umwelt
Environmental & Social Consultants

ARK ENERGY

Richmond Valley Solar Farm

Amendment Report

Final

June 2025

Richmond Valley Solar Farm

Amendment Report

Final

Prepared by Umwelt (Australia) Pty Ltd
on behalf of Richmond Valley Solar Farm and
BESS Pty Ltd

Project Director:	Malinda Facey
Project Manager:	Jessica Henderson-Wilson
Report No.:	23252/R20
Date:	June 2025

This report was prepared using Umwelt's
ISO 9001 certified Quality Management System

Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

Disclaimer

Document Status

Rev No.	Reviewer Name	Reviewer Date	Approved for Issue Name	Approved for Issue Date
Final	J Henderson-Wilson	3 June 2025	M Facey	4 June 2025

Executive Summary

Richmond Valley Solar Farm is a large-scale renewable energy project proposed by Richmond Valley Solar Farm and BESS Pty Ltd (Ark Energy) to generate solar renewable energy to supply New South Wales. The Project is approximately seven kilometres (km) to the east of the town of Rappville, 25 km south of Casino and 26 km to the west of Woodburn within the Northern Rivers region of NSW.

The Project Area is situated across two freehold agricultural properties with Ellangowan State Forest located to the north-west and vegetation connecting to Bungawalbin State Forest to the east. The Project Area comprises two freehold properties that span across ten cadastral lots, covering an area of approximately 1,475 hectares (ha).

The Project as presented in the Environmental Impact Statement (EIS), hereafter referred to as the EIS Project, comprised a solar farm, battery energy storage system (BESS) and ancillary infrastructure within a Development Footprint approximately 803 ha for the solar farm and a Development Footprint for the road upgrade occupying approximately 11 ha.

An EIS was prepared for the Project and placed on public exhibition by the Department of Planning, Housing and Infrastructure from 24 July 2024 and 21 August 2024. During the public exhibition period the Project received 48 public submissions, which includes seven (7) from organisations. The 48 submissions do not include the submission from Richmond Valley Council or advice received from 11 government agencies. A detailed response to the issues raised during the public exhibition period is provided in the Response to Submissions Report (Umwelt, 2025).

Since submission of the EIS, Ark Energy has conducted a thorough review of the layout and optimised the Project design to enhance its efficiency while continuing to minimise environmental and social impacts. This Amendment Report outlines proposed project changes as a result of the layout review and design optimisation process. This amended project design is hereafter referred to as the Amended Project.

The Amended Project includes:

- Amendment to the BESS size and model.
- Amendment to number of BESS Inverters.
- Amendments to the Perimeter fence.
- Amendments to the Transmission line cut in area.
- Amendments to the Development Footprint.
- Amendments to the vertical arrangement of Solar Panels.
- Revised OSOM Transport Route.

Revised technical assessments have been undertaken to address the potential impacts associated with the Amended Project, including clarification on how these differ from the EIS Project. Assessments have been undertaken for potential impacts associated with bushfire, biodiversity, noise and vibration, hazards, Aboriginal heritage, traffic and flooding.

The Amended Project represents a Project that will form an essential part of the energy transition, with a fully optimised constructible design. This Amendment Report confirms that, while there are some unavoidable impacts from the Amended Project, the extent of such impacts have been minimised through the design process and will be minimised through implementation of additional mitigation and management measures to the extent practicable.

The proposed amendments to the EIS Project outlined in this Amendment Report are consistent with the relevant objectives of the *Environmental Planning and Assessment Act 1979* and the principles of ecologically sustainable development and do not significantly change the nature of the Project originally proposed. The potential impacts can be avoided or managed and mitigated appropriately.
Further management and mitigation measures as a result of the Amended Project are discussed in further detail within this report.

Table of Contents

Executive Summary i

1.0 Introduction 1

1.1 Background 1

1.2 The EIS Project 5

1.3 Proposed Amendments 6

1.4 Structure of This Report 7

1.5 Assessment Undertaken 7

2.0 Strategic Context 10

2.1 Strategic Context for Project Amendments 10

2.1.1 Renewable Energy Market 10

2.1.2 NSW Electricity Strategy 11

2.1.3 Renewable Energy Planning Framework 11

2.1.4 Benefit-Sharing Guideline 11

2.1.5 NSW Large-Scale Solar Energy Guideline 11

3.0 Description of the Amendments 12

3.1 BESS Facility 15

3.2 Perimeter Fence 18

3.3 Transmission Line Cut in Area 18

3.4 Switching Substation 20

3.5 Solar Panels 20

3.6 Development Footprint 20

3.7 OSOM Transport Route 24

4.0 Statutory Context 25

4.1 NSW Assessment and Approval Process 25

4.2 Commonwealth Assessment and Approval Process 25

5.0 Stakeholder Engagement 26

5.1 Consultation to Support the EIS Project Public Exhibition 26

5.2 Consultation Post Public Exhibition 26

5.3 Ongoing Consultation 28

6.0 Assessment of Impacts 29

6.1 Bushfire Threat Assessment 30

6.1.1 Impact Assessment 31

6.1.2 Cumulative Assessment 32
6.1.3 Mitigation Measures 32
6.2 Flooding 32
6.2.1 Impact Assessment 32
6.2.2 Cumulative Impact 34
6.2.3 Mitigation Measures 34
6.3 Preliminary Hazard Analysis 35
6.3.1 Impact Assessment 35
6.3.2 Cumulative Assessment 36
6.3.3 Mitigation Measures 36
6.4 Traffic and Transport 36
6.4.1 Amended OSOM Transport Route 36
6.4.2 Amended Road Network Upgrades 37
6.4.3 Impact Assessment 37
6.4.4 Cumulative Assessment 37
6.4.5 Mitigation Measures 38
6.5 Biodiversity Development Assessment Report (BDAR) 38
6.5.1 Subject Land and Assessment Area 38
6.5.2 Native Vegetation 38
6.5.3 Threatened Species 43
6.5.4 Avoidance and Minimisation 48
6.5.5 Impact Assessment 50
6.5.6 Mitigation and Management 56
6.5.7 Cumulative Impacts 62
6.6 Aboriginal Heritage 62
6.6.1 Consultation 62
6.6.2 Impact Assessment 62
6.6.3 Cumulative Impacts 63
6.6.4 Management and Mitigation Measures 63
6.7 Noise and Vibration 63
6.7.1 Construction Noise and Vibration Assessment 64
6.7.2 Road Traffic Noise Assessment 64
6.7.3 Operational Noise Assessment 64
6.7.4 Cumulative Impacts 64
6.7.5 Management and Mitigation Measures 64
7.0 Justification of the Amended Project 67
7.1 Environmental, Economic and Social Impacts 67

7.2 Strategic Context 67
7.3 Suitability of the Site 68
7.4 Ecologically Sustainable Development (ESD) 68
7.4.1 The Precautionary Principle 68
7.4.2 Intergenerational Equity 69
7.4.3 Conservation of Biological Diversity 70
7.4.4 Valuation Principle 70
7.5 Conclusion 71
8.0 References 73

Figures

Figure 1.1 Regional Context 3
Figure 1.2 EIS Project 4
Figure 3.1 Amended Project 14
Figure 3.2 EIS BESS Layout 16
Figure 3.3 Amended BESS Layout 17
Figure 3.4 Amended Project Transmission Line 19
Figure 3.5 Proposed Amendments to Development Footprint 23
Figure 6.1 Proposed Panel Dimensions (Ark Energy, 2025) 34
Figure 6.2 Vegetation within the Subject Land 40
Figure 6.3 Threatened Ecological Communities 42
Figure 6.4 Threatened Species Polygon 47
Figure 6.5 Serious and Irreversible Impacts 59
Figure 6.6 Impacts Requiring Offset 61
Figure 6.7 Constraints 62
Figure 6.8 EIS Project – Predicted Operational Noise Levels LAeq (15 min) 66
Figure 6.9 Amended Project – Predicted Operational Noise Levels LAeq(15 min) dB(A) – Amended 67

Tables

Table 1.1 Report Structure 7
Table 1.2 Summary of Assessments Undertaken by Amendments 9
Table 3.1 Comparison of the EIS Project and the Amended Project 12
Table 3.2 Changes to the Solar Farm Development Footprint Since EIS 21
Table 5.1 Summary of Ongoing Consultation 27
Table 6.1 Desktop Assessment and Approach to Additional Assessment 30
Table 6.2 Amendments that Influence the BTA 31

Table 6.3	Amendments that Influence the Flood Impact	32
Table 6.4	Amendments that Influence the PHA	35
Table 6.5	Amendments that Influence the TTIA	36
Table 6.6	Route 1 – Transformer – Melbourne to Richmond Valley Solar Farm	36
Table 6.7	Route 2 – Switchrooms – Brisbane to Richmond Valley Solar Farm	37
Table 6.8	Route 3 – Switchrooms –Melbourne to Richmond Valley Solar Farm	37
Table 6.9	Amendments that Influence the BDAR	38
Table 6.10	Plant Community Types within the Subject Land	39
Table 6.11	TECs within the Subject Land	41
Table 6.12	Candidate Flora Species Credit Species	43
Table 6.13	Candidate Fauna Species Credit Species	43
Table 6.14	Summary of Targeted Flora Survey Method and Results Since EIS Submission	44
Table 6.15	Avoidance and Minimisation of Impact	49
Table 6.16	Assessment of Indirect Impacts	52
Table 6.17	Management and Mitigation Measures	57
Table 6.18	Credit Offsets	60
Table 6.19	Amendments that Influence the Addendum ACHA	63
Table 6.20	Amendments that Influence the NVIA	64

Appendix No. Appendix Name

Appendix A	Updated Project Description
Appendix B	Updated Table of Mitigation Measures
Appendix C	Addendum Bushfire Threat Assessment
Appendix D	Amended Biodiversity Development Assessment Report
Appendix E	Addendum Noise and Vibration Impact Assessment
Appendix F	Addendum Preliminary Hazards Analysis
Appendix G	Addendum Aboriginal Cultural Heritage Assessment
Appendix H	Amended Traffic and Transport Impact Assessment

1.0 Introduction

Richmond Valley Solar Farm and BESS Pty Ltd (Ark Energy) is proposing to develop the Richmond Valley Solar Farm (the Project: SSD 41020244) to generate solar renewable energy for New South Wales (NSW). An Environmental Impact Statement (EIS) was submitted to the Department of Planning, Housing and Infrastructure (DPHI) in June 2024 and publicly exhibited for 28 days.

The Project, as exhibited in the EIS (hereafter referred to as the "EIS Project"), included the construction, operation, maintenance and decommissioning of approximately 500 MW of DC solar generation, a Battery Energy Storage System (BESS) with a power capacity of 275 MW and an energy storage capacity of up to 2,200 MWh over eight hours and a transmission line to connect the EIS Project from the substation to the National Energy Market (NEM). The EIS Project also included various associated infrastructure including inverters to convert DC to AC electricity, a substation and switching substation, temporary construction facilities, operations and maintenance (O&M) facility, internal roads, civil works and other required electrical infrastructure.

Following submission and public exhibition of the EIS, Ark Energy has continued to consult with landholders and stakeholders alongside progression of the design leading to several proposed Project design amendments as described in **Section 1.3**. Amendments to the EIS Project are described and assessed within this Amendment Report which should be read in conjunction with the Response to Submissions Report (Umwelt, 2025)).

1.1 Background

The Project Area is approximately seven kilometres (km) to the east of the town of Rappville, 25 km south of Casino and 26 km to the west of Woodburn within the Northern Rivers region of NSW, as shown in **Figure 1.1**. The Project Area comprises two freehold properties that span across ten cadastral lots, covering an area of approximately 1,475 hectares (ha). The Development Footprint of the solar arrays and associated infrastructure as described in the EIS, occupied approximately 803 ha and the Development Footprint for the road upgrade occupies approximately 11 ha, refer to **Figure 1.2**.

The Amended Project is a State Significant Development (SSD) under the State Environmental Planning Policy (Planning Systems) 2021, being a development for the purposes of electricity generating works and with a capital investment value of over $30 million. The EIS was submitted to DPHI in June 2024.

The public exhibition of the EIS took place between 24 July 2024 and 21 August 2024, receiving 48 public submissions, including those from organisations. The 48 submissions do not include the submission from Richmond Valley Council or advice received from 11 government agencies. Out of the 48 public submissions, 44 were objections to the EIS Project. A summary of the comments received during public exhibition of the EIS and a detailed response to these are provided in the RtS Report.

Since submission of the EIS, Ark Energy has conducted a thorough review of the layout and optimised the EIS Project design to enhance its efficiency while continuing to minimise environmental and social impacts. This Amendment Report outlines proposed Project changes and is hereafter referred to as the Amended Project.

The proposed amendments, such as BESS capacity, further enhance the alignment of the EIS Project with the renewable energy strategies of both the State and Federal governments. It is widely acknowledged that the NEM needs to rapidly transition to renewable energy to support Government commitments to net zero including the NSW Climate Change Policy Framework, and the Commonwealth Government's commitments under the Paris Agreement. At present, additional renewable energy capacity is being added to the NEM at a lower rate than what the Australian Energy Market Operator (AEMO) has identified as required to achieve the transition to renewable energy (Parkinson, Renew Economy, 2023).

The Amended Project will materially assist in addressing this shortfall by delivering approximately 500 MW of renewable energy to the NEM to contribute to replacing the generation capacity which will be lost when NSW's largest power station, Eraring, closes in August 2027.

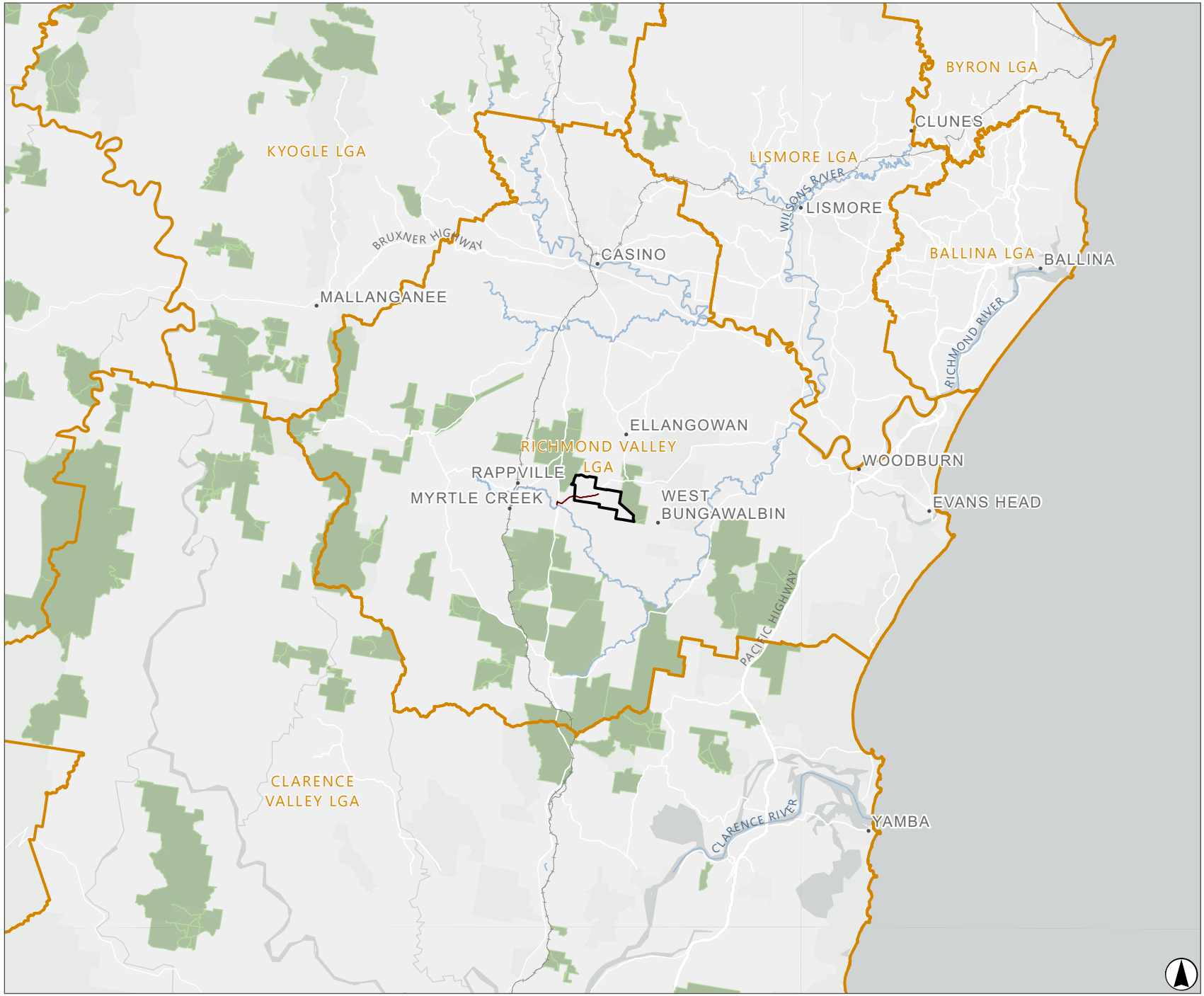


FIGURE 1.1

Regional Context

Legend

- Project Area
- Road Upgrade Area
- Local Government Area
- NPWS Reserve
- State Forest
- Watercourse
- Railway
- Towns

0 10 20

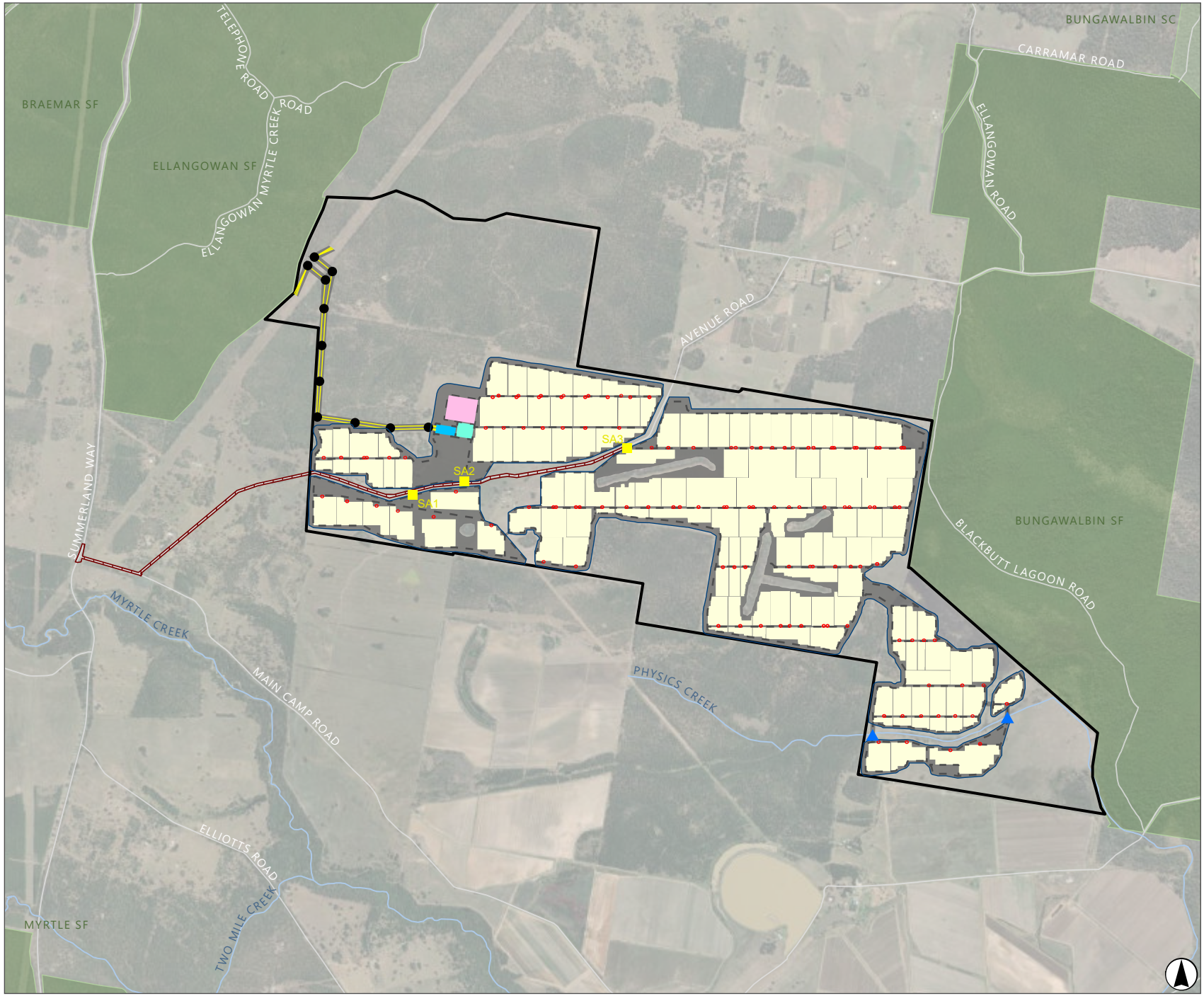
Kilometers

Scale 1:600,000 at A4
GDA 1994 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

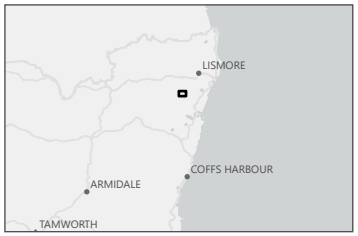
FIGURE 1.2

EIS Project



Legend

- Project Area
- Development Footprint
- Road Upgrade Area
- Transmission Poles
- Access Points
- Watercourse Crossings
- Transmission Lines
- Access Tracks
- Security Fence
- Substation
- Switching Subsation
- BESS
- Inverters
- Solar Array Blocks
- NPWS Reserve
- State Forest
- Roads
- Watercourse



0 1 2

Kilometers

Scale 1:45,000 at A4
GDA 1994 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

1.2 The EIS Project

The key components of the EIS Project as presented in the EIS are shown in **Figure 1.2** and include:

- Up to 730,000 bifacial photovoltaic (PV) modules (solar panels) in an east-west single-axis tracking arrangement with a maximum height of four (4) metres (m) above ground level at maximum tilt.
- A BESS with an approximate 275 MW power capacity and 2,200 MWh storage capacity, housed in a series of outdoor containers, aggregated in one central location adjacent to the substation and switching substation.
- Up to 118 inverter stations to convert the DC solar panel electricity to AC electricity.
- One onsite 330 kV switching substation and 330 kV/33 kV substation for the BESS and solar farm, with underground electrical conduits and cabling.
- Approximately two (2) km of new transmission line connecting to the Transgrid Lismore – Coffs Harbour 330 kV transmission line (line 89) from the proposed 330 kV switching substation and a 330 kV / 33 kV substation.
- Underground electrical cable reticulation between solar arrays and infrastructure within the Project Area to transport power from the solar arrays to the onsite substation.
- Office and an O&M facility with parking for the operations team.
- Three access points from Avenue Road (SA1, SA2 and SA3) via Main Camp Road and Summerland Way.
- Internal roads to allow for Project maintenance and emergency response.
- Road upgrades including at the Summerland Way / Main Camp Road intersection and sealing of sections of Avenue Road from Main Camp Road to the north most Project access point (SA3).
- A biodiversity corridor to improve habitat connectivity and reduce amenity impacts.
- Drainage line crossings (where required) to manage existing surface water flows (to be determined during further design development).
- Vegetation clearance associated with establishment of infrastructure.
- Perimeter security fencing around the Development Footprint, crossing gates, water tanks and/or dams, and internal access points around the Project.
- Additionally, during the construction of the Project, temporary laydown areas will be established to support the safe and efficient establishment of the facility. Temporary laydown areas will be located within the Development Footprint area.
- The Project is expected to operate for 30 years. After the initial 30-year operating period, the solar farm would either be decommissioned, removing all infrastructure except the transmission lines and substations and returning the Project Area to its existing land capability, or repurposed with new PV equipment subject to technical feasibility and planning consent.

