



WESTERN
ENVIRONMENTAL

Bushfire Management Plan

Development Application:
Tathra Wind Farm

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Development Application:
Tathra Wind Farm

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Executive Summary

This executive summary outlines the Bushfire Management Plan (BMP) for the Tathra Wind Farm Development Application, prepared by Western Environmental Approvals Pty Ltd (WEPL) for SynergyRED.

Project Overview and Location

The Tathra Wind Farm project is proposed in the mid-west region of Western Australia, approximately 15 km east of Eneabba and 300 km north of Perth, within the Shire of Carnamah. The development includes:

- Up to 140 wind turbine generators (total capacity up to 1,000 MW).
- Up to 500 MW solar capacity and 500 MW in Battery Energy Storage Systems (BESS).
- Associated infrastructure such as roads, foundations, drainage, electrical substations, operations and maintenance buildings, temporary construction facilities, fire water tanks, and communication towers.

Bushfire Context and Framework

The project area is situated within a designated bushfire prone area (Area 2) in Western Australia. Given the absence of a specific bushfire assessment framework for renewable energy facilities in Western Australia's *State Planning Policy 3.7 (SPP 3.7)*, this BMP draws upon:

- Bushfire Protection Criteria 7 (Commercial and Industrial Development) of Western Australia's *Planning for Bushfire Guidelines*.
- The Country Fire Authority's (CFA) *Design Guidelines and Model Requirements for Renewable Energy Facilities Version 4* (adapted for Western Australia).

Identified Fire Hazards

The BMP identifies various potential fire hazards specific to renewable energy facilities:

Facility Type	Hazard Types	Examples
Wind Energy Facilities	<ul style="list-style-type: none"> • Electrical faults • Chemical hazards • Fire spread • Landscape hazards 	<ul style="list-style-type: none"> • Power surges, lightning • Oil/lubricant leakage • Fire spread from falling debris or airflow • Bushfire ignition from or to the facility
Solar Energy Facilities	<ul style="list-style-type: none"> • Electrical faults • Fire spread 	<ul style="list-style-type: none"> • Panel/inverter faults, retained DC electricity • Close proximity of panel banks and vegetation
Battery Energy Storage Systems (BESS)	<ul style="list-style-type: none"> • Electrical hazards • Chemical hazards • Explosions • Fire spread • Mechanical damage 	<ul style="list-style-type: none"> • Battery faults, overcharging, thermal runaway, internal short circuits • Dangerous goods, spills, reactions • Venting gases • Proximity of batteries • Physical impacts or damage to battery systems

Bushfire Assessment Results

Bushfire Attack Level (BAL): Post-development, all proposed bushfire prone assets at Tathra Wind Farm will be subject to BAL ratings of \leq BAL-12.5.

Radiant Heat Flux: The project has adopted a 10 kW/m² radiant heat flux threshold as best practice for siting wind turbines, BESS yards, and solar farms. This threshold is applied to ensure separation distances prevent ignition from surrounding vegetation.

Asset Protection Zones (APZs): These zones will be established around infrastructure to ensure the radiant heat flux does not exceed the 10 kW/m² threshold. For wind turbines, a 1090 K flame temperature is used, while for BESS and solar farms, a more precautionary 1200 K flame temperature is used, especially considering future habitable buildings. APZs also serve as exclusion zones for future built assets.

Key Mitigation Measures

The BMP proposes comprehensive measures to mitigate bushfire risks:

- **Asset Protection Zones (APZs):** Sufficient APZs will be established and managed in perpetuity in a low fuel state around all wind turbines, BESS yards, and solar farms.
- **Emergency Vehicle Access:** Internal access tracks will have a minimum width of 10 meters and include turnaround heads to accommodate Type 3.4 firefighting appliances. Multiple access points are provided for the Project Area and to individual turbines.
- **Firefighting Water Supply:** The plan includes seventy-eight 50 kL static firefighting water tanks, providing a total of 3.9 ML of water for bushfire protection. These tanks are strategically located (e.g., two 50 kL tanks at each entrance, additional tanks for solar farms at 2 per 200 ha, and twenty-four 50 kL tanks per BESS yard, totaling 1.2 ML per yard) and are set back at least 10 meters from infrastructure.
- **Fire Detection and Suppression Equipment:** On-site buildings, dangerous goods storage, and electrical installations will have suitable fire detection and suppression equipment in accordance with relevant standards. BESS units will have in-built smoke, heat, and combustible gas detectors, along with explosion prevention mechanisms.
- **Fire Breaks:** A minimum 10-meter-wide cleared buffer will be maintained inside the boundaries of BESS yards and solar farms, with APZs often exceeding this. A perimeter firebreak of at least 3 meters wide will be maintained along external boundaries.

Facility-Specific Design

Wind Turbines will be located no less than 300 m apart and equipped with automatic shut-down and disconnection capabilities in case of fire.

Solar Facilities will have a minimum 6 m separation between solar panel banks.

BESS designs will prioritize fire spread prevention between containers and other site elements, considering emergency responder safety, and minimizing impacts from bushfire and internal fires. BESS will include ember protection, suitable ventilation, impact protection, and spill containment for fire water runoff.

Conclusion

WEPL concludes that the proposed Tathra Wind Farm development satisfies the intent, aim, and objectives of SPP 3.7 and the Planning for Bushfire Guidelines, while also addressing the additional requirements of the CFA Guidelines (adapted to Western Australia). The BMP is a living document and will be updated during the detailed design stage, with further BAL reassessments if design or vegetation changes occur.

