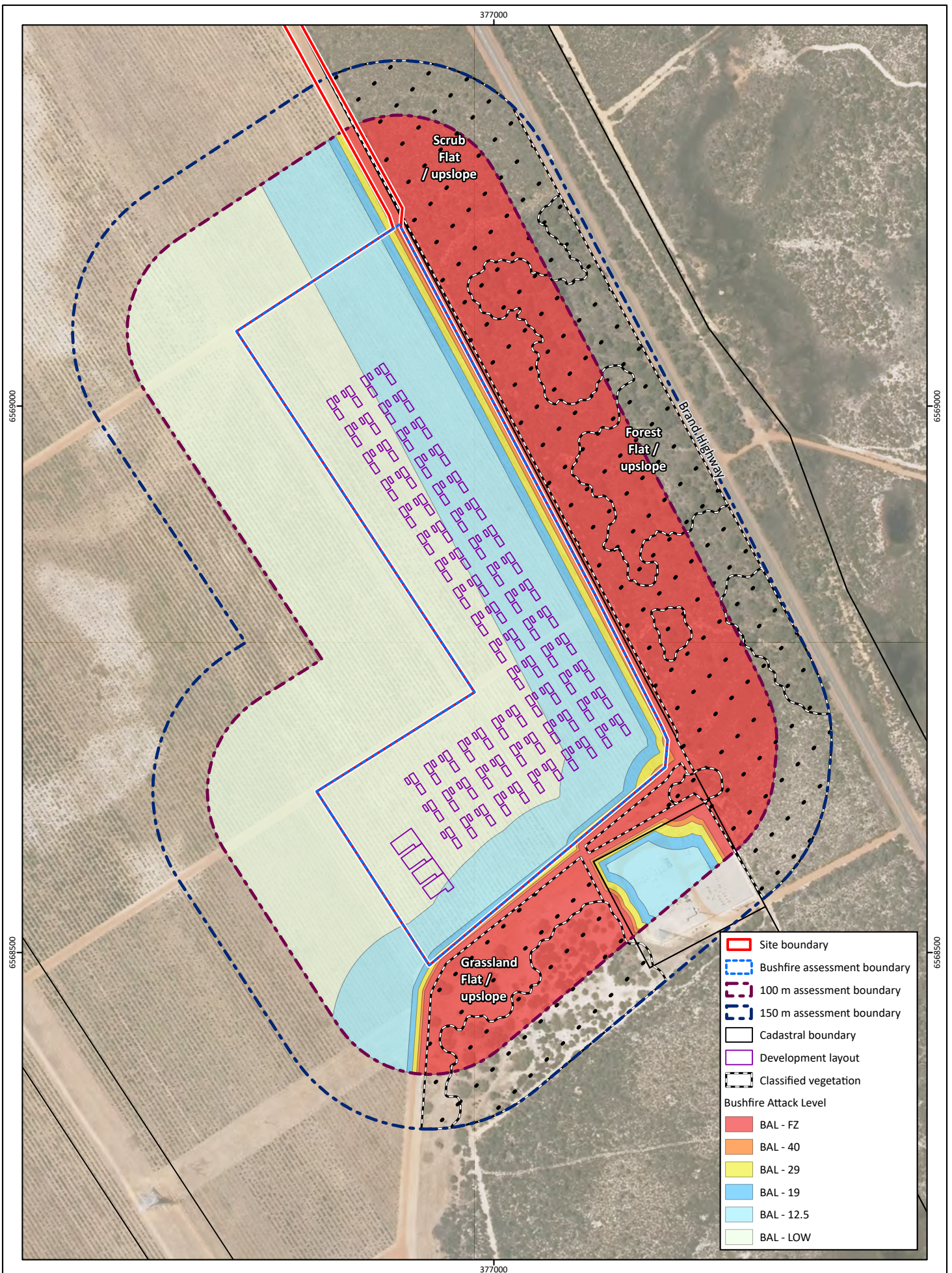


Figure 8: Bushfire Attack Level Contour Plan

Project: Due Diligence Report
Regans Ford BESS Project

Client: Shizen Energy Inc.

Plan Number: EP26-010(01)--F15
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Date: 03/03/2026
Checked: DAW
Approved: TB
Date: 04/03/2026



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