1.3 Proposed Amendments

The proposed amendments to the EIS project are all refinements of the design and represent minor amendments to the EIS Project. As such they are not considered to materially change the nature of the EIS Project.

A summary of the proposed amendments to the EIS Project are provided in **Table 3.1**. The proposed amendments are described in detail in **Section 3.0.**

The amended Project description now includes the following:

- Amendment to the BESS size and model
    - The BESS has a footprint of approximately 9 ha (Refer to **Figure 3.1**).
    - The BESS model has a power capacity of 475 MW.
    - The BESS will have an operational capacity of 2,200 MWh however it is noted that the nameplate capacity will be approximately 3,000 MWh. Further details are provided in **Section 3.1**.
- Amendment to number of BESS Inverters
    - The BESS compound hosts 186 inverters (Refer to **Figure 3.1**).
- Amendment to the location of the switching station.
    - Switching station is proposed to be located 50 m from the western boundary of the Development Footprint.
- Amendments to the Perimeter fence
    - The perimeter fence generally aligns with the existing farm fences on the perimeter of properties and the lot boundaries within the Project Area. The perimeter fence is 27.0 km in cumulative length.
- Amendments to the Transmission line cut in area
    - The cut in area for the transmission line is approximately 13 ha (Refer to **Figure 3.2**).
- Amendments to the Development Footprint
    - The Development Footprint (Solar Farm) is 789 ha (Refer to **Figure 3.1**). The Development Footprint – Road Upgrades is 12 ha (Refer to **Figure 3.1**).
- Amendments to the height of Solar Panels
    - Solar panels will be mounted to provide a minimum of 100 mm freeboard for the lowest edge above the maximum 1% AEP flood level.
- Revised OSOM Transport Route
    - Three route options for OSOM vehicles with two points of origin being Brisbane and Melbourne.

1.4 Structure of This Report

This Amendment Report is structured in accordance with the DPIE Guideline (2022) as presented in **Table 1.2**.

Table 1.1 Report Structure

Section	Description
Section 1.0	Introduces the EIS Project and a summary the proposed amendments.
Section 2.0	Identifies any changes to the strategic context relevant to the Amended Project.
Section 3.0	Describes the proposed amendments to the EIS Project.
Section 4.0	Identifies any changes to the statutory requirements as a result of the proposed amendments to the EIS Project.
Section 5.0	Summarises the stakeholder engagement that has been undertaken during the development of the Project Amendments.
Section 6.0	Provides a detailed summary of any changes in impacts resulting from the proposed amendments to the EIS Project.
Section 7.0	Provides an updated justification of the amended EIS Project.
Section 8.0	Provides a list of references used during the preparation of this report.
Appendices	Information and technical reports supporting the main document.

1.5 Assessment Undertaken

A desktop assessment of all environmental aspects considered within the EIS was undertaken alongside the identification of any new aspects as a result of the amendments. A summary of this desktop assessment and the need for further assessment for each of the amendments has been summarised in **Table 1.2**.

Within **Table 1.2**, the determination of the need for assessment was based on each specialists review of the amendments.

As a result of the desktop assessment, amendments to the following assessments were identified as necessary to assess the Amended Project:

- Addendum Bushfire Threat Assessment (BTA) summarised in **Section 6.1** and appended to this Amendment Report as **Appendix C**.
- Addendum Preliminary Hazard Analysis (PHA) summarised in **Section 6.3** and appended to this Amendment Report as **Appendix F**.
- Addendum Transport Impact Assessment (TIA) summarised in **Section 6.4** and appended to this Amendment Report as **Appendix H**.
- Amended Biodiversity Development Assessment Report (BDAR) summarised in **Section 6.5** and appended to this Amendment Report as **Appendix D**.
- Addendum Aboriginal Cultural Heritage Assessment (ACHA) report summarised in **Section 6.6** and appended to this Amendment Report as **Appendix G**.

- Addendum Noise and Vibration Impact Assessment (NVIA) summarised in **Section 6.7** and appended to this Amendment Report as **Appendix E**.
- The amendments were also assessed against existing assessments within the EIS including the Flood Impact Assessment as presented in **Section 6.2**.

As a result of the desktop assessment, amendments to the following assessments were not required to assess the Amended Project:

- Social impacts were not further assessed as the amendments outlined in **Section 1.3** will not change the underlying assumptions or inputs of the social impact assessment such as workforce number and distribution, accommodation arrangements, local community values, engagement outcomes and Project timeline.
- Water impacts were not further assessed as the amendments outlined in **Section 1.3** will not increase the reliance on local water supplies and will not change surface water flow and distribution across the Project Area.
- Landscape and visual impacts including glint and glare were not further assessed as:
    - The amendments outlined in **Section 1.3** will not change the landscape character of the Project or increase the visual amenity or glare impacts to nearby viewpoints and users of Avenue Road.
    - The assessment of the BESS in the EIS phase determined the sensitivity rating as very low with only minor visibility from Avenue Road and no visibility from dwellings. Although the overall BESS footprint has increased since the EIS Project, the number of containers has been reduced. The proposed increase to the BESS footprint (in a direction away from dwellings) will not result in a change to the visual amenity impacts associated with the Amended Project.
    - The vertical arrangement of the solar panels as assessed within the EIS had a 300 mm freeboard which has been reduced to 100 mm. As a result, the overall height of the panels will reduce however given the small scale of the reduction it is not likely to significantly change the outcomes of the LVIA or Glint and Glare as presented in the EIS.
- Historic Heritage impacts were not further assessed as the EIS assessment determined that no listed or non-listed heritage items or areas of historical archaeological potential are located within the Project Area.
- Soils, Land Use and Agriculture were not further assessed as the amendments outlined in **Section 1.3** are located within the study area of the soil and landscape assessment which determined that direct impacts to soil within the study area are anticipated to be minimal and temporary. Additionally, the amendments will not reduce the amount of land otherwise required for agricultural production.
- Economic impacts were not further assessed as the amendments outlined in **Section 1.3,** as the contributions to the local economy will not significantly change, the workforce number and distribution will not change, there will be no change to the construction timeline or the community benefit fund arrangements.
- Waste impacts were not further assessed as the amendments outlined in **Section 1.3** will not change the waste estimates presented in the EIS or the potential cumulative impacts for nearby waste facilities as the construction timeline has not been amended.

Table 1.2 Summary of Assessments Undertaken by Amendments

Amendment	Social	Bushfire	Water	Flooding	Hazard	Landscape Visual	Traffic and Transport	Biodiversity	Aboriginal Cultural Heritage	Historic Heritage	Soils, Land Use and Agriculture	Economic	Noise and vibration	Waste
BESS size and model		Y		Y	Y				Y				Y	
BESS Inverters				Y	Y								Y	
Amendments to Transmission Line Cut In		Y						Y	Y					
Fence Line/Development Footprint		Y						Y	Y					
Intersection Vegetation Clearing							Y	Y	Y					
Solar Panels				Y										
Revised OSOM Transport Route							Y							

2.0 Strategic Context

The strategic context as described in Section 2.0 of the EIS remains relevant for the Amended Project. The Amended Project is aligned with the NSW and Commonwealth governments' energy and climate policies and will make a meaningful contribution to achieving the goal of net zero emissions by 2050.

2.1 Strategic Context for Project Amendments

The Amended Project, described in **Section 3.0**, generally consists of layout refinements and amendments and does not change the overall strategic context of the EIS Project. The justifications for the proposed amendments are outlined in **Section 6.0**.

An overview of the strategic context for the Amended Project is provided below, where it differs from that outlined in the EIS.

2.1.1 Renewable Energy Market

The development of the Amended Project aligns with global, Commonwealth and NSW commitments to increase renewable energy generation and reduce carbon emissions across the NSW and Australian economies.

Since submission of the EIS, the renewable energy market has continued to expand as new Projects are proposed through the NSW Planning Portal. Since submission of the EIS, the Clean Energy Council has released updated figures regarding the contribution of renewable energy to the NSW electricity market.

Renewable energy sources accounted for 39.4% of the total electricity generation in 2023, up from 32.5% in 2020 (Clean Energy Council, 2024). Coal's share of electricity generation continued to decline, falling to 52.7% in 2023, down from 54.6% in 2022 (Clean Energy Council, 2024). Gas currently generates 7.3 per cent of energy, down from 8.9 per cent in 2022. At 3.1 GW, rooftop solar was the largest contributor to Australia's renewables drive, accounting for 28.5 per cent of all renewable energy and 11.2 per cent of energy generation overall, up from 25.8 per cent and 9.3 per cent respectively in 2022. Despite there being some positives for large-scale renewables, 2023 saw a plateau for new investment in utility scale generation, (AEMO, 2024). The Amended Project will assist in addressing this potential energy shortfall by delivering approximately 500 MW of renewable energy capacity to the NEM. This contribution will help to replace the generation capacity lost when NSW's largest power station, Eraring, closes in 2027.

The Amended Project aligns with the current strategic direction of the NSW and Australian energy generation market and assists in achieving the planned transition to an increased contribution of renewable energy to Australia's energy needs. As an existing renewable energy developer in Australia, Ark Energy has a track record of delivering large-scale renewable energy projects.

2.1.2 NSW Electricity Strategy

Current and future electricity development in NSW is supported though the NSW Government's Electricity Strategy (NSW Government, 2023a) and the NSW Electricity Infrastructure Roadmap. Since submission of the EIS, there have been no changes to the NSW Electricity Strategy and the Amended Project continues to be consistent with the objectives of the Electricity Strategy by aiming to provide affordable and reliable electricity to NSW consumers.

2.1.3 Renewable Energy Planning Framework

The Renewable Energy Planning Framework (DPHI, 2024) provides a framework for assessing state significant renewable energy development and infrastructure in NSW. The Framework aims to support the transition to renewable energy, support and legislated net zero targets and secure an affordable supply of electricity for the people of NSW.

The Framework provides a suite of new policies that are yet to be released and will guide the planning and assessment process for renewable energy infrastructure. The Large-scale Solar Energy Guideline will detail revise the scope and requirements of the assessment of impacts to visual amenity, agriculture, decommissioning and glare. In lieu of the new guideline, the Project has been reviewed in response to the existing guideline (DPE, 2022).

2.1.4 Benefit-Sharing Guideline

The Benefit-Sharing Guideline was released in November 2024 as part of the new Renewable Energy Planning Framework and is designed to ensure that the benefits of large-scale renewable energy projects are shared equitably with local communities. It includes policy principles, benefit-sharing mechanisms, and guidance on distributing benefits at neighbourhood, local, and regional levels. Section 4.1 of the Benefit-Sharing Guideline prescribes $850 per MW per annum for solar energy developments when determining the total funding value for community benefits. The Project has implemented a Community Benefit Fund (CBF) with a value of $850/MW installed/year over the lifetime of the project which will be administered by Richmond Valley Council in the form of their Section 7.12 Contributions Plan or a Voluntary Planning Agreement.

2.1.5 NSW Large-Scale Solar Energy Guideline

In 2022, the Department of Planning and Environment released the NSW Large Scale Solar Energy Guideline to guide site selection, landscape and visual impacts, and agricultural land use conflicts. Since submission of the EIS, there have been no changes to the NSW Large-Scale Solar Guideline. The Amended Project continues to align with the strategy.

3.0 Description of the Amendments

A comparison of the EIS Project (Umwelt, 2024) and the Amended Project is provided in **Table 3.1** below and a detailed description of the amendments is provided in **Section 3.1** to **Section 3.7**.

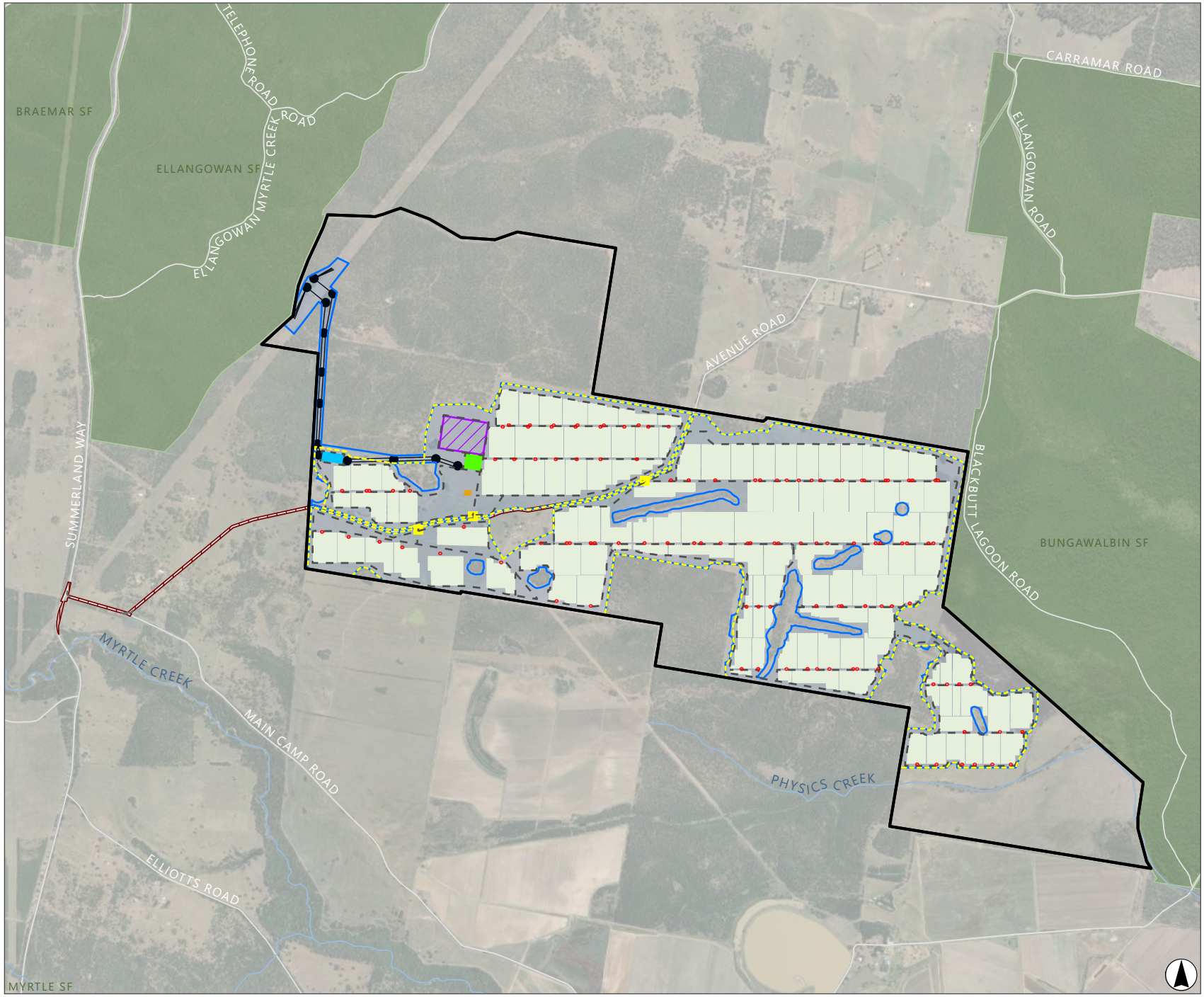
Table 3.1 Comparison of the EIS Project and the Amended Project

Project Component	Project Stage	EIS Project	Amended Project	Difference
BESS size and model	Footprint	5 ha	9 ha	Increase by 4 ha
BESS Inverters	Number of inverters	106 inverters	Approximately 186 inverters	Increase by 80 inverters.
BESS Inverters	Power Capacity	Up to 275 MW	Approximately 475 MW	Increased installed power capacity by 200 MW to improve interaction with the solar farm.
Perimeter fence	Length	31.9 km	27.0km	Decrease by 4.9 km
Perimeter fence	Position	Aligned largely to the Development Footprint.	Aligned to Lot/DP boundaries and existing fence lines in some locations.	Changes to position of the fence line in some locations. (Refer **Figure 3.5**).
Transmission line cut in area	Cut in area	7 ha	13 ha	Increase by 6 ha
Switching Substation	Area	1.3 ha	1.3 ha	No Change
Switching Substation	Location	Adjacent to the BESS – north-western portion within the Development Footprint	Western boundary within the Development Footprint	800 m west but remaining within the Development Footprint
Solar Panels	Solar panel vertical arrangement	Solar panels will be designed to provide a minimum of 300 mm freeboard for the lowest edge above the maximum 1% AEP flood level.	Solar panels will be designed to provide a minimum of 100 mm freeboard for the lowest edge above the maximum 1% AEP flood level.	200 mm less freeboard for the lowest panel edge above the maximum 1% AEP flood level.

Project Component	Project Stage	EIS Project	Amended Project	Difference
Development Footprint	Solar Farm - adjustments to the fence line, transmission connection point and in response to the identification of *Rotala Tripartita* and *Maundia Triglochinoides.*	803 ha	789 ha	Decrease by 14 ha
Development Footprint	Road upgrade - Increased safe intersection sight distance	No vegetation removal included in Development Footprint	0.52 ha of vegetation removal on the southern corner of Main Camp Road and Summerland Way	0.52 ha
Transport Route	Transport Route for OSOM vehicles	OSOM vehicles will travel on a defined route from Port of Brisbane to the Project Area.	OSOM vehicles will travel on one of three defined routes from Brisbane or Melbourne to the Project Area.	Additional transport routes from Melbourne to Project Area. No additional areas of impact associated with additional routes.

FIGURE 3.1

Amended Project



Legend

- Project Area
- Development Footprint
- Fence Line
- BESS Footprint
- Road Upgrade Area
- Transmission Poles
- Access Points
- Transmission Lines
- Access Tracks
- Substation
- Switching Subsation
- O&M Facility
- Solar Array Blocks
- Solar Farm Inverters
- State Forest
- Roads
- Watercourse

0 0.75 1.5

Kilometers

Scale 1:42,500 at A4
GDA 1994 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

3.1 BESS Facility

Ark Energy is proposing amendments to the BESS facility to improve the interaction between the solar farm and BESS. The amendments include an increase in the indicative number of BESS inverters and the overall size of the footprint for the BESS facility. These amendments are a result of improvements across multiple system components which will allow the BESS to deliver higher power output while maintaining the same energy storage capacity presented in the EIS of 2,200 MWh.

The BESS will remain located in the central-west portion of the Project Area as presented in the EIS and illustrated in **Figure 3.2**.

The amendments to the BESS facility comprise:

- Increase in the power capacity from up to 275 MW to approximately 475 MW.
- Increase in the overall size of the footprint from approximately 5 ha to approximately 9 ha.
- Increase in the number of inverters contained within the BESS facility from 106 to 186 inverters.
- Update the description of the BESS capacity noting that the BESS will have an operational capacity of 2,200 MWh however it is noted that the nameplate capacity will be approximately 3,000 MWh.

To ensure that the distance from the amended BESS to the nearest unmanaged vegetation will be at least 100 m, a cluster of trees will be removed (approximately 0.7 ha).

FIGURE 3.2

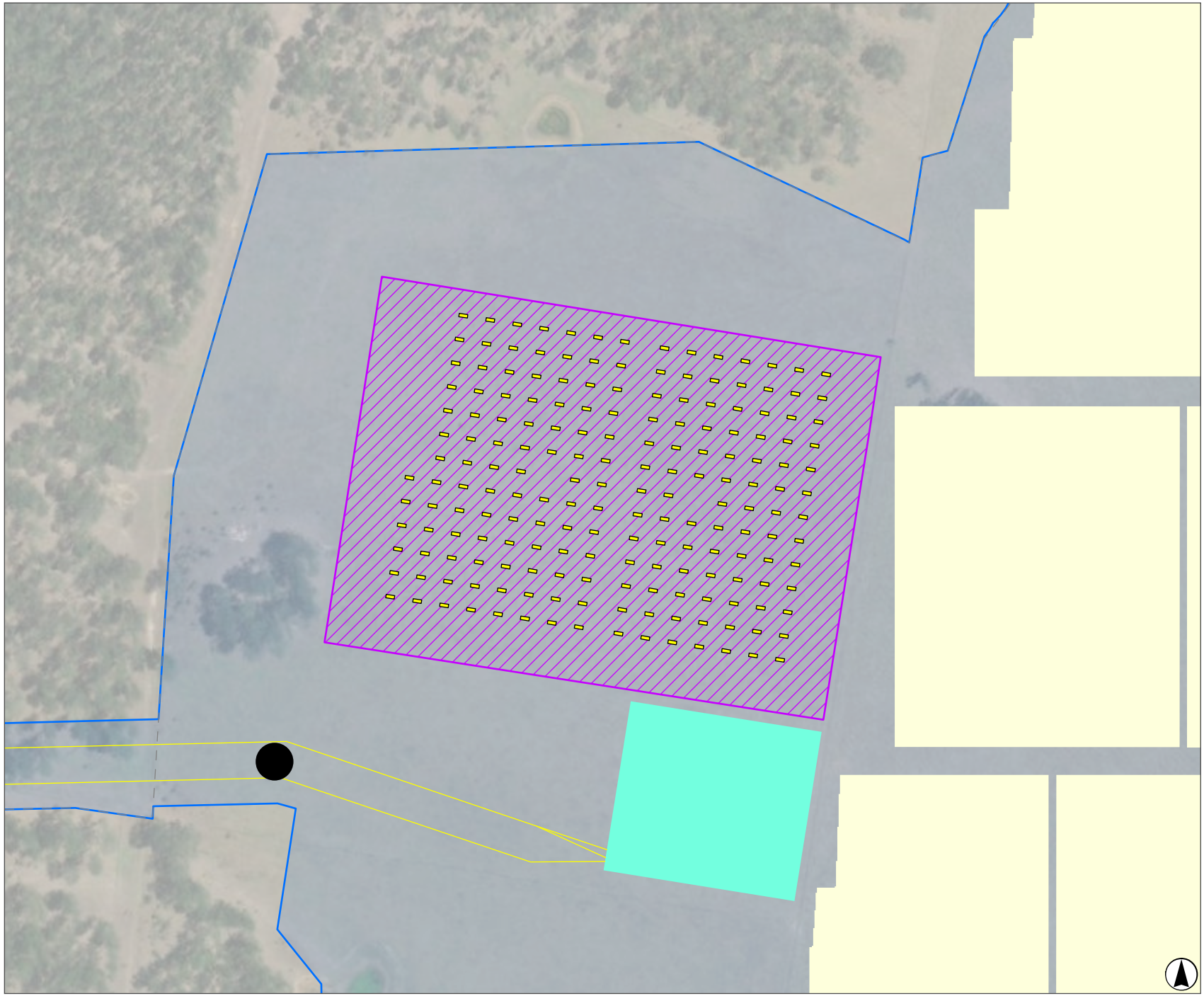
EIS BESS Layout

Scale 1:2,500 at A4
GDA 1994 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

FIGURE 3.3

Amended BESS Layout



Legend

- Fence Line
- BESS Inverters
- Development Footprint
- BESS Footprint
- Transmission Poles
- Transmission Lines
- Solar Array Blocks
- Substation

0 25 50

Metres

Scale 1:3,750 at A4
GDA 1994 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

The increased number of inverters are proposed to provide additional redundancy to the BESS facility and improve the systems reliability. In the event that inverters fail within the BESS compound, the increased load will be distributed across these additional inverters, ensuring continuous operation. Additionally, increasing the number of inverters allows for more precise control over the energy flow between the solar farm, the BESS, and the NEM. This additional control will help balance and control output from the Project during variable electricity demand periods across the NEM. To meet the automatic access standard under NER Clause S5.2.5.1, the BESS has been specifically designed with sufficient inverter capacity to enable full reactive power provision at all times. An oversizing factor has been applied in the inverter modelling to ensure that the reactive power requirement is met across all operating conditions, including when delivering or absorbing full active power. The resulting design ensures compliance with voltage support obligations and contributes to overall power system security.

The energy storage capacity of the BESS remains the same as presented in the EIS at 2,200 MWh. It is noted however that the nameplate capacity will be approximately 3,000 MWh. Further details regarding the storage capacity is provided in **Section 6.3.1**.

3.2 Perimeter Fence

Ark Energy proposes adjustments to the position of the perimeter fence which generally runs around the circumference of the Development Footprint. The perimeter fence has been adjusted to better align with existing farm fences which separate agricultural properties from the road corridor, remnant vegetation and other paddocks. The amended perimeter fence will also align more closely with the lot boundaries within the Project Area. As a result of these amendments, the fence length will decrease from 31.9 km to 27.0 km.

Although the perimeter fence has been designed to align with existing fences, all fences will be constructed to the requirements under AS 1725.2010 Parts 1–5 as out as outlined in Section 3.3.6.4 of the EIS. Perimeter fences will have concrete footings for posts and installed fencing mesh with barbed wire as assessed in the EIS.

3.3 Transmission Line Cut in Area

Ark Energy have continued to consult with Transgrid and as a result it was determined that the area provided for the transmission line to enter the Project Area (the “cut in area”) was insufficient for the scope of work required to connect the Amended Project to the 330 kV Lismore to Coffs Harbour Transmission Line. As such, the cut in area at the connection point for the transmission line has been increased by 6 ha. The additional cut in area is predominantly located within the existing transmission corridor of the 330 kV Lismore to Coffs Harbour Transmission Line (See **Figure 3.2**). Less than 0.5 ha of vegetation clearance will be required to accommodate the increased cut in area. The cut in area ensures the NEM connection is clear of obstructions and provides enough space for construction, maintenance and emergency access.

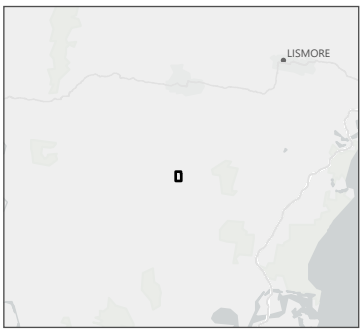
It is noted that this increase to the transmission line cut in area has contributed to changes in the overall area in ha of the Development Footprint as outlined in **Section 3.6**.

FIGURE 3.4

Amended Project - Transmission Line

Legend

- Transmission Poles
- Transmission Lines
- Project Area
- Development Footprint
- EIS Development Footprint
- Roads
- State Forest



0 100 200

Metres

Scale 1:9,250 at A4
GDA 1994 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

3.4 Switching Substation

Ark Energy propose to move the switching substation from adjacent the BESS in the north-western portion of the Project Area to the western boundary along the transmission line. The switching station is proposed to be located 50 m from the western boundary and approximately 40 m to the nearest vegetation on the northern side of the switching station. It will remain within the Development Footprint. There is no change to the dimension of the switching station remaining as 1.3 ha as presented in the EIS.

3.5 Solar Panels

Ark Energy has reduced the height of solar panels resulting in a change to the amount of freeboard between the bottom of the solar panels and the 1% AEP flood level. The EIS Project proposed a 300 mm freeboard between the bottom of the solar panels and the 1% AEP flood level. The Amended Project proposed a 100 mm freeboard between the bottom of the solar panels and the 1% AEP flood level. An assessment of the impacts associated with this amendment is provided in **Section 6.2**.

3.6 Development Footprint

As a result of the proposed amendments, the Development Footprint (Solar Farm) will decrease from 803 ha to 789 ha. The amended Development Footprint (Solar Farm) will result in an decrease in the managed land surrounding Project infrastructure including the solar arrays and the BESS. Vegetation within the Development Footprint and Asset Protection Zone (APZ) will be managed to comply with the outcomes of the NSW Rural Fire Service (RFS) document Planning for Bushfire Protection (PBP) (NSW RFS, 2019). Further detail regarding the APZ management practices is outlined in **Section 6.1.3**.

Further details regarding amendments to the Development Footprint (Solar Farm) are outlined in **Table 3.2** and illustrated in **Figure 3.5**.

Table 3.2 Changes to the Solar Farm Development Footprint Since EIS

Change to the Development Footprint	Location	Extent	Justification
Increased	Adjacent to Avenue Road and the northern boundary of the Development Footprint.	17.189 ha	Align the Project fence line to existing fences.
Increased	Adjacent to the associated dwelling (C3-4) located within the Project Area.	3.167 ha	Align the Project fence line to existing fences.
Increased	The south-western boundary of the Development Footprint.	1.985 ha	Align the Project fence line to existing fences.
Increased	The western and northern boundary of the Amended BESS footprint.	7.053 ha	Increased footprint of the BESS.
Increased	The north-eastern and south-western side of the transmission line connection.	5.281 ha	Align the Project fence line to existing fences.
Decreased	The western boundary of the Development Footprint.	2.718 ha	Align the Project fence line to existing fences.
Decrease	The south-eastern portion of the Development Footprint.	49.06 ha	Reduce the scale of development due to the identification of *Rotala tripartita*.
Decrease	Two locations in the eastern portion of the Project Area.	0.79 ha (circle with a radius of 50 m) in	Reduce the scale of development due to the identification of *Rotala tripartita*.
Decrease	Various locations across the central western portion of the Development Footprint.	9.56 ha	Reduce the scale of development due to the identification of *Rotala tripartita*.
Decrease	South-western portion within the Development Footprint.	1.40 ha	Remove the development surrounding an area identified with *Maundia trichlochoides*.

Ark Energy has consulted with the landholder and Transgrid regarding these amendments to the Development Footprint (Solar Farm). Ark Energy will manage the increased Development Footprint as managed land where appropriate, in line with the PBP 2019, as per commitments made in the EIS.

Amendments are also proposed to the Development Footprint (Road Upgrades) specifically inclusion of additional areas at the southern egress of the Main Camp Road and Summerland Way intersection increasing from 11 ha to approximately 12 ha in total. This increase has occurred to facilitate vegetation clearing and management required to ensure adequate sight distance for northbound vehicles travelling along Summerland Way (see **Figure 3.5**).

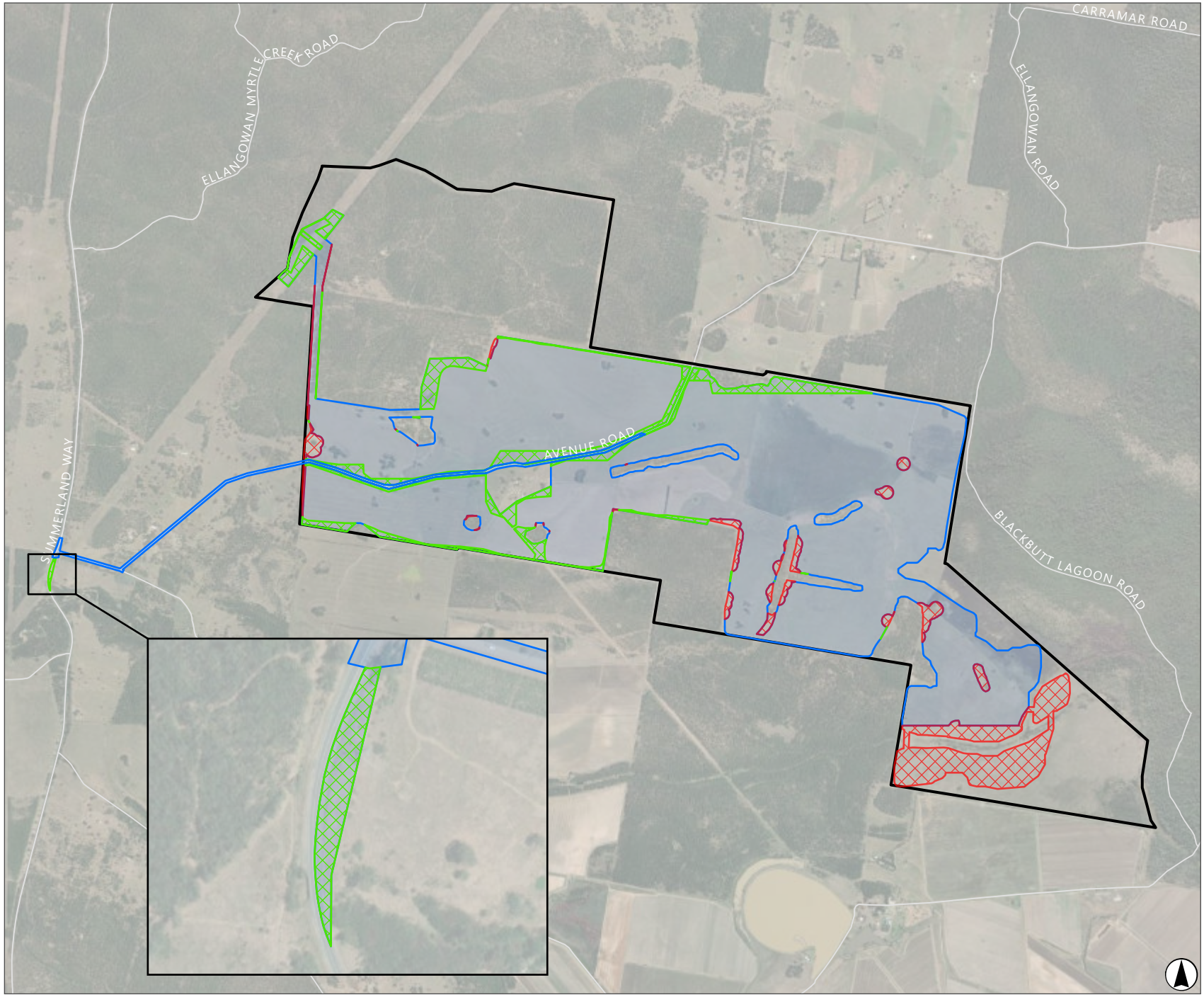


FIGURE 3.5

Proposed Amendments to Development Footprint

Legend

- Project Area
- Development Footprint
- Increase in Development Foorpint
- Decrease in Development Footprint
- Roads

0 0.75 1.5

Kilometers

Scale 1:42,000 at A4
GDA 1994 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

3.7 OSOM Transport Route

Ark Energy has amended the OSOM transport routes from Port to site as further details of the proposed transformer and switchroom OSOM components have been identified. The EIS transport route proposed all components would travel along a single route from Brisbane Port. The amended transport routes include a transport route for the proposed transformer components (Route 1 from Melbourne) and two potential route options (Route 2 from Brisbane and Route 3 from Melbourne) for the switchroom components. An overview of the proposed routes are in **Appendix H**.

Based on the swept path analysis completed for these routes, a number of minor route upgrade / mitigation works were identified at pinch points to accommodate the required OSOM vehicle movements with additional details provided in **Section 6.4**.

4.0 Statutory Context

Since exhibition of the EIS there has not been any significant changes to the statutory context for the Amended Project. A summary of the status of the NSW and Commonwealth approvals processes is provided **Section 4.1** and **Section 4.2**.

4.1 NSW Assessment and Approval Process

The statutory context has not changed from the original application, as documented in the EIS. The EIS is yet to be determined.

Following submission of the EIS to DPHI it was placed on public exhibition from 24 July 2024 to 21 August 2024. A RtS has been prepared to address submissions received during public exhibition.

Additionally, this Amendment Report has been prepared in accordance with clause 113 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) which states that an application may, with the approval of the Planning Secretary, be amended at any time before the application is determined.

The Planning Secretary has been advised of Ark Energy's intention to amend the EIS Project with this Amendment Report describing the proposed Project amendments and assessing the associated impacts.

4.2 Commonwealth Assessment and Approval Process

On 21 November 2023, the EIS Project was determined to be a Controlled Action requiring approval under the *Environment Protection and Biodiversity Conservation Act 1999* by the Commonwealth Minister for the Environment due to its potential impact on listed threatened species and ecological communities.

The assessment path for the EIS Project is under the bilateral agreement between the Commonwealth and NSW Government. The Department of Climate Change, Energy, the Environment and Water (DCCEEW) determined it a controlled action on 21 November 2023 and issued assessment requirements which were issued as Supplementary SEARs for the EIS Project (refer to Appendix 1 of the EIS). A summary of the assessment findings related to MNES is included in Section 6.11.3.8 of the EIS.

On 21 November 2023, the Project was declared a Controlled Action requiring approval under section 75 of the EPBC Act (2022/09423) by the Commonwealth Minister for the Environment due to its potential impact on listed threatened species and ecological communities. It was further determined that the Project will be assessed under the Bilateral Agreement between NSW and the Commonwealth (Amending Agreement No. 1). Supplementary SEARs were subsequently issued by the former NSW Department of Planning and Environment. The Commonwealth Controlled Action Decision and Supplementary SEARs are provided in Appendix 1 and are addressed in Appendix E of Appendix 6 of the Project EIS.

5.0 Stakeholder Engagement

This section outlines community and stakeholder engagement carried out during and following exhibition of the EIS.

5.1 Consultation to Support the EIS Project Public Exhibition

The EIS was placed on public exhibition by DPHI from 24 July 2024 to 21 August 2024. The exhibition period provided stakeholders with an opportunity to review the EIS and make a submission to DPHI.

On 14 August 2024, a community information session was held to provide an update on the progression of the Project through the assessment process and information about the next phases of the planning and assessment process, including the RtS. Outcomes of the EIS were also discussed.

The EIS was publicly available on DPHI's Major Projects website, and the following communication materials continued to be available during the EIS exhibition period.

- project website – richmondvalleysolar.com.au
- project email address – info@richmondvalleysolar.com.au
- regular email updates and letters.

5.2 Consultation Post Public Exhibition

Following exhibition of the EIS, consultation and engagement activities continued with a range of stakeholders including directly impacted land holders, government authorities, local councils and utility owners.

This included consultation with:

- The local community via a community drop-in session on 14 August 2024. The objective of the drop-in session was to respond to community questions and provide clarification of the next steps in the planning and assessment process.
- Host and nearby landholders to reach host and neighbour agreements.
- Government agencies.
- Local suppliers for Project. Further details of this consultation is provided in **Table 5.1**.
  Further consultation with the local community will be undertaken to coincide with the release of the Amendment Report, to inform them of the changes proposed.

Table 5.1 Summary of Ongoing Consultation

Agency consulted with	Date of consultation	Summary of consultation
Nearby Landholders	August to December 2024	Ongoing direct consultation with nearby landholders regarding progression of the Project and outcomes of the EIS. Three (3) benefit sharing agreements reached with neighbours. One (1) land purchase agreement reached.
Local Community	14 August 2024	A community information session was held to provide an update on the progression of the Project through the assessment phase and information about the next phase of the planning and assessment process. Outcomes of the EIS were also discussed.
CPHR (Formally BCS)	22 October 2024	Met with CPHR following public exhibition and discussed approach to addressing comments in the RtS report and Amendment Report. Agreement reached on staged approach to updating the BDAR.
Richmond Valley Council	30 October 2024	Meeting to discuss the Community Benefit Fund. The objective was to further define the contributions structure from Ark Energy.
Richmond Valley Council	9 October 2024	Phone calls to discuss the Accommodation and Employment Strategy particularly regarding availability of accommodation during construction of the Project.
Richmond Valley Council	15 October 2024	Received a letter of support from Council on willingness to continue to work with Ark Energy on the coordination of accommodation during construction of the Project.
Richmond Valley Council	3 February 2025	Email to update Council on approach to wastewater management.
Richmond Valley Council	May 2025	Emails with council to discuss Community Benefits.
Crown Lands	14 August 2024	Crown Lands provided landowners consent via email.
Crown Lands	6 September 2024	Email requesting a meeting from Ark to Crownlands to discuss the required approach to acquire the Crown Roads on site to facilitate the construction and operation of the Project.
Crown Lands	10 October 2024	Email to clarify the approach required to acquire the Crown Roads on site to facilitate the construction and operation of the Project.
TfNSW	1 November 2024	TfNSW provided clarification on what needs to be addressed in the RtS report via email.
TfNSW	13 November 2024	Ark Energy contacted TfNSW via email to request assistance in assessing the suitability of the proposed OSOM load over the bridges/culverts on the state road network along the Project transport route.
TfNSW	November 2024	Ark Energy contacted TfNSW via email to clarify details for bridge assessments which has been addressed within the Amendment Report (Umwelt, 2025). Email exchanges between TfNSW and Ark Energy on 15,22 and 27 November 2024.
TFNSW	December 2024 - May 2025	Engaged TFNSW to complete bridge assessments on required routes. Email exchanges with TfNSW December 2024 – May 2025.
DPHI	19 October 2024	Meeting with DPHI to discuss approach to the preparation of the RtS report and Amendment Report.
CPHR/DPHI	15 January 2025	Meeting with DPHI to discuss the finalisation of the RtS report and Amendment Report.

Agency consulted with	Date of consultation	Summary of consultation
CPHR/DPHI	4 February 2025	Met with CPHR/DPHI to discuss approach to addressing results of January biodiversity surveys
CPHR/DPHI	21 March 2025	Met with DPHI/CPHR to discuss proposed mitigation measures to accommodation the species polygon within the APZ and Development Footprint. Further actions included addition investigation by CPHR to confirm the appropriate measures based on the species characteristics.

5.3 Ongoing Consultation

Consultation with the community and key stakeholders is ongoing and will continue prior to and during construction and operation of the Project. Ongoing consultation activities will aim to provide the community and stakeholders with awareness of construction processes and activities, updates on the proposed timing of construction and opportunities for ongoing feedback and input throughout construction and operations.

Ark Energy will continue to be available prior to and during construction and operations. Targeted consultation methods, such as newsletters, emails, phone calls, notifications, signage and face-to-face communications, will also continue to occur.

A Communication and Stakeholder Engagement Plan (CSEP) has been developed and will continue to be implemented throughout future stages of construction, operation and decommissioning. The CSEP is dynamic and is updated as required during each phase. Engagement during operations will focus on maintaining regular communications with the community including reporting back to the community on compliance obligations, operations and generation updates, benefit sharing programs and promotion of community initiatives or events.

Environmental Management Plan(s) will address the procedures for receiving, evaluating and responding to complaints, environmental incidents and non-conformance during the construction and operation of the Project.

6.0 Assessment of Impacts

This section provides a summary of the assessments undertaken to assess the potential impacts associated with the Amended Project during construction and operation.

The impacts associated with decommissioning remain the same as presented in the EIS and as such have not been further outlined in this Amendment Report.

Where required, additional or revised mitigation measures have been proposed. A consolidated summary of all proposed commitments identified in the EIS, RtS, and any changes made through this Amendment Report, is presented in **Appendix B**.

This Amendment Report and associated appendices have been prepared in consideration of the *State Significant Infrastructure Guidelines – Preparing an Amendment Report* (DPE, 2021). An overview of the revised assessments required to determine the impacts of the Amended Project and a reference to their location in this report is provided in **Table 6.1**. Technical assessments undertaken to support this Amendment Report are provided in **Appendix C** to **Appendix H**.

A number of aspects assessed within the EIS did not require detailed assessment as a result of the Amended Project as outlined in **Table 1.2**.

The following aspects were identified in **Table 1.2** as requiring further assessment as the proposed amendments include new or additional impacts and/or alter the Project Description used to prepare a specialist assessment:

- Bushfire
- Biodiversity
- Noise
- Hazard and Risk
- Aboriginal Cultural Heritage
- Traffic and Transport
- Flooding.

Table 6.1 Desktop Assessment and Approach to Additional Assessment

Environmental aspect	Desktop Assessment and approach to additional assessment	Reference
Bushfire Threat Assessment	An addendum to the Bushfire Threat Assessment has been prepared to assess the potential Bushfire impacts associated with the Amended Project. The assessment is set out in the Addendum BTA (BlackAsh, 2025) appended to this report (Appendix C) and summarised in **Section 6.1**.	**Section 6.1**
Biodiversity	An amended biodiversity Development Assessment Report (BDAR) has been prepared to incorporate the Amended Project and findings of additional surveys. The revised BDAR is appended to this report (**Appendix D**) and summarised in **Section 6.5**. Additional biodiversity surveys took place in Q1 2025 to address feedback from CPHR and determine the potential impacts associated with the Amended Project.	**Section 6.2**
Noise	An addendum to the Noise and Vibration Impact Assessment (NVIA) has been undertaken to determine the potential impacts of the Amended Project. The assessment is set out in the Addendum NVIA (Umwelt, 2025) appended to this Report and summarised in **Section 6.6**.	**Section 6.6**
Hazards and Risk	An addendum to the Preliminary Hazard Analysis (PHA) has been undertaken to determine the potential impacts of the Amended Project. The addendum PHA is appended to this Report and summarised in **Section 6.3**.	**Section 6.4**
Aboriginal Heritage	An addendum to the Aboriginal Cultural Heritage Assessment (ACHA) has been undertaken to determine the potential impacts of the Amended Project. The Addendum ACHA is appended to this Report and summarised in **Section 6.6**.	**Section 6.5**
Traffic and Transport	An addendum to the Transport and Traffic Impact Assessment (TTIA) has been undertaken to determine the potential impacts of the Amended Project. The addendum TTIA is appended to this Report and summarised in **Section 6.4**.	**Section 6.6**
Flooding	The proposed amendments are not expected to cause new or additional flooding impacts. The changes to solar panels were considered against the flood assessment presented in the EIS and are summarised in **Section 6.2**.	**Section 6.2**

6.1 Bushfire Threat Assessment

An addendum to the BTA report (Appendix C) has been prepared to assess the potential impacts of the proposed amendments. The Addendum BTA is supplementary to the previously prepared BTA (Umwelt , 2024). The amendments to the EIS Project with the potential to influence the BTA are outlined in **Table 6.2**.

Table 6.2 Amendments that Influence the BTA

Amendment Description	Potential to influence aspect
BESS size and model	Yes – Amendments assessed in **Section 6.1.1**.
BESS Inverters	Nil – No change to or additional impacts.
Transmission line cut in area	Yes – Amendments assessed in **Section 6.1.1**.
Fence Line/Development Footprint	Yes – Amendments assessed in **Section 6.1.1**.
Intersection Vegetation Clearence	Nil – No change to or additional impacts.
Solar Panels	Nil – No change to or additional impacts.
OSOM Transport Route	Nil – No change to or additional impacts.

6.1.1 Impact Assessment

The amended Development Footprint will result in a decrease of 14 ha in the managed land surrounding Project infrastructure including the solar arrays and the BESS. As detailed in the assessment undertaken during the EIS phase (BlackAsh , 2024), all grassland within the amended Development Footprint will be managed to meet the required standards for an APZ in accordance with the NSW RFS document Planning for Bushfire Protection (PBP) (RFS , 2019).

Due to the increased BESS footprint, some of the north-eastern and north-western portion of the BESS containment area will be within the far outer edge of BAL 12.5. As the BESS containers will be surrounded by a fence line and gravel hardstand, BESS containers and inverters will still be beyond 100 m from the nearest hazardous vegetation.

To ensure the distance from the BESS containers and inverters to the nearest unmanaged vegetation will be at least 100 m, a cluster of trees to the west of the EIS BESS footprint will be removed (approximately 0.5 ha).

Ark Energy also proposes to increase the number of inverters housed within the BESS compound however it is noted this would result in a minimal increase to the bushfire risk.

The current bushfire management strategies and mitigation measures remain effective and sufficient. This assessment is based on:

- Maintaining clear vegetation buffers, regular monitoring, and emergency response plans.
- The amendments do not introduce new materials or structures that would increase the fire load or risk of ignition.
- The land use and operational activities remain unchanged, ensuring that the existing risk profile is maintained.
- The Amended Project continues to comply with all relevant bushfire safety regulations and guidelines, ensuring ongoing protection against bushfire risks.

6.1.2 Cumulative Assessment

Given the minimal changes proposed in the Amended Project and the reduction in scope and scale of the proposed Myrtle Creek Solar Farm to include only a BESS, there are no additional bushfire-related cumulative impacts anticipated.

6.1.3 Mitigation Measures

The proposed amendments do not alter the findings of the EIS BTA and no additional mitigation measures are proposed for the Amended Project.

6.2 Flooding

Ark Energy designed the proposed amendments in consideration of the flood modelling presented in the EIS to ensure negligible change in impacts as a result of the Amended Project. Given the amendments do not introduce any new infrastructure that may contribute to or alter flood behaviour an addendum to the flood modelling was not considered necessary. The amendments to the EIS Project with the potential to influence the Flood Assessment are outlined in **Table 6.3.** These were assessed against the flood assessment as presented in the EIS.

Table 6.3 Amendments that Influence the Flood Impact

Amendment Description	Potential to influence aspects
BESS size and model	Yes – Amendments assessed in **Section 6.2.1**.
BESS Inverters	Nil – No change to or additional impacts.
Transmission line cut in area	Nil – No change to or additional impacts.
Fence Line/Development Footprint	Yes – Amendments assessed in **Section 6.2.1**.
Intersection Vegetation Clearence	Nil – No change to or additional impacts.
Solar Panels	Yes – Amendments assessed in **Section 6.2.1**.
OSOM Transport Route	Not applicable

6.2.1 Impact Assessment

6.2.1.1 BESS

The amended BESS is located in the north-eastern portion of the Development Footprint which is outside of the flood extent and does not change the existing topography within the flood conveyance areas within the Project Area. Although the BESS footprint has increased, this additional area will not be located within the 1% AEP flood event area, ensuring it does not contribute to any flood risks.

6.2.1.2 Perimeter Fence and Development Footprint

Amendments to the perimeter fence and Development Footprint are proposed within the north-eastern half of the Development Footprint. All proposed amendments are within H1 (Low hazard, safe for people, vehicles, and buildings) or H2 (Moderate hazard, unsafe for small vehicles) for the 1% AEP flood event. Given the small extent of amendments, the potential for blockage remains low consistent with the EIS and any localised impacts (afflux) upstream of the fence are expected to be minor. It should be noted that the overall length of the perimeter fence has decreased. It is noted that the severity of these impacts will be linked to the rarity of the flood event, similar to the findings in the EIS assessment.

The changes to the perimeter fence, in the north-eastern portion of the Project Area is unlikely to increase the flood risk or hazard profile beyond the findings of the EIS because the 1% AEP Probable Maximum Flood (PMF) event predominantly impacts the south-western portion of the Amended Project.

6.2.1.3 Solar Panels

It is noted that components of the project description which informed the Flood Impact Assessment, specifically the freeboard width of solar panels, has been amended.

The vertical arrangement of the solar panels as assessed within the EIS had a 300 mm freeboard which has been reduced to 100 mm (refer to **Figure 6.1**). Ark Energy has advised that this change will not impact infrastructure as it has a waterproof casing for electrical components and will remain above the 1% AEP (1 in a 100-year ARI). As outlined in the EIS, in the event of flooding, areas of the array that are affected will be shut off and isolated to prevent damage.

The EIS flood modelling (Arcadis, 2024) indicated that 100 mm freeboard still ensures that the panels will not be impacted by floodwaters for the 1% AEP flood event as the bottom edge of the panel will be above the expected flood levels. Additionally, as the panels have a tracking movement they can be moved into a horizontal position during any periods of flooding on site to ensure they remain above flood waters. As a result, impacts to infrastructure as a result of a flood do not change from those outlined in the EIS.

It is noted that in areas where the flood level is lower than the maximum 1% AEP flood depth the tracker heights would be reduced and the panels would be lower to the ground whilst still maintaining the freeboard allowance.

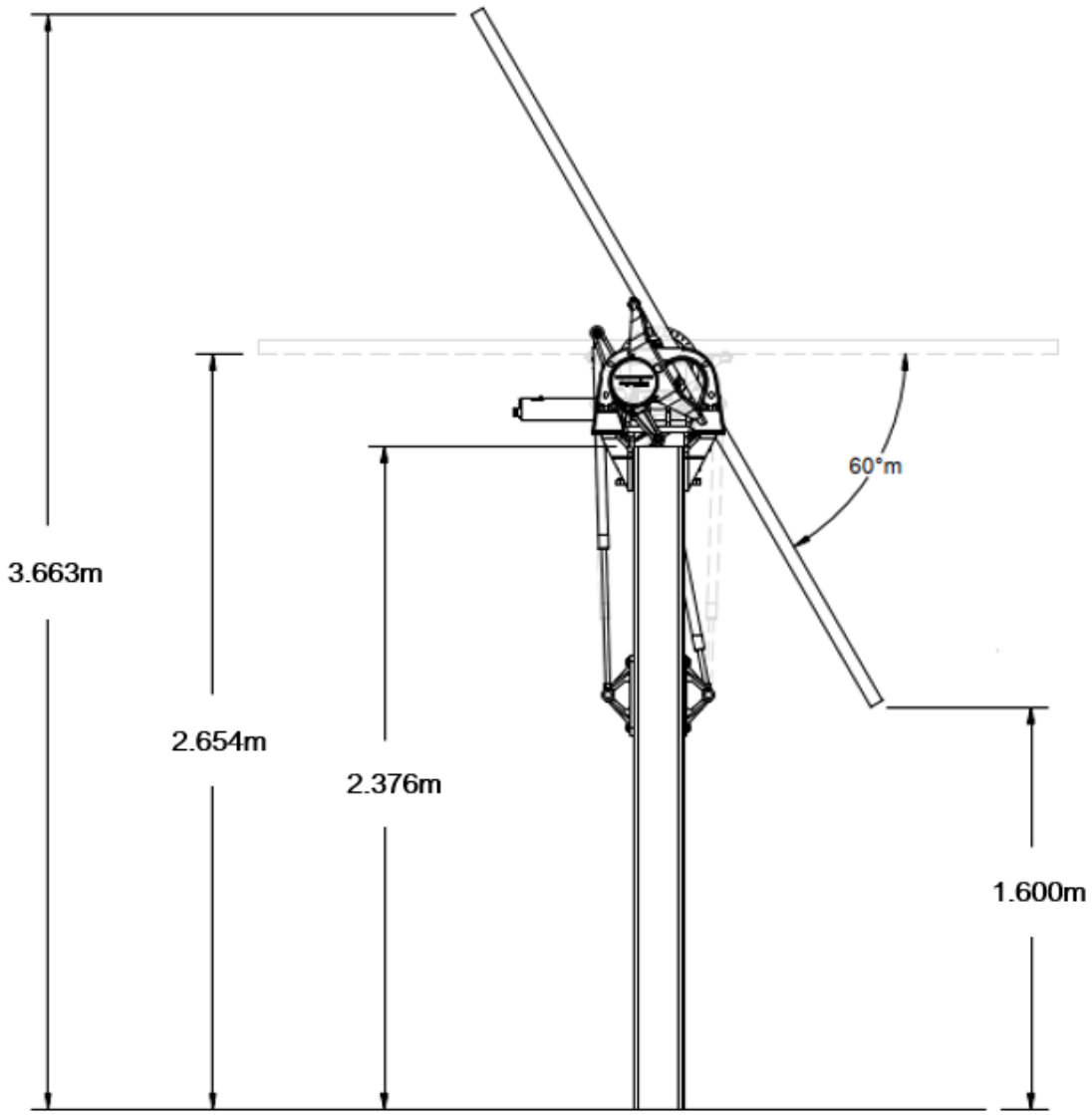


Figure 6.1 Proposed Panel Dimensions (Ark Energy, 2025)

6.2.2 Cumulative Impact

Given the minimal changes proposed in the Amended Project and the reduction in scope and scale of the proposed Myrtle Creek Solar Farm there are no additional bushfire-related cumulative impacts anticipated.

6.2.3 Mitigation Measures

The existing EIS mitigation measures F-01 will be adjusted to note a decrease in the freeboard distance from 300 mm to 100 mm from the lowest edge of the solar panels above the maximum 1% AEP flood level.

6.3 Preliminary Hazard Analysis

An addendum to the EIS PHA (Umwelt, 2024) has been prepared to assess the Amended Project. The Addendum PHA (Umelt, 2025) is provided in **Appendix F**. The Addendum PHA is supplementary to the previously prepared EIS PHA (2024) and should be read in conjunction.

The amendments to the EIS Project with the potential to influence the PHA are outlined in **Table 6.4**.

Table 6.4 Amendments that Influence the PHA

Amendment Description	Potential to influence PHA
BESS size and model	Yes – Amendments assessed in **Section 6.3.1**.
BESS Inverters	Yes – Amendments assessed in **Section 6.3.1**.
Transmission line cut in area	Nil – No change to or additional impacts.
Fence Line/Development Footprint	Nil – No change to or additional impacts.
Intersection Vegetation Clearence	Nil – No change to or additional impacts.
Solar Panels	Nil – No change to or additional impacts.
OSOM Transport Route	Nil – No change to or additional impacts.

6.3.1 Impact Assessment

Umwelt reviewed the Amended Project, specifically with respect to amendments to the BESS, against the original PHA findings. It was concluded that no additional risks involving Li-ion batteries or electrical transformers with the potential for harmful off-site impacts occur as a result of the amendment. Key findings include:

- The increase in the area of the proposed BESS compound described in **Section 3.1** will decrease the stored energy density from 44 kWh/m^2 to 42 kWh/m^2. The proposed energy density will provide adequate separation between the battery components and infrastructure to achieve non-propagation of thermal incidents.
- The worst case scenario (thermal radiation, explosion overpressure and toxic gas concentrations) associated with a BESS hazardous incident would be limited to within 100 m of the nearest containerised unit.
- For the worst-case scenario, the maximum distance at which an individual exposed to hydrogen fluoride (HF) emissions from a battery storage facility toxic release event could experience an injury (i.e. exposure of 24 ppm for 60 minutes) is estimated to be 57 m. Due to the separation distances outlined above, the risk of over exposure to HF as a result of the Amended Project does not require further assessment.
- An updated assessment based on the amended BESS footprint concluded that the nearest involved dwelling, C3-4 remains 650 m from the BESS compound and the nearest non-involved dwelling is beyond 1,900 m from the BESS compound. The assessment of hazard events involving LIBs and electrical transformers with the potential for harmful off-site impacts are consistent with the EIS PHA 2024. That is, due to the significant separation distances, the risk of off-site injury, fatality, or property damage from lithium-ion battery or electrical transformer hazards is deemed negligible.

6.3.2 Cumulative Assessment

Given the minimal changes proposed in the Amended Project and the reduction in scope and scale of the proposed Myrtle Creek Solar Farm there are no additional bushfire-related cumulative impacts anticipated.

6.3.3 Mitigation Measures

The proposed amendments do not alter the findings of the EIS PHA and no additional mitigation measures are proposed for the Amended Project.

6.4 Traffic and Transport

The TTIA for the EIS Project was prepared by Access Traffic Pty Ltd (Access Traffic) in March 2024. An update to the TTIA has been prepared by Access Traffic to respond to agency submissions and design refinements and assess the traffic and transport impacts associated with the amended Project. It also includes amended appendices comprising the concept design and route assessment. The amended TTIA (Access Traffic, 2025) is provided in **Appendix H**.

The amendments to the EIS Project with the potential to influence the TTIA are outlined in **Appendix H**.

Table 6.5 Amendments that Influence the TTIA

Amendment Description	Potential to influence aspects
BESS size and model	Nil – No change to or additional impacts.
BESS Inverters	Nil – No change to or additional impacts.
Transmission line cut in area	Nil – No change to or additional impacts.
Fence Line/Development Footprint	Nil – No change to or additional impacts.
Intersection Vegetation Clearence	Yes – Amendments assessed in **Section 6.4.3**.
Solar Panels	Nil – No change to or additional impacts.
OSOM Transport Route	Yes – Amendments assessed in **Section 6.4.3**.

6.4.1 Amended OSOM Transport Route

As outlined in **Section 3.7**, three (3) OSOM transport routes have been proposed for the Amended Project based on revised specifications of the components of the transformer and switchroom. An overview of the proposed OSOM transport routes is provided in **Table 6.6**, **Table 6.7** and **Table 6.8**.

Table 6.6 Route 1 – Transformer – Melbourne to Richmond Valley Solar Farm

Route ID	Route Description	Route Length (km)
1	Springvale Road, Mitcham Road, Williamson Road, Fitzsimmons Lane, Main Road, Greensborough Highway, MBO Ring Road, Hume Highway, Melbourne Road, Melrose Drive, Hume Highway, South Western Freeway, M7 Motorway, M2 Motorway, Pennant Hills Road, M1 Motorway, John Renshaw Drive, New England Highway, Old Maitland Road, Pacific Highway, Bruxner Highway, Summerland Way, Main Camp Road, Avenue Road	1,700.6

Table 6.7 Route 2 – Switchrooms – Brisbane to Richmond Valley Solar Farm

Route ID	Route Description	Route Length (km)
2	Noosa Street, Stradbroke Street, Stapylton Road, M2 Logan Motorway, M6 Motorway, M1 Motorway, Tugan Currumbin Road, Gold Coast Highway, M1 Motorway, Bruxner Highway, Summerland Way, Main Camp Road, Avenue Road	270.3

Table 6.8 Route 3 – Switchrooms –Melbourne to Richmond Valley Solar Farm

Route ID	Route Description	Route Length (km)
3	Scanlan Drive, Gateway Boulevard, O'Herns Road, Hume Highway, South Western Freeway, M7 Motorway, M2 Motorway, Pennant Hills Road, M1 Motorway, John Renshaw Drive, New England Highway, Old Maitland Road, Pacific Highway, Bruxner Highway, Summerland Way, Main Camp Road, Avenue Road	1,648.7

6.4.2 Amended Road Network Upgrades

In response to the TfNSW advice, designs of the upgrades to the intersection at Summerland Way and Main Camp Road have been updated and are appended to the TTIA. These updated designs do not change the road upgrade Development Footprint as assessed in the EIS. It is noted that vegetation clearing associated with Safe Intersection Sight Distance (SISD) has been assessed in the Amended BDAR.

6.4.3 Impact Assessment

The proposed changes to the Project are not expected to significantly change the previously identified daily or peak hour traffic generation or the distribution of this traffic on the external road network. Therefore, the daily and peak hour Project traffic volumes, road link and intersection impact assessments outlined in the previous traffic and transport assessment (Access Traffic, 2024) remain applicable to the Amended Project.

Additionally, a bridge assessment has been completed which assessed the height and width of bridges between Albury and the Project Area along Route 1. The assessment concluded that the proposed OSOM vehicles are "permitted to travel over the requested route" (see **Appendix H**).

The revised OSOM routes require no further assessment as any works required are temporary and confined to road corridor. The majority of these points will only require traffic management measures or minimal works (signage relocation).

The addendum TTIA includes a design verification which confirms that the proposed vegetation clearing on the southern side of the Summerland Way / Main Camp Road intersection are sufficient to achieve the required SISD for vehicle movements at the intersection.

6.4.4 Cumulative Assessment

Given the minimal changes proposed in the Amended Project and the reduction in scope and scale of the proposed Myrtle Creek Solar Farm there are no additional traffic or transport-related cumulative impacts anticipated.

6.4.5 Mitigation Measures

The proposed amendments do not require additional mitigation measures beyond those outlined in the EIS TTIA.

6.5 Biodiversity Development Assessment Report (BDAR)

The BDAR for the EIS Project was prepared by Biosis Pty Ltd (Biosis) in May 2024. An amended BDAR has been prepared by Biosis to respond to agency submissions and assess the Project based on the amendments outlined in **Section 3.0**. The amended BDAR (Biosis, 2025) is provided in **Appendix D**.

The amendments to the EIS Project with the potential to influence the BDAR are outlined in **Table 6.9**.

Table 6.9 Amendments that Influence the BDAR

Amendment Description	Potential to influence aspect
BESS size and model	Nil – No change to or additional impacts.
BESS Inverters	Nil – No change to or additional impacts.
Transmission line cut in area	Yes – Amendments assessed in **Section 6.5.5**.
Fence Line/Development Footprint	Yes – Amendments assessed in **Section 6.5.5**.
Intersection Vegetation Clearence	Yes – Amendments Assessed in **Section 6.5.5**.
Solar Panels	Nil – No change to or additional impacts.
OSOM Transport Route	Nil – No change to or additional impacts.

6.5.1 Subject Land and Assessment Area

The Subject Land includes the Development Footprint, and areas where indirect and prescribed impacts may occur. This includes a buffer of 100 m surrounding the solar farm Development Footprint and 20 m buffer surrounding the road upgrade Development Footprint, clipped to the Project Area.

The Assessment Area includes the Subject Land and the area of land within the 1500 m buffer zone surrounding the Subject Land that is determined as per the Section 3.1.2 of the BAM. This area comprises approximately 4,981.15 ha.

6.5.2 Native Vegetation

The Subject Land is comprised of 1,079.16 ha of vegetation (151.54 ha of native vegetation, 1.77 ha of planted native vegetation, 0.45 ha of exotic vegetation and 925.40 ha of Category 1 exempt land).

An overview of the opportunistic and rapid assessment surveys of vegetation and habitat are provided in Section 3.1.3 of the Amended BDAR (Biosis, 2025).

An overview of the additional surveys undertaken since the submission of the EIS are provided below:

- January 2025 – Additional targeted flora and fauna surveys.
- February 2025 – Additional targeted flora surveys and vegetation mapping.

- March/May 2025 – Additional surveys for the purposes of identifying stewardship sites (Note: While not undertaken for the purposes of this BDAR where relevant findings from these surveys have been included within this amended BDAR for context.).
- All surveys were conducted in accordance with the BAM (DPIE, 2020) as detailed in Section 3.1.3 of the Amended BDAR.

6.5.2.1 Plant Community Types

The surveys undertaken in 2025 followed considerable rainfall which informed the identification of a fifth Plant Community Type (PCT), PCT 3965 - Far North Floodplain Forb-Sedge Wetland. During previous assessments in 2023 and 2024, this PCT was not discernible during drier conditions and given the high abundance of exotic grasses.

An overview of the PCT assessed as present within the Subject Land can be found in **Figure 6.2** and **Table 6.10**.

Table 6.10 Plant Community Types within the Subject Land

PCT ID	PCT Name	Condition	Subject Land (ha)	Assessed in EIS
PCT 4046	*Northern Lowland Swamp Turpentine-Red Gum Forest*	Several conditional states including moderate and riparian	55.7 ha	Yes
PCT 4001	*Northern Floodplain Paperbark Fern Swamp Forest*	Low condition	0.9 ha	Yes
PCT 3428	*Northern Lowland Red Gum-Swamp Turpentine Grassy Forest*	Moderate and low conditional states	17.4 ha	Yes
PCT 3420	*Clarence Lowland Ironbark-Spotted Gum Grassy Forest*	Several conditional states including good, moderate and regenerating	64.2 ha	Yes
PCT 3965	*Far North Floodplain Forb-Sedge Wetland*	Overall, it is considered to be in moderate condition with a condition state denoted as 'Cat 1', a reflection of its links with previous land use.	13.34 ha	No Assessed in Amended BDAR
		Total Area	**138.2 ha**	

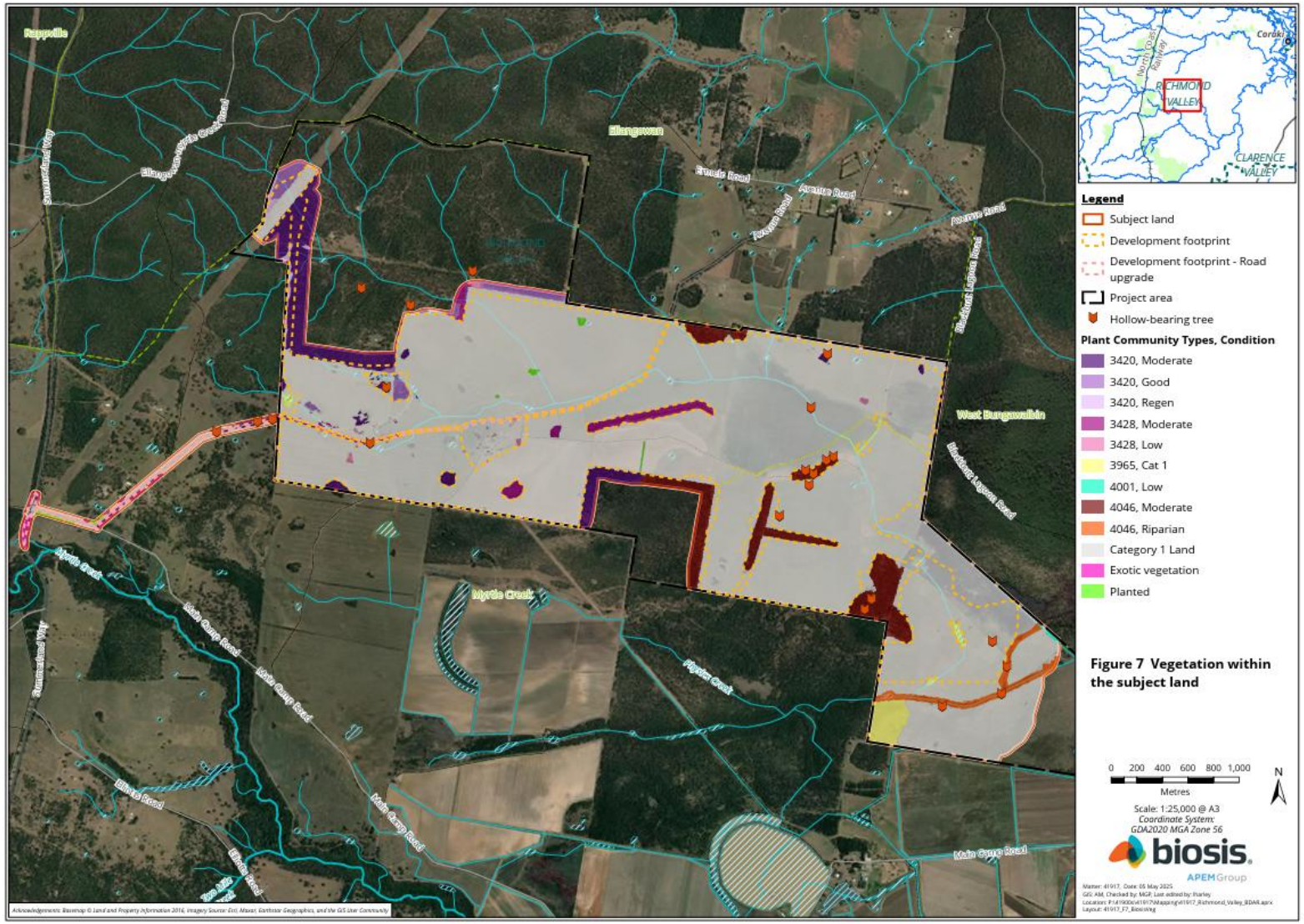


Figure 6.2 Vegetation within the Subject Land

6.5.2.2 Threatened Ecological Communities

Since the exhibition of the EIS, an additional Threatened Ecological Communities (TEC) was identified within the Subject Land. Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions, listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) was identified in the south-eastern portion of the Subject Land. Due to changes in the Development Footprint since the EIS submission, the proportionality of each TEC within the Subject Land and Development Corridor has also changed. An overview of the TEC listed under the NSW BC Act, and Commonwealth EPBC Act within the Subject Land and Development Corridor is provided in **Table 6.11** and **Figure 6.3**.

Table 6.11 TECs within the Subject Land

TEC	Listing	Subject Land (ha)	Development Footprint (Ha)	Assessed in EIS
Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion	Endangered (BC)	73.10	4.42	Y
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered (BC)	0.89	0	Y
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered (BC)	413.35	2.38	No Assessed in Amended BDAR
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered (EPBC)	71.17	3.13	Y

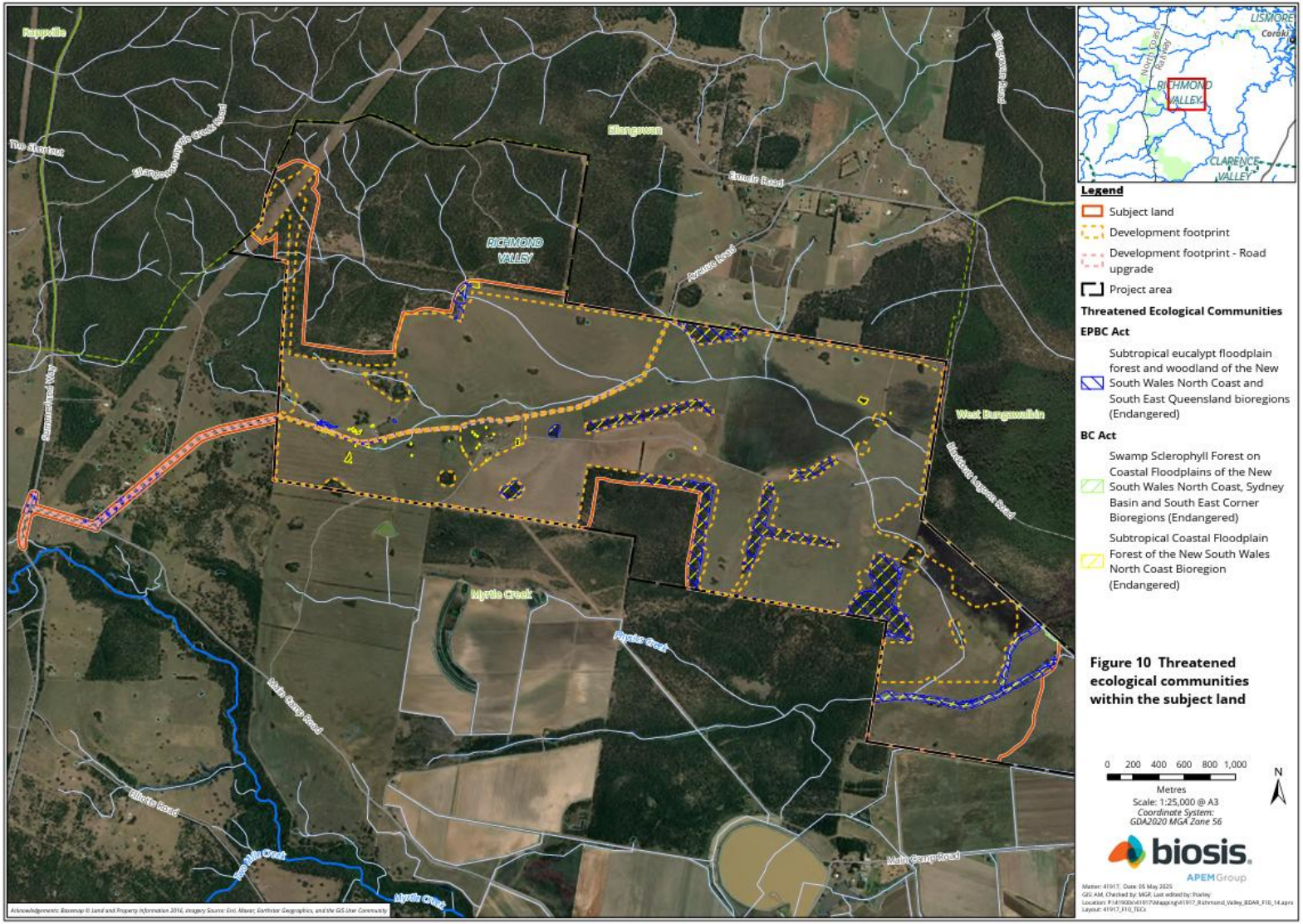


Figure 6.3 Threatened Ecological Communities

6.5.3 Threatened Species

6.5.3.1 Candidate Species

A list of predicted ecosystem credit species expected to occur within the Amended BDAR Subject Land was generated in accordance with the BAM and in accordance with feedback from CPHR which was also addressed in the Response to Submissions Report (Umwelt, 2025).

Since submission of the EIS, seven (7) additional species have been added to the list based on feedback from CPHR. For each species credit species, **Table 6.12** provides the required survey period and the relevant method of assessment.

Table 6.12 Candidate Flora Species Credit Species

Species name	Common name	Associated PCT	Survey period	Survey Completed	Method of assessment
Centranthera cochinchinensis	Swamp Foxglove	3420, 3428, 4046	January – March	Yes	Targeted survey
Cyperus aquatilis	Water Nutgrass	3420, 4046	January – April	Yes	Targeted survey
Eleocharis tetraquetra	Square-stemmed Spike-rush	3420, 3428, 4046	January – February	Yes	Targeted survey
Lindsaea alsinoides	Noah's False Chickweed	3428, 4046	November - February	Yes	Targeted survey
Maundia trichlochoides		3428, 4001, 4046	November - March	Yes	Targeted survey
Myrsine richmondensis	Ripple-leaf Muttonwood	3428	All year	Yes	Targeted survey
Phaius australis	Southern Swamp Orchid	3428	September – October	Not directly although survey during the flowering period was undertaken and it would have been identified if present. See Section 4.3.1 of the Amended BDAR.	Targeted Survey

In addition to the above, the Pale-headed Snake (*Hoplocephalus bitorquatus*) and the Common Planigale *Planigale maculata* have been added to the list of fauna species credit species based on feedback from CPHR. **Table 6.13** provides the required survey period and the relevant method of assessment.

Table 6.13 Candidate Fauna Species Credit Species

Species name	Common name	Associated PCT	Survey period	Method of assessment
Hoplocephalus bitorquatus	Pale-headed Snake	3420, 3428, 4046	November - March	EIS BDAR: Assumed Present Amended BDAR: Nocturnal spotlighting and funnel trapping
Planigale maculata	Common Planigale	4046, 3428, 3420	September – April	EIS BDAR: Assumed Present Amended BDAR: Habitat assessment, Incidental observation, Pitfall trapping January 2025

6.5.3.2 Threatened Flora

Survey Method and Effort

Targeted flora surveys completed following submission of the EIS were undertaken by Mitchell Palmer (Manager – Ecology and GIS NSW), Brendon True (Senior Botanist – Major Projects) and Kit King (Botanist) on 21-23 January 2025, 28-29 January 2025 and 25-26 February 2025.

Surveys were undertaken in line with the survey method described in the EIS and with regard to feedback from CPHR as detailed in Table 1-1 of the Amended BDAR. Targeted flora surveys were conducted in to coincide with the requirements for each threatened species credit species in the TBDC survey guides.

The additional survey and outcomes undertaken since the submission of the EIS is outlined below in **Table 6.14**.

Table 6.14 Summary of Targeted Flora Survey Method and Results Since EIS Submission

Species name	Common name	Survey Method	Survey Results	Species Polygon or Count
Maundia triglochinoides		10 m separated transect searches of potential habitat January 2025, February 2025	Recorded during surveys in the south of the Subject Land	0.80
Rotala tripartita		10 m separated transect searches of potential habitat December 2023, January 2024, January 2025. February 2025	Recorded extensively during 2025 surveys	53.25 ha
Lindsaea alsinoides	Noah's False Chickweed	10 m separated transect searches of potential habitat January and February 2025	Not recorded during surveys	N/A
Eleocharis tetraquetra	Square-stemmed Spike-rush	10 m separated transect searches of potential habitat January and February 2025	Not recorded during surveys	N/A
Centranthera cochinchinensis	Swamp Foxglove	10 m separated transect searches of potential habitat January and February 2025	Not recorded during surveys	N/A

Maundia triglochinoides was recorded in the eastern portion of the Subject Land during the 2025 surveys. The resulting species polygon includes an area of PCT 3965 where the species was found. Impacts have been avoided to individuals and the species polygon through redesign of the Development Footprint (see **Figure 6.4**).

Rotala tripartita was recorded in high numbers across the Subject Land during the 2025 surveys. The species polygon overlaps parts of PCTs 3420, 3428, 3965, 4001, and 4046, as well as Category 1 exempt land (see **Figure 6.4**). The known habitat polygon, as shown in **Figure 6.4**, corresponds to a 50 m buffer around identified records, while potential habitat is assumed within a 25 m buffer along narrow swales, gilgai formations, swampy soils, and wetlands, as well as a 50 m buffer surrounding farm dams with likely suitable conditions. These areas experience frequent inundation or prolonged water retention.

Avoidance to individuals, known habitat and potential habitat has been prioritised through redesign of the Development Footprint resulting in a total species impacts of 3.33 ha which includes one individual cluster containing three individuals associated with the species polygon within native vegetation, and 34.51 ha of the species polygon within Category 1 – Exempt Land.

6.5.3.3 Threatened Fauna

Additional targeted threatened fauna surveys of the Subject Land were undertaken seasonally since submission of the EIS. A summary of the additional surveys conducted and survey outcomes are outlined below.

Since submission of the EIS, an additional hollow bearing tree was identified during 2025 surveys although this tree was not identified as having a significant hollow.

See Appendix 4 of the Amended BDAR for a full list of all fauna species (with and without conservation significance) recorded within the Subject Land.

Nocturnal Birds

Forest Owl surveys were undertaken across two nights in January 2025 and included call playback and spotlighting. Species targeted during these surveys included the Barking Owl, Powerful Owl and Masked Owl.

Powerful Owl surveys were undertaken in July/August 2023 and January 2025 and included call playback and spotlighting across four survey nights and the Powerful Owl was not recorded within the Project Area. The Barking Owl remains assumed present as previous surveys identified it beyond the Subject Land although within the Project Area. Based on assumed presence, the Barking Owl species polygon is 79.28 ha across PCT zones 4001, 4046, 3428 and 3420 (see **Figure 6.3**).

The Masked Owl was not recorded during January 2025 surveys and the Bush Stone Curlew and Red-backed Button-quail were not recorded during surveys conducted for the EIS.

Amphibian Surveys

Surveys in January 2025 recorded increased common frog calls and a significant presence of cane toads, while a Wallum Froglet was detected in adjacent retained vegetation on sandier alluvial soils. Water bodies within the site had pH levels between 6.9 and 7.2, exceeding the optimal range (<5.5) for suitable breeding habitat according to the NSW guide for threatened frogs. Given these pH readings, seasonal inundation, and the species being at the edge of its distribution, the Wallum Froglet individuals are likely transient rather than resident breeders.

Reptile Surveys

Additional reptile surveys were conducted from 20 – 25 January 2025 with a focus on habitat assessment for Pale-headed Snake. This species was initially excluded based on microhabitat requirements. This species has subsequently been surveyed for to address feedback from CPHR. Targeted surveys including active search, spotlighting and funnel trapping were completed across the Subject Land, in accordance with the Threatened Reptiles Biodiversity Assessment Method survey guide. Nocturnal spotlighting and funnel trapping in January 2025 did not result in identification of the Pale-headed Snake within the Subject Land.

Mammalian Surveys

Pitfall trapping for *Planigale maculata* (Common Planigale) took place in January 2025 which coincided with all species survey timing requirements. The Common Planigale was identified in two locations during the January surveys resulting in a 20.70 ha species polygon across zones 4046, 3428 and 3420 (see **Figure 6.4)**.

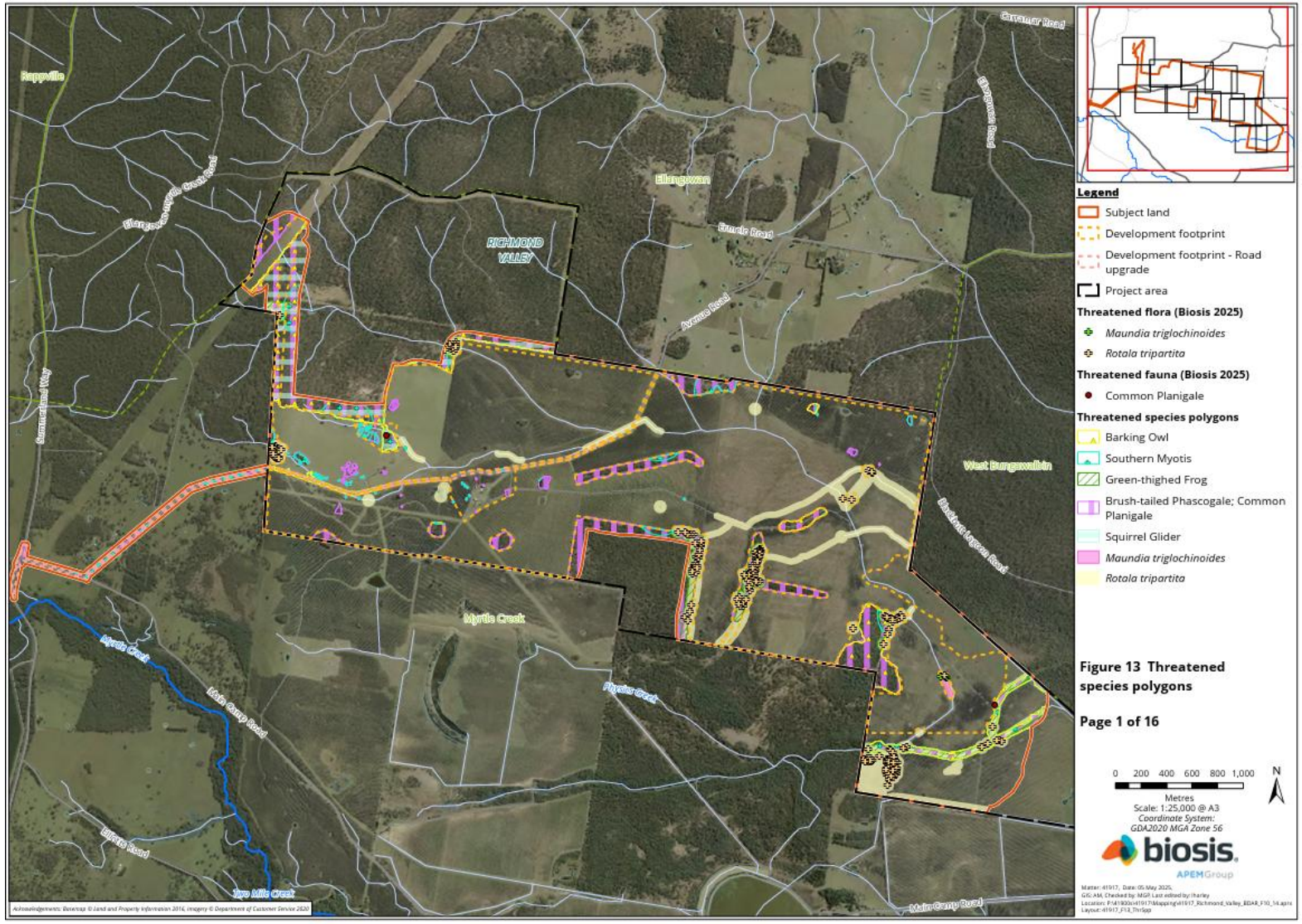


Figure 6.4 Threatened Species Polygon

6.5.4 Avoidance and Minimisation

Since submission of the EIS, Ark Energy have amended the Development Footprint as a result of the identification of both *Rotala tripartita* and *Maundia triglochinoide.* As outlined above in **Section 6.5.3.2**, survey effort was undertaken to map the extent of these species across the Project Area and a total of 640 points or clusters, were recorded during this survey. Additionally, of the individuals and clusters found, an estimated 689 *Rotala tripartita* individuals (196 clusters) were found within the Project Area to the north of the Subject Land in May 2025 as part of stewardship feasibility investigations, and 896 individuals (140 clusters) were found in areas set aside to be conserved by the project. Further details regarding the management of this area are proposed to be outlined within the Biodiversity Management Plan.

Individual records were mapped, and a species polygon was also prepared incorporating other potential and suitable habitats and an updated Development Footprint was applied to avoid or reduce overlap with this species polygon and clusters. Avoidance of all potential *Rotala tripartita* across the Development Footprint in its entirety would render the Project no longer feasible and as a result there is anticipated to be temporary direct and indirect impacts on potential *Rotala tripartita* habitat during construction, operation and decommissioning phases of the Project.

- The south-eastern portion of the Development Footprint was removed from the Amended Project as well as some sections of the Development Footprint across the Project Area which overlapped with the known *Rotala tripartita* habitat and also records of *Maundia triglochinoides*. As a result, the Amended Development Footprint has avoided:
- All identified *Maundia triglochinoides* species within the Subject Land.
- Approximately 5,095 known *Rotala tripartita* individuals (~99.9% avoidance) and an associated buffer from the Development Footprint and infrastructure.
- Approximately 21 ha or 54% of the potential *Rotala tripartita* habitat within the Subject Land.
- A summary of the new avoidance and minimisation of impact since submission of the EIS is presented below in **Table 6.15**. New measures are presented in bold.

Table 6.15 Avoidance and Minimisation of Impact

Avoidance and minimisation components	Action	Outcome	Timing	Responsibility
Modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology.	Not require site leveling or heavy disturbance to groundcover and maintaining existing hydrological flow to retained vegetation and habitats. Internal access tracks will be established with alternative methodology in areas of potential *Rotala triparita* habitat including the use of concrete mat structures where appropriate.	Reduction in impacts beneath, but more so between, solar arrays to incentivise and to retain a level of biodiversity value. Avoidance of site leveling as far as practicable. Temporary impacts of compaction as opposed to full clearing and levelling of groundcover that will regenerate.	Project design Construction	The applicant Contractors
Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through Project design.	Constraints and opportunities assessment. Utilising Project design to avoid areas of highest biodiversity value. Establishment of northern biodiversity corridors and southern conservation area. Consultation with RFS will be undertaken to consider application of adjusted APZ maintenance regime that maintains conditions suitable to the survival of *Rotala tripartita.*	Avoidance of higher biodiversity values. Avoidance of Swamp Sclerophyll Forest and habitat for Barking Owl, *Rotala triparita* and *Maundia triglochinoides* Minimising impacts to hollow bearing trees. Maintaining existing hydrological flow to retained vegetation and habitats.	Project design Construction	The applicant Contractors

6.5.5 Impact Assessment

6.5.5.1 Direct Impacts

Direct impacts include vegetation clearing calculated from the area of proposed lot boundaries, roads and easements for service infrastructure.

Direct impacts arising from the Amended Project include:

- Removal of 23.08 ha of native vegetation including:
    - 0.46 ha of PCT 4046.
    - 3.96 ha of PCT 3428.
    - 16.29 ha of PCT 3420.
    - 2.38 ha of PCT 3965.
    - 20.63 ha of assumed Brush-tailed Phascogale habitat.
- Threatened Species:
    - 13.39 ha of Barking Owl habitat.
    - 10.69 ha of Squirrel Glider habitat.
    - 5.74 ha of Southern Myotis habitat buffer.
    - 20.63 ha of Common Planigale habitat.
    - 0.94 ha for assumed Green-thighed frog habitat.
    - 3.33 ha of *Rotala tripartita* habitat within PCT 3420, 3428, 3965 and 4046, as well as 34.51 ha within Category 1 – Exempt land.
- TECs:
    - Removal of 4.42 ha of Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion (Endangered, BC Act).
    - Removal of 3.13 ha of Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions (Endangered, EPBC Act).
    - Removal of 2.38 ha of Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.
- Hollow bearing and scattered trees:
    - Removal of 1.09 ha of planted native vegetation.
    - Removal of 28 scattered paddock trees, of which five are hollow bearing.
    - Removal of 10 hollow-bearing trees.

As detailed in the EIS BDAR, these impacts will be permanent and will occur from the outset of the development. Mitigation measures outlined in **Section 6.5.4** above will help to minimise the potential impacts to biodiversity values that remain present within the Subject Land.

6.5.5.2 Indirect Impacts

Potential indirect impacts which have changed since the EIS are outlined and addressed in **Table 6.16**.

As above, indirect impacts which have been added to the BDAR since the submission of the EIS are presented in bold.

Table 6.16 Assessment of Indirect Impacts

Indirect impact (Describe impact, e.g. transport of weeds and pathogens form the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Likelihood and consequences
Inadvertent impacts on adjacent habitat or vegetation	All PCT/zones All ecosystem credit species assumed present Subtropical Coastal Floodplain Forest Weeping Myall EEC (BC Act and EPBC Act listings) Freshwater Wetlands EEC *Rotala tripartita* Barking Owl Squirrel Glider Southern Myotis Brush-tailed Phascogale Common Planigale Green-thighed Frog *Maundia triglochinoides*	**114.07 ha** of adjacent vegetation subject to monitoring and enhancement	**Moderate.** Impacts to adjacent vegetation during construction and operational phase can be prevented or minimised through appropriate exclusion fencing, implementation of a Biodiversity Management Plan (BMP) and Construction Environmental Management Plan (CEMP) or similar detailing best practice environmental protection measures, strict water quality practices and stormwater controls, and by ensuring any lighting is directed towards the developed area, rather than towards adjacent retained habitat. Connectivity remains throughout areas of retained vegetation and existing hydrological flow will be maintained within retained vegetation and ephemeral wetland habitats
Reduced viability of adjacent habitat due to edge effects	All PCT/zones All ecosystem credit species assumed present Subtropical Coastal Floodplain Forest Weeping Myall EEC (BC Act and EPBC Act listings) Freshwater Wetlands EEC *Rotala tripartita* Barking Owl Squirrel Glider Southern Myotis	**114.07 ha** of adjacent vegetation subject to monitoring and enhancement	**Low-Moderate**. Adjacent habitats are currently subject to disturbance via clearing and existing agricultural land use. Improve and maintain principles will apply within the BMP and Vegetation Management Plan (VMP) to ensure retained areas of adjacent habitat do not decline or are subjected to adverse impacts. Connectivity will largely remain the same within the Subject Land. Edge effect will be increased marginally through the removal of low and moderate edges of some woodland/forest areas. Distances between scattered trees, and hollow-bearing scattered trees will be increased from removal and will therefore incur an increase in edge effect and connectivity between these features.

Indirect impact (Describe impact, e.g. transport of weeds and pathogens form the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Likelihood and consequences
	Brush-tailed Phascogale Common Planigale Green-thighed Frog *Maundia triglochinoides*		
Reduced viability of adjacent habitat due to noise, dust or light spill	All PCT/zones All ecosystem credit species assumed present Subtropical Coastal Floodplain Forest Weeping Myall EEC (BC Act and EPBC Act listings) Freshwater Wetlands EEC Rotala tripartita Barking Owl Squirrel Glider Southern Myotis Brush-tailed Phascogale Common Planigale Green-thighed Frog *Maundia triglochinoides*	**114.07 ha** of adjacent vegetation subject to monitoring and enhancement	**Low-Moderate.** It is predicted that the adjacent habitat may be impacted in a small way by noise, dust, compaction and light spill, during construction and operation. However, this will be managed via best practices outlined in a BMP and CEMP or similar. Improve and maintain principles will apply within the BMP and VMP to ensure retained areas of adjacent habitat do not decline or are subjected to adverse impacts. Improve and maintain principles will apply within the BMP to ensure retained areas of adjacent habitat do not decline or are subjected to adverse impacts. A temporary reduction in foraging within the Subject Land may occur within scattered tree's however, as the development has largely avoided most large patches of vegetation, these impacts are considered to be low.
Transport of weeds and pathogens from the site to adjacent vegetation	All PCT/zones All ecosystem credit species assumed present Subtropical Coastal Floodplain Forest Weeping Myall EEC (BC Act and EPBC Act listings) Freshwater Wetlands EEC *Rotala tripartita*	**114.07 ha** of adjacent vegetation subject to monitoring and enhancement	**Low-Moderate**. Weeds occurring within the Subject Land are common with those occurring within adjacent vegetation to be retained. However there is likely to be a substantial increase in traffic movement through the Subject Land during the construction phase of the project, and an ongoing increase in traffic through operation. This increase in vehicle movements, with many vehicles coming from other construction sites, has the potential to spread novel weed species within the Subject Land and strict biosecurity protocols will need to be established and adhered to prevent outbreaks of weeds. Increased transport of pathogens and weeds is unlikely to occur but will be managed by biosecurity measures outlined in the CEMP.

Indirect impact (Describe impact, e.g. transport of weeds and pathogens form the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Likelihood and consequences
	Barking Owl Squirrel Glider Southern Myotis Brush-tailed Phascogale Common Planigale Green-thighed Frog *Maundia triglochinoides*		
Increased risk of starvation, exposure and loss of shade or shelter	All PCT/zones All ecosystem credit species assumed present Subtropical Coastal Floodplain Forest Weeping Myall EEC (BC Act and EPBC Act listings) Swamp Sclerophyll Forest EEC (BC and EPBC Act listing) Freshwater Wetlands EEC Barking Owl Squirrel Glider Southern Myotis Brush-tailed Phascogale Common Planigale Green-thighed Frog	**114.07 ha** of adjacent vegetation subject to monitoring and enhancement	**Low-Moderate.** Improve and maintain principles will apply within the BMP and VMP to ensure retained areas of adjacent habitat do not decline or are subjected to adverse impacts. While the removal of sheltering vegetation within the Development Footprint is a small proportion of the commensurate habitat available within the Subject Land and broader Project Area, the removal of potential roost/sheltering sites is a more adverse impact, but not one that is likely to result in mortality of individuals, however, may result in an increase of competition for remaining habitat features. Removal of HBTs will increase hollow competition for common fauna species within the landscape. The level of change is minimal in the context of the Subject Land and broader locality and the ecosystem is unlikely to be at carrying capacity such that displaced fauna cannot continue to persist in adjacent retained areas
Loss of breeding habitats	Hollow dependent fauna All ecosystem credit species assumed present	**114.07** ha of adjacent vegetation subject to monitoring and enhancement	**Moderate**. **15** hollow-bearing trees will be removed by the amended Project, leaving at least **28** remaining in adjacent retained vegetation. Indirect impacts associated with the loss of breeding habitats are not considered likely to be substantial or significant to any locally occurring threatened, or non-threatened, species.

Indirect impact (Describe impact, e.g. transport of weeds and pathogens form the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Likelihood and consequences
		13 retained hollow bearing trees	Removal of HBTs will increase hollow competition for common fauna species within the landscape
Trampling of threatened flora species	*Maundia triglochinoides* *Rotala tripartita*	**114.07 ha** of adjacent vegetation subject to monitoring and enhancement	Moderate. Two threatened flora species were recorded within the Subject Land. Where these occur within retained vegetation, these areas will be subject to strict management and access requirements as part of the BMP. Improve and maintain principles will apply within the BMP to ensure retained areas of adjacent individuals and habitat do not decline or are subjected to adverse impacts. Existing hydrological flow will be maintained within retained vegetation and ephemeral wetland habitats. Initial disturbance activities associated with establishing APZs will not be undertaken during the *Rotala tripartita* growing season within areas of potential *Rotala tripartita* habitat.
Changed fire regimes	N/A	N/A	**Low.** Appropriate asset protection zones and fire mitigation systems will be implemented for the amended Project and the implementation of bushfire management and mitigation measures for the amended Project will help to manage risk of fire within the Subject Land. Initial disturbance activities associated with establishing APZs will not be undertaken during the *Rotala tripartita* growing season within areas of potential *Rotala tripartita* habitat.
Disturbance to specialist breeding and foraging habitat, e.g. important mapped areas	None	0 ha	**Low**. No mapped important areas occur within the Subject Land. A small area of forested wetland occurs within the far south-east portion of the Subject Land, providing potential foraging habitat for wetland species. However this area will not be impacted by the amended Project. Impacted dams occur in a low to **moderate** condition and **highly ephemeral** and are not likely to support the foraging or breeding behaviours of migratory species. Retained areas will be managed and improved under a BMP implemented for the amended Project.

6.5.5.3 Prescribed Impacts

Since the submission of the EIS, minimal impacts associated with Prescribed impacts are expected. Additional considerations have been made to accommodate the identification of *Rotala triparita* and *Maundia triglochinoides* within the Project Area such as the maintenance of existing hydrological flows.

6.5.6 Mitigation and Management

Additional Management and Mitigation measures have been implemented in response to the additional work which has taken place since the submission of the EIS. Below is a summary of these measures which should be read alongside the full list oof management measures provided in the Appendix 6 of the EIS and Section 7 of the Amended BDAR.

Table 6.17 Management and Mitigation Measures

ID	Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
B2	Indirect impacts on native vegetation and habitat	• Exclusion zones for retained *Maundia triglochinoides* and *Rotala tripartita* individuals and habitat. • Internal access tracks will be established with an alternative methodology in areas of potential *Rotala tripartita* habitat including the use of concrete mat structures. • Where access tracks traverse or are immediately adjacent the potential *Rotala tripartita* habitat additional dust management and erosion and sediment control measures will be employed. • Any topsoil requiring removal within known *Rotala tripartita* would be stored during construction and re-spread other suitable disturbed areas. • Maintenance of the fence will be conducted during periods of heavy rainfall to remove debris which may inhibit the flow of water. • Conservation areas would be established in retained lands, particularly in the in the south-east and managed as part of the Projects BMP.	Effective management of potential indirect impacts such that they do not occur or are minimal.	Pre-construction and construction	The applicant /contractor
B3	*Mitigating prescribed biodiversity impacts*	• Procedures for unexpected threatened species finds such as the potential for Swamp Foxglove in degraded Category 1 exempt areas.	Effective management of prescribed impacts such that they do not occur or are minimal.	Pre-construction, construction and post-construction	The applicant /contractor

6.5.6.1 Significant and Irreversible Impacts

As outlined in Section 8.2 of the Amended BDAR, in accordance with Clause 6.7 of the BC Regulation an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct. The principles for determining a serious and irreversible impact (SAII) are provided in the Amended BDAR.

Three species have been identified within the Subject Land which meet one or more of the above principles of a SAII species. These include: Little Bent-winged Bat, Large Bent-winged Bat, and *Rotala tripartita*.

The amended Project will not result in impacts to breeding habitat (caves, tunnels, mines, culverts) of the Little Bent-winged Bat or Large Bent-winged Bat, as such, no further assessment is required.

As detailed in **Section 6.5.3.2**, *Rotala tripartita* was recorded in surveys conducted in January 2025 following above average rainfall conditions. The details regarding the identification, avoidance, management and impacts associated with this species is detailed in **Section 6.5.4**.

An assessment of SAII has been completed for this species and included as Appendix 7 of the Amended BDAR. As an SAII is possible, additional and appropriate measures have been included, in accordance with section 7.16 of the BC Act. These will be developed further in consultation with CHPR, but include:

- a designated conservation area managed and incorporated within the Biodiversity Management Plan
- commitment to maintain hydrological flows to retained vegetation where Rotala tripartita occurs
- stringent monitoring of habitat and individuals during optimal conditions and enact trigger response actions where required
- adaptive management and novel approaches to access tracks within or adjacent to 50 m buffer locations of known Rotala tripartita records.

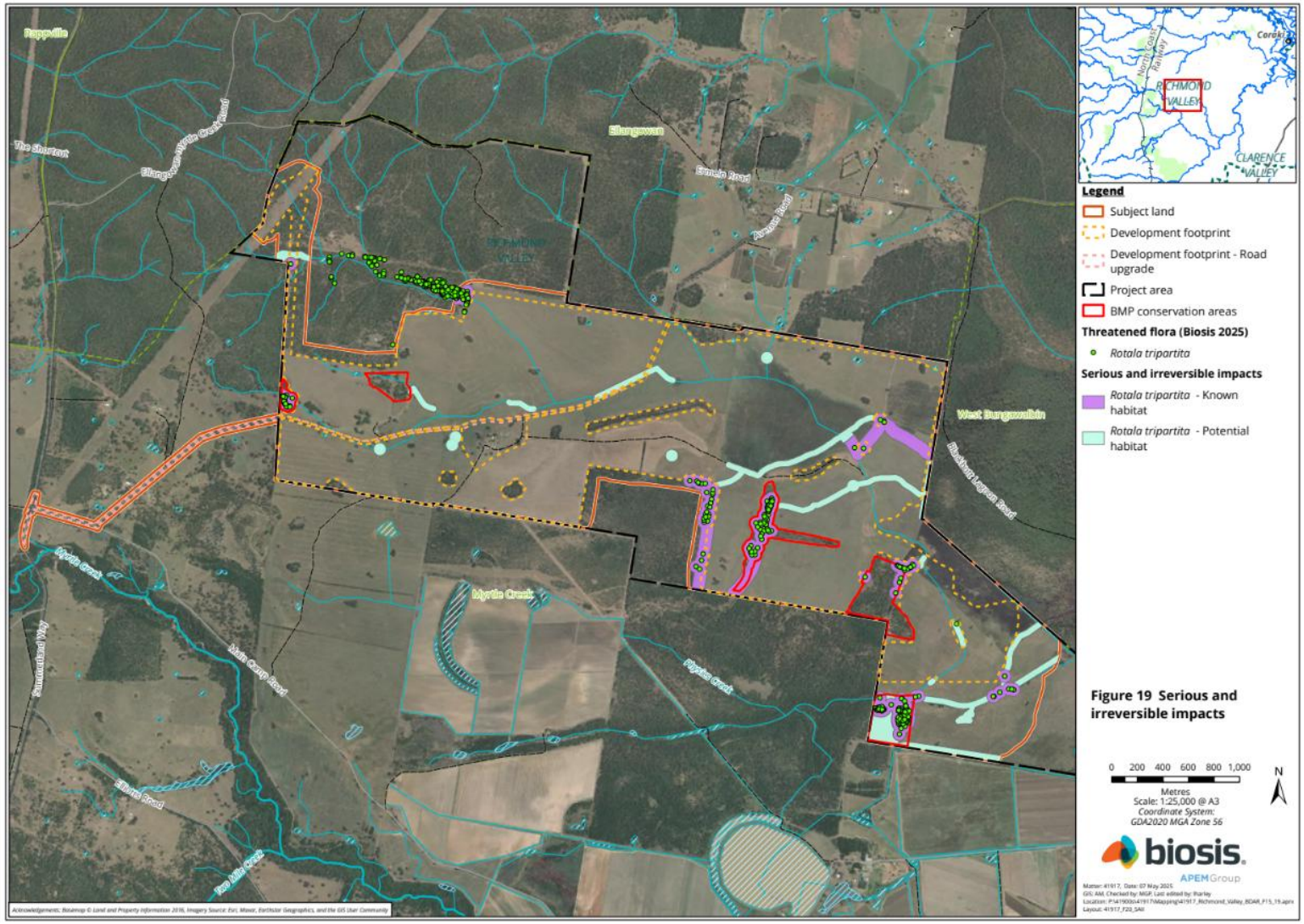


Figure 6.5 Serious and Irreversible Impacts

6.5.6.2 Impacts Requiring Offsets

The offset requirement for the amended Project was calculated using the BAM Calculator.

Table 6.18 provides an overview of the updated credit offsets required for the amended Project. The area figures in column two reflects the rounding of the BAM-C.

Table 6.18 Credit Offsets

Class	Vegetation Zone/Species	Impact	Offset Requirement (credits)
Ecosystem	4046_Moderate	Direct	65
Ecosystem	3428_Moderate	Direct	272
Ecosystem	3428_Low	Direct	23
Ecosystem	3420_Good	Direct	16
Ecosystem	3420_Moderate	Direct	53
Ecosystem	3420_Regen	Direct	45
Ecosystem	3965_Cat1	Direct	15
Species	Barking Owl	Direct	322
Species	Southern Myotis	Direct	133
Species	Squirrel Glider	Direct	262
Species	Brush-tailed Phascogale	Assumed	492
Species	Common Planigale	Direct	492
Species	Green-thighed Frog	Assumed	52
Species	*Rotala tripartita*	Direct	102
Scattered Trees	3420-Clarence Lowland Ironbark-Spotted Gum Grassy Forest	4	4
Scattered Trees	3428-Northern Lowland Red Gum-Swamp Turpentine Grassy Forest	13	11
Scattered Trees	4046-Northern Lowland Swamp Turpentine-Red Gum Forest	11	11
Total	N/A	N/A	2,359

Species polygons for the above seven species credit species impacted by the amended Project are illustrated on **Figure 6.6**.

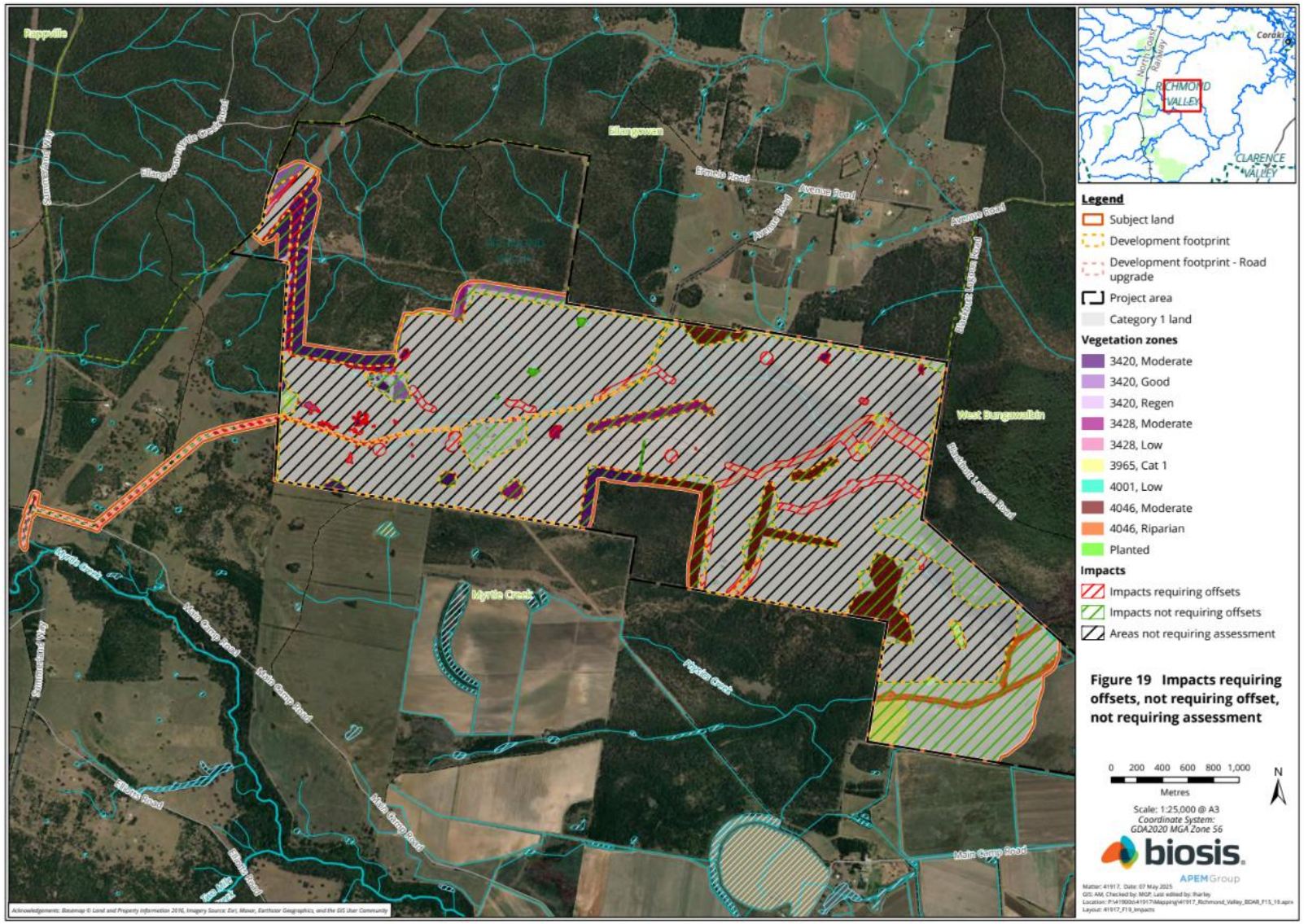


Figure 19 Impacts requiring offsets, not requiring offset, not requiring assessment

Figure 6.6 Impacts Requiring Offset

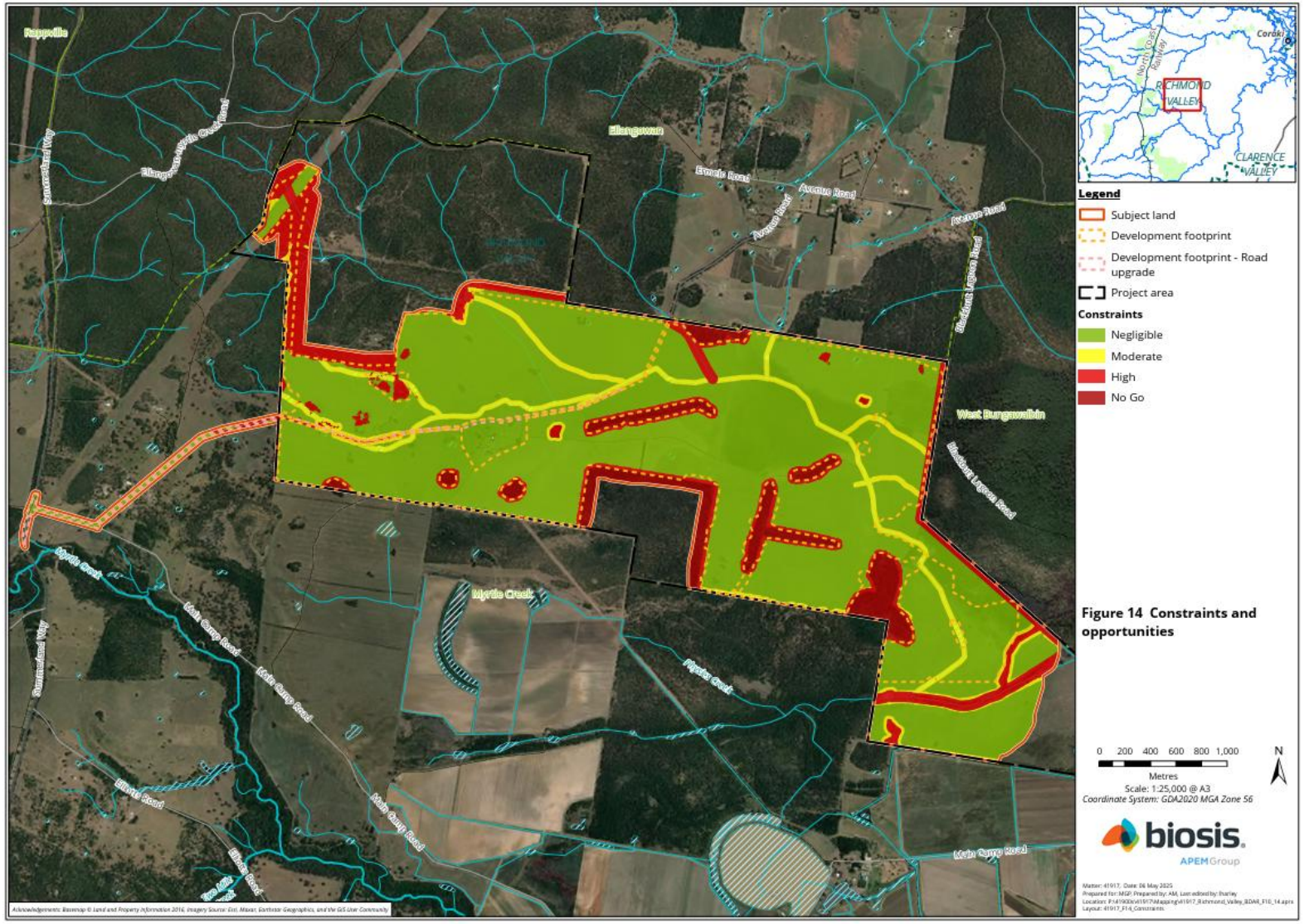


Figure 6.7 Constraints

6.5.7 Cumulative Impacts

Given the minimal changes proposed in the Amended Project and the reduction in scope and scale of the proposed Myrtle Creek Solar Farm there are no additional biodiversity-related cumulative impacts anticipated.

6.6 Aboriginal Heritage

An Addendum ACHA has been prepared by Umwelt (2024) to assess the potential Aboriginal heritage impacts of the Amended Project. The Addendum ACHA is provided in **Appendix G** and should be read in conjunction with the ACHA prepared for the EIS. The amendments to the EIS Project with the potential to influence the Addendum ACHA are outlined in **Table 6.19.**

Table 6.19 Amendments that Influence the Addendum ACHA

Amendment Description	Potential to influence aspects
BESS size and model	Yes – Amendments assessed in **Section 6.6.2**.
BESS Inverters	Nil – No change to or additional impacts.
Transmission line cut in area	Yes – Amendments assessed in **Section 6.6.2**.
Fence Line/Development Footprint	Yes – Amendments assessed in **Section 6.6.2**.
Intersection Vegetation Clearence	Yes – Amendments assessed in **Section 6.6.2**.
Solar Panels	Nil – No change to or additional impacts.
OSOM Transport Route	Nil – No change to or additional impacts.

6.6.1 Consultation

It was concluded that the changes to the EIS Project were not significant enough to warrant specific consultation with RAPs regarding the amendments. The Amendments are wholly contained within the Project Area and located in the existing surveyed areas or areas in close proximity with the same landforms. Field surveys during the EIS phase identified one Aboriginal site located within the EIS ACHA study area and the proposed amendments will not increase disturbance in areas considered high potential for Aboriginal sites.

Informed by consultation during the EIS phase, strong cultural values of Aboriginal communities towards landscapes and cultural heritage sites continue to be recognised.

Consultation with RAPs has continued to provide general updates of the status of the Project including email correspondence on 20 February 2025.

6.6.2 Impact Assessment

Umwelt reviewed the Amended Development Footprint against the EIS ACHA findings and concluded that no additional archaeological investigation is needed.

Key points include:

- The Project Area, including the amended Development Footprint is not a sensitive archaeological landscape, with much of it being a stagnant floodplain. The Project Area was used transiently as opposed to long-term past Aboriginal habitation, limiting the potential for archaeological evidence.
- A three-day survey with RAPs in July 2023 for the EIS inspected all landform types, covering crests, hill slopes, flats, and watercourses, and found no areas of Potential Archaeological Deposit.
- The original survey's methodology remains valid as the amended Development Footprint does not introduce new landform types.
- The Addendum ACHA determined that the Project Area is not considered likely to feature subsurface archaeological deposits, and outside of the single identified artefact RVSF-UMW-01, there is low potential for further surface artefacts to be identified.
- Overall, the Amended Development Footprint does not warrant further archaeological surveys or excavations.

6.6.3 Cumulative Impacts

There are no additional cumulative impacts associated with the Amended Project compared to the EIS Project presented in the EIS.

6.6.4 Management and Mitigation Measures

No additional Aboriginal cultural heritage mitigation is anticipated to be required for the construction or operation of the EIS Project.

6.7 Noise and Vibration

An NVIA Addendum report (**Appendix E**) has been prepared to assess the proposed amendments and is supplementary to the previously prepared NVIA (Umwelt, 2024). The amendments to the EIS Project with the potential to influence the NVIA are outlined in **Table 6.20**.

Table 6.20 Amendments that Influence the NVIA

Amendment Description	Potential to influence NVIA
BESS size and model	Yes – Amendments assessed in **Section 6.7.2**.
BESS Inverters	Yes – Amendments assessed in **Section 6.7.2**.
Transmission line cut in area	Nil – No change to or additional impacts.
Fence Line/Development Footprint	Nil – No change to or additional impacts.
Intersection Vegetation Clearence	Nil – No change to or additional impacts.
Solar Panels	Nil – No change to or additional impacts.
OSOM Transport Route	Nil – No change to or additional impacts.

6.7.1 Construction Noise and Vibration Assessment

The proposed amendments as described in **Section 3.0** do not affect the construction noise or vibration assessment presented in the EIS and as such no amended construction noise assessment was required.

6.7.2 Road Traffic Noise Assessment

The proposed amendments as described in Section 3.0 do not affect the road traffic assessment presented in the EIS and as such no amended road traffic noise assessment was required. While the OSOM transport route has been amended the main access along Main Camp Road and Avenue Road which was the subject of the road traffic noise assessment remains as per the EIS Project.

6.7.3 Operational Noise Assessment

The Amended Project includes amendments to the BESS size, model and number of inverters. The nearest sensitive receivers are consistent with the EIS Project except for D3-47 which is now associated with the Amended Project. See **Figure 6.8** and **Figure 6.9** to compare the predicted noise level change from the EIS Project to the Amended Project demonstrating the inclusion of D3-47 within the 35 dBA noise contour. The noise levels have been predicted under default worst-case meteorological conditions (D-class with 3 m/s windspeed or F-class with 2 m/s windspeed).

Predicted noise levels are generally consistent with the EIS (within 2 dB(A)), except at receiver D3_8 where a 4 dB(A) increase is predicted although this increase does not elevate the impact rating at this receiver. The operational noise levels at all non-associated receivers are predicted to comply with the day, evening and night noise limits in accordance with the *Noise Policy for Industry* (NPfI, 2017).

6.7.4 Cumulative Impacts

Consistent with Section 6.16.3.2 of the EIS (Umwelt , 2024), potential noise impacts from corona discharge (i.e. hissing or crackling sound from the transmission line) are not anticipated.

Any potential cumulative construction noise impacts are anticipated to be lower than the EIS, as the Myrtle Creek project has been amended to comprise only a BESS and there will no longer be a solar farm and associated construction activity and traffic movements.

6.7.5 Management and Mitigation Measures

No additional noise mitigation is anticipated to be required for the construction or operation of the Amended Project.

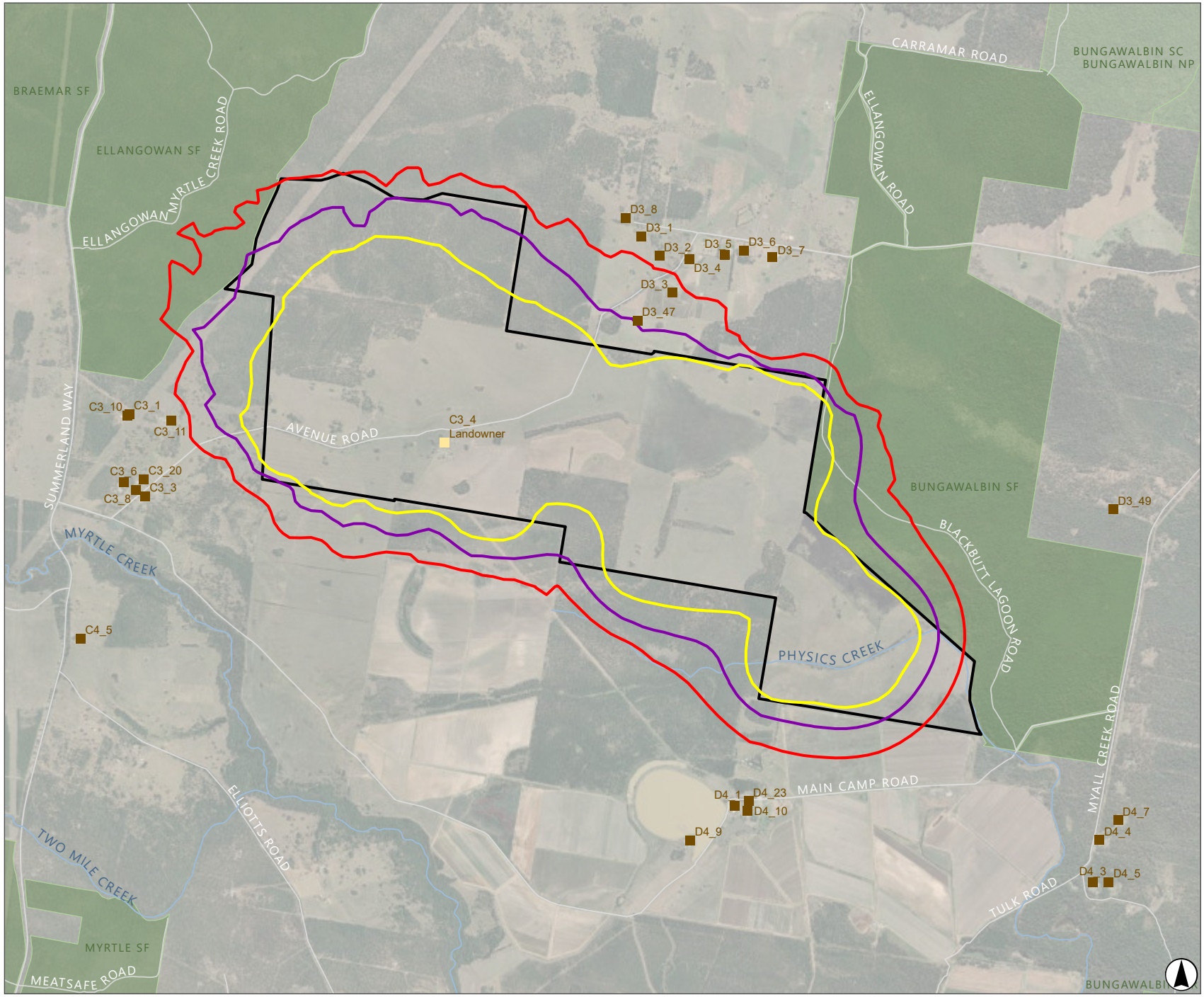


Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

FIGURE 6.8

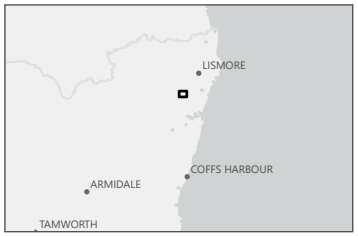
Predicted Operational Noise Levels under default Worst-case Meteorological Conditions, LAeq(15 min) dB(A) - EIS Project

Legend

- Project Area
- Associated Sensitive Receiver
- Non-Associated Sensitive Receiver
- NPWS Reserve
- State Forest
- Roads
- Watercourse

Predicted Noise Levels, LAeq(15 min) dB(A)

- 30
- 35
- 40



0 1 2

Kilometers

Scale 1:50,000 at A4
GDA 1994 MGA Zone 56

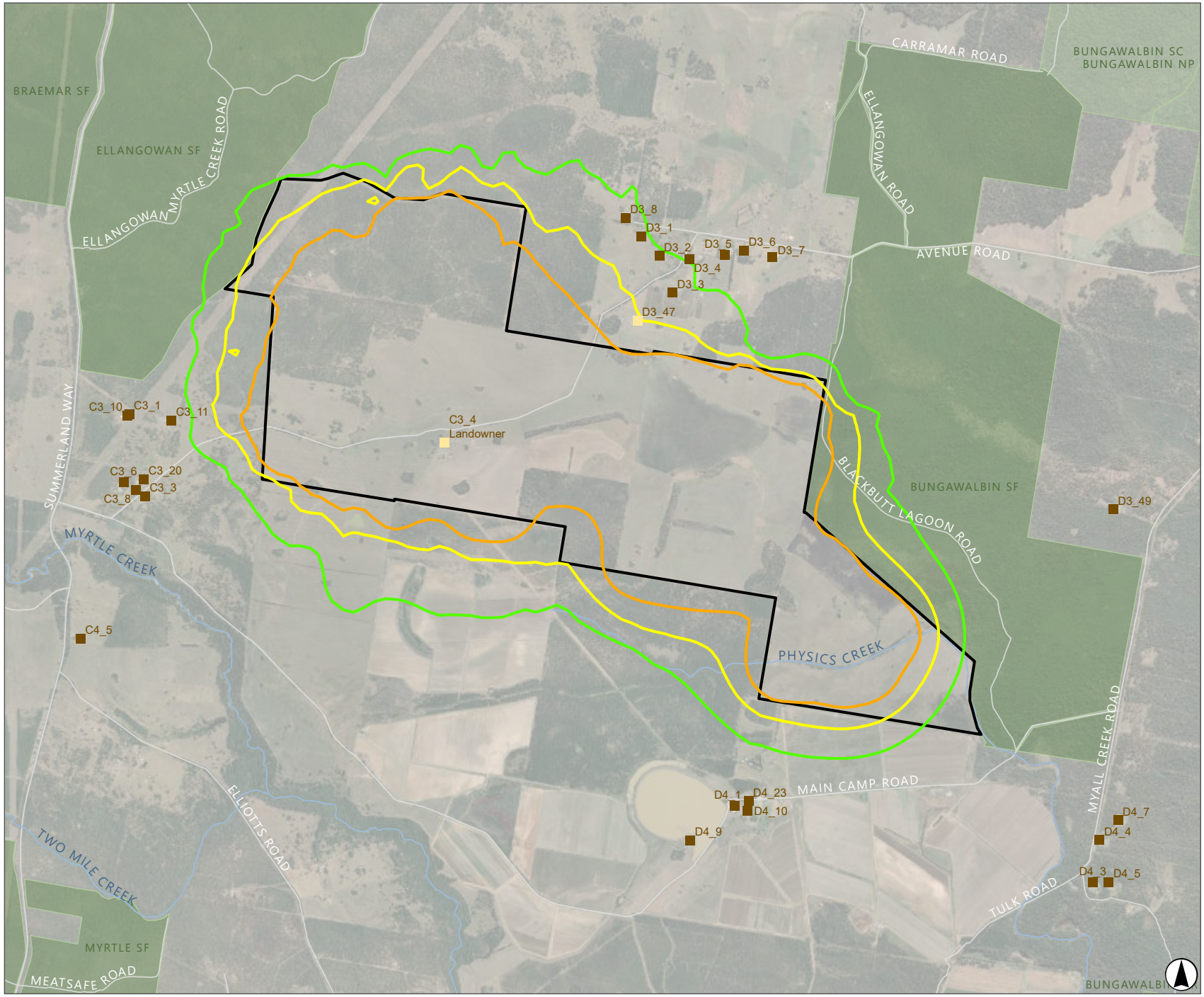


FIGURE 6.9

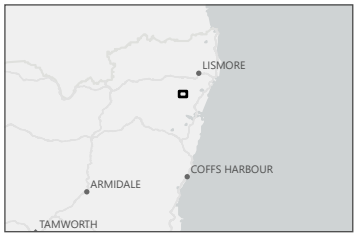
Predicted Operation Noise Levels under Default Worst-case Meteorological Conditions LAeq (15 min) dB(A) - Amended Project

Legend

- Project Area
- Associated Sensitive Receiver
- Non-Associated Sensitive Receiver
- NPWS Reserve
- State Forest
- Roads
- Watercourse

Predicted Noise Levels, LAeq(15 min) dB(A)

- 30
- 35
- 40



0 1 2

Kilometers

Scale 1:50,000 at A4
GDA 1994 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

7.0 Justification of the Amended Project

This section provides a justification of the Amended Project, taking into consideration the environmental, social and economic impacts, as compared to the EIS Project, as well as considering the strategic context and suitability of the Amended Project. The Amended Project is also considered in the context of the principles of ecologically sustainable development (ESD) as defined in Schedule 2 of the EP&A Regulation.

7.1 Environmental, Economic and Social Impacts

The changes proposed by the Amended Project were developed in response to ongoing consultation with agencies, progression of detailed design, and submissions received during the EIS exhibition period. Ark Energy, in consultation with agencies, has sought to update features of the EIS Project infrastructure to align with guidelines, agency requirements and existing infrastructure within the Project Area.

Key changes from the EIS Project to the Amended Project include reduced Development Footprint to avoid biodiversity values, changed BESS size and model, increased number of inverters within the BESS, update to the perimeter fence line, increased transmission line cut in area and amendment to vertical arrangement of solar panels. For most environmental aspects there would be no substantial change to impacts as a result of the Amended Project, when compared with the EIS Project. The Amended Project can comply with statutory requirements and relevant standards, policies and guidelines.

7.2 Strategic Context

NSW is transitioning towards a reliable, affordable, and sustainable electricity future. The NSW Government is actively working to provide cost effective, reliable, and clean electricity for homes and businesses (EnergyCo, 2023). The REZs were officially declared under the Electricity Infrastructure Investment Act 2020, with this Project located 95 km northeast of the New England REZ. The NSW Government has emphasised that REZs are crucial for delivering affordable energy and preparing the state for the retirement of coal power stations in the coming decades.

The increase in BESS total power capacity and number of inverters aims to enhance system redundancy and reliability. It will also improve electrical coordination between the co-located solar farm and the point of connection. These changes will allow for an increased max power output, enhancing the Amended Project's ability to respond to NEM changes and requirements. The increased power capacity also ensures the BESS will be capable of continuously supplying and absorbing reactive power at the required level at the connection point, at any active power level and voltage within the normal operating range. This oversized design ensures compliance with voltage support obligations and contributes to overall power system security.

The Amended Project aligns with the strategic direction of the NSW and Australian energy generation markets and supports the planned transition to a higher contribution of renewable energy in Australia. Ark Energy, a seasoned renewable energy developer in Australia with a proven track record in large-scale renewable energy projects, is well-positioned to advance the Amended Project.

7.3 Suitability of the Site

The focus of the amendments to the EIS Project Area have been on developing a design that is constructable and optimises the EIS Project to better suit the needs the NSW and Australian energy generation market whilst minimising environmental and social impacts in particular for biodiversy valies at the Site.

The site itself remains suitable for large scale renewable energy generation. The location of cleared agricultural land adjacent to the 330 kV network is highly desirable. Through consultation with TransGrid, it was determined that the cut in area is required to increase to ensure enough area is cleared for the safe construction and management of the transmission line connection point. These changes are entirely within the Project Area although change the Development Footprint in the north-western portion of the Project Area as detailed in **Figure 3.1**.

Changes to the fence line will increase the suitability of the EIS Project for host landholders. Aligning the EIS Project with the existing fences will reduce disturbance to the otherwise cleared, agricultural land. Rehabilitation of fences will better suit future use of the land and offer host landholders the option to retain upgraded fences and reduce decommissioning impact and cost.

7.4 Ecologically Sustainable Development (ESD)

To justify the Amended Project with regard to the principles of ESD, the benefits of the Amended Project in an environmental and socio-economic context should outweigh any negative impacts.

The principles of ESD encompass the following:

- The precautionary principle.
- Intergenerational equity.
- Conservation of biological diversity.
- Valuation, pricing and incentive mechanisms.

An assessment of the Amended Project against the principles of ESD is provided in the sections below.

7.4.1 The Precautionary Principle

The EP&A Regulation defines the precautionary principle as:

> *'if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:*
>
> - *careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment*
> - *an assessment of the risk-weighted consequences of various options.'*

Ark Energy is the Proponent of 19 renewable energy projects across Australia which are at various phases of the development process from construction through to energy generation. Their approach to developing and operating solar farms is proven and means that risks can be qualified and quantified with a relatively high level of certainty.

The technical specialists who have completed assessments have all worked in solar and renewable projects providing experience to ensure the successful implementation and operation of the Amended Project. Umwelt, as the EIS lead consultant, have worked numerous projects in NSW, navigating regulatory frameworks and environmental considerations.

In order to achieve a level of scientific certainty in relation to potential impacts associated with the proposed amendments to the EIS Project, extensive evaluation of all the key components of the Amended Project have been undertaken. Detailed assessment of all key issues and the identification of management measures has been undertaken and are comprehensively documented in this Amendment Report.

The assessment process has involved detailed studies of the existing environment, and where applicable the use of scientific modelling to assess and determine potential impacts as a result of the Amended Project. To this end, there has been careful evaluation to avoid and minimise the risk of irreversible damage to the environment, wherever possible.

The decision-making process for the design, impact assessment and development of management processes has been transparent through the consultation process with both government authorities, landowners and the community.

Consistent with the precautionary principle, the environmental assessment of the Amended Project has sought to minimise environmental impact through the avoidance of impacts and a range of mitigation measures are proposed to address identified residual impacts.

7.4.2 Intergenerational Equity

The EP&A Regulation defines the principle of intergenerational equity as:

> *'... that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.'*

Intergenerational equity refers to equality between generations. It requires that the needs and requirements of today's generations do not compromise the needs and requirements of future generations in terms of health, biodiversity and productivity.

The Amended Project is considered to be consistent with the principle of intergenerational equity as it can be carried out in a way that would maintain the health, diversity and productivity of the environment now and into the future. The key benefit of the Amended Project will be Project's strong contribution to energy capacity, reliability and security in the transition away from coal-fired power generation to renewables. The amendments proposed to the EIS Project enable more electricity stroage capacity with minor adjustments to the layout and design of the EIS Project.

The Amended Project as a whole is designed to contribute to the net zero emissions targets that Australia and the state of New South Wales has committed to. This target is in support of greater intergenerational equity and ensuring that future generations inherit a liveable planet.

The addition of biodiversity offset credits, in combination with the biodiversity enhancement measures, means the Amended Project will further contribute to intergenerational equity by increasing the area of land under conservation.

7.4.3 Conservation of Biological Diversity

The EP&A Regulation identifies that the principle of conservation of biological diversity and ecological integrity should be a fundamental consideration in the decision-making process. The conservation of biological diversity refers to the maintenance of species richness, ecosystem diversity and health and the links and processes between them. Ark Energy has demonstrated a commitment to conserving biodiversity by refining the Development Footprint and implementing mitigation measures in response to identified threatened species, particularly following the discovery of *Rotala tripartita* across the Project Area, as detailed in the amended BDAR in **Appendix E**.

7.4.4 Valuation Principle

The goal of improved valuation of natural capital is included in Agenda 21 of Australia's Intergovernmental Agreement on the Environment. The principle has been defined in the EP&A Regulation as follows:

> *'… that environmental factors should be included in the valuation of assets and services, such as:*
>
> *i. polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement;*
>
> *ii. the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste; and*
>
> *iii. environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.'*

Ark Energy has intrinsically valued the environmental resources by designing the Amended Project to avoid and minimise potential environmental and social impacts as much as practicable. The Amended Project is considered to be consistent with the valuation principle of ESD as Ark Energy will be required to pay the full costs associated with:

- Ensuring the Amended Project is designed and implemented in accordance with the relevant standards.
- Avoiding impacts where possible through the design process.
- Offsetting residual impacts to biodiversity in accordance with State and Commonwealth guidelines.
- Management measures to minimise potential environmental and social impacts.

Implementing the mitigation measures for the Amended Project would impose an economic cost, increasing both the capital and operating costs of the Amended Project so as to provide sound environmental outcomes. In this manner, environmental resources have been given appropriate valuation.

The Amended Project is considered ecologically sustainable, due to the social, economic and environmental benefits discussed, and the mitigation measures put in place to protect from adverse impacts on the environment.

7.5 Conclusion

- The Project is consistent with the objectives of the NSW Electricity Strategy and Infrastructure Road Map (NSW Government, 2020), in aiming to provide large-scale renewable electricity generation that is affordable and reliable. With a proposed capacity of approximately 500 MW, the Project will make a material contribution to the existing direction of both the Commonwealth and NSW commitments to increase renewable energy generation and reduce carbon emissions across the NSW and Australian economies.

- The Project has been designed and progressively refined in collaboration with key stakeholders to avoid and minimise impacts to key environmental, cultural and social values where practicable, and to maximise potential benefits to impacted communities.

- The assessment findings outlined in Section 6.0 of the Project EIS (Umwelt , 2024), supported by further clarification and assessment presented in the Response to Submissions Report (Umwelt, 2025) and this Amendment Report, indicate that while there will be environmental and social impacts associated with the Project, the extent of impacts have been minimised through the design process. Where residual impacts are predicted, Ark Energy has committed to management, mitigation and offset measures to address these residual impacts.

- The Amended Project will provide long-term, strategic benefits to NSW, and at the regional and local levels, including:

    - Renewable energy supply to assist with fulfilling the current obligations under State and Commonwealth renewable energy targets.

    - Providing for cleaner reliable electricity generation, assisting with meeting current load demand while reducing greenhouse gas emissions and the impacts of climate change.

    - Providing regional investment in the NSW renewable energy sector.

    - Generating approximately $1.2 billion in capital investment within NSW during construction.[1]

    - Employment generation creating on average 150 direct jobs during the construction phase and approximately 13 direct jobs nationally during the operational phase.

    - CBF payments and increased Council land tax returns from the Project Area.

    - Ongoing economic stimulus associated with the operation of the Project is estimated at approximately $145 million over 30 years.

[1] Capital investment within NSW is calculated at 40% of EDC. In the Project EIS, the EDC was calculated at $2.5b, based on a 143 WTG layout. The EDC has not been recalculated to reflect the removal of two (2) WTGs in the Amended Project.

- The Project will also provide additional direct financial benefits to the region and local community, including payments to host and neighbouring landowners via private agreements and a community benefit sharing scheme.
- On this basis, and subject to the implementation of the mitigation, management and offsetting commitments outlined in the Project EIS, Response to Submissions Report, and supplemented by the additional measures presented in Appendix B of this Amendment Report, it is considered that the Project is consistent with the objects and requirements of the EP&A Act and is in the public interest.

8.0 References

Access Traffic . (2025). *Traffic Impact Assessment .*

Access Traffic. (2024). *Richmond Valley Solar Farm - Traffic and Transport Impact Assessment - Rev B.*

Access Traffic. (2025). *Amendment Traffic and Transport Impact Assessment.*

AEMO. (2024, 10). *Forecasting and Planning*. Retrieved from AEOM Access Markets Portal: https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information

Arcadis. (2024). *Richmond Valley Solar Farm Flood Study & Impact Assessment .*

Biosis. (2025). *Revised Biodiversity Development Assessment Report.*

Biosis. (2025). *Richmond Valley Solar Farm Biodiversity Development Assessment Report - Amended.*

BlackAsh . (2024). *Bushfire Threat Assessment .*

BlackAsh. (2025). *Bushfire Threat Assessment Memo.*

Clean Energy Council. (2024). *Clean Energy Australia Report 2024.*

DECC. (2009). *Interim Construction Noise Guideline .*

DPE. (2022). *Large Scale Solar Energy Guideline.* Department of Planning and Environment.

DPHI. (2024). *Renewable Energy Planning Framework.* Department of Planning, Housing and Infrastructure.

DPIE. (2020). *Biodiversity Assessment Method (BAM)* . Retrieved from NSW Department of Planning, Industry and the Environment: https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-2020.

NSW Government. (2023a). *NSW Government* . Retrieved from NSW Electricity Strategy: https://www.energy.nsw.gov.au/nsw-plans-and-progress/government-strategies-and-frameworks/nsw-electricity-strategy

Parkinson, G. (2023, June 20). *Renew Economy*. Retrieved from “Not fast enough:” AEMO says renewable pipeline is huge, but stuck at the gates, Renew Economy. : https://reneweconomy.com.au/not-fast-enough-aemo-says-renewable-pipeline-is-huge-but-stuck-at-the-gates

RFS . (2019). *Planning for Bushfire Protection.*

Transport for NSW. (2017). *Golden Highway Corridor Strategy.* NSW Government .

Umelt. (2025). *Preliminary Hazards Assessment Memo.*

Umwelt . (2024). *Environmental Impact Assessment - Richmond Valley Solar Farm.*

Umwelt. (2024). *Noise and Vibration Impact Assessment.*

Umwelt. (2024). *Preliminary Hazards Assessment .*

Umwelt. (2025). *Aboriginal Cultural Heritage Impact Assessment Memo.*

Umwelt. (2025). *Noise and Vibration Impact Assessment Memo.*

Umwelt. (2025). *Preliminary Hazards Analysis Memo.*

Umwelt. (2025). *Richmond Valley Solar Farm - Response to Submissions.*

Umwelt. (2025). *Richmond Valley Solar Farm Amendment Report.* Umwelt.