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1. Introduction

1.1 Proposal Details

Urbis, on behalf of Synergy Renewable Energy Development (the Proponent), is seeking to progress a Development Application (DA) for Tathra Wind Farm, located in the mid-west region of Western Australia within the Shire of Carnamah, approximately 15 km east of Eneabba town site and approximately 300 km north of Perth (hereafter referred to as the Project Area, Figure 1). The proposed DA will result in an intensification of land use and involves the development of a renewable energy facility including (Figure 2):

- Up to 140 wind turbine generators with a total capacity of up to 1,000 MW across the Project Area.
- Up to 500 MW capacity in solar and 500 MW in Battery Energy Storage Systems (BESS), including associated roads, foundation and drainage.
- Associated turbine foundations and hard stand areas.
- A turbine design comprising:
 - Blade length up to 90 m.
 - Tower/tub height between 110 m and 160 m.
 - Turbine tip height up to 250 m.
- Site entrances from public roads and internal access roads between wind turbines and supporting infrastructure.
- Overhead transmission poles or towers and power lines and underground electrical cables.
- Electrical substations and switchyards, including ancillary electrical equipment (e.g. STATCOM).
- Operations and maintenance buildings, workshops and associated car parking.
- Temporary construction facilities, including site offices, construction compounds, laydown areas, gravel borrow pits and concrete batching plant.
- Water abstraction bore(s) for construction activities and associated infrastructure.
- Fire water tanks.
- Communication towers and monitoring masts (meteorological masts) up to 150 m tall.

Several of the aforementioned assets are indicatively proposed to be situated within a designated bushfire prone area (Area 2) as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES, 2024; Figure 2), which typically triggers bushfire planning requirements under *State Planning Policy 3.7 Bushfire* (SPP 3.7; WAPC, 2024a) and reporting to accompany submission of the DA in accordance with the associated *Planning for Bushfire Guidelines* (the Guidelines; WAPC, 2024b). Renewable energy facilities are not captured under this version of SPP 3.7, however an assessment of the proposed facility against Bushfire Protection Criteria 7 (Development - Commercial and Industrial) of the Guidelines has been undertaken in order to appropriately address and mitigate bushfire risk associated with the project. Western Environmental Approvals Pty Ltd (WEPL) was commissioned to prepare a Bushfire Management Plan (BMP) to support the DA. This BMP has been prepared by Bushfire Consultant Bridie Farrar and Senior Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802).

An indicative layout of the proposed assets has informed the assessments in this BMP. It should be noted that this layout is subject to design changes and although some of the proposed assets are within bushfire prone areas, design changes may result in these being situated outside of the bushfire prone area, meaning the bushfire mitigation measures prescribed in this BMP will not be applicable. Similarly, if any assets which are currently proposed to be sited in non-bushfire prone areas are moved within a bushfire prone area, an assessment of these assets will be triggered.

1.1.1 Site context

The Project Area is located within the Shire of Carnamah and is zoned Rural under the Shire of Carnamah Local Planning Scheme No. 2. The Project Area contains a mixture of unmanaged, classifiable vegetation as well as cleared areas. The Project Area is bound by:

- Three Springs-Eneabba Road, Wotto Nature Reserve and vegetated rural land to the north.
- Reserve Road, Garibaldi Willis Road, Tathra National Park and vegetated rural land to the east.
- Vegetated rural land to the south.
- Rose Thomson Road, White Gums Nature Reserve and vegetated rural land to the west.

1.2 Purpose and Application of the BMP

This BMP has been prepared in accordance with SPP 3.7 and the Guidelines to support the assessment of the DA for the development, in its current layout within the Project Area submitted to the Shire of Carnamah via the Regional Development Assessment Panel.

In addition, this BMP provides strategies and guidance to reduce the level of bushfire risk exposure for the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

Renewable energy facilities are considered vulnerable to bushfire and may also pose a fire risk due to the associated hazards outlined in Table 1. Hazards specific to this project will be identified through an appropriate risk management process. Given the absence of a statewide bushfire framework for assessing renewable energy facilities in Western Australia at the time of preparation of this BMP, an assessment of the proposed wind turbines, solar assets and BESS assets against the Country Fire Authority's (CFA) *Design Guidelines and Model Requirements for Renewable Energy Facilities Version 4* (the CFA Guidelines; State of Victoria, 2023) adapted to Western Australia, has been undertaken to guide the detailed design of Tathra Wind Farm (Appendix A).

Consideration has been given to the Shire of Carnamah's Local Planning Policy (LPP) - Wind Farm/Turbines. This BMP considers the recommendations of the LPP as they relate to bushfire planning. An assessment against the CFA Guidelines has been undertaken as per the LPP, however a Broader Landscape Assessment (BLA) has not been completed to support the proposed development. As per SPP 3.7, the BLA is required for strategic planning proposals, structure plans and subdivision applications and is not applicable to DAs. A BLA is an extremely broad scale assessment that considers surrounding bushfire risk and evacuation potential to identify land that may not be suitable for intensification of development which results in the creation of habitable buildings - its application in considering a DA for non-habitable infrastructure is inappropriate. Additionally, the LPP's explanation of the relevance of a BLA to wind farms references the need to avoid areas of Extreme Bushfire Hazard Level (BHL) when siting these developments. A BHL assessment is not the correct bushfire assessment methodology for a DA, nor will it provide the correct inputs for a BLA to be conducted. Instead, this BMP contains a Bushfire Attack Level (BAL) assessment, in accordance with the Guidelines. In our professional opinion, this portion of the LPP is inconsistent with SPP 3.7 and is not relevant to the proposed development; therefore, should not be considered when assessing the DA.

Table 1: Fire Hazards Associated with Renewable Energy Facilities (State of Victoria, 2023)

Facility Type	Potential Fire Hazards
Wind Energy Facilities	<ul style="list-style-type: none"> • Electrical hazards, such as wind turbine electrical faults; power surges; hot surfaces; lightning strike. • Chemical hazards, such as the leakage of oils and lubricants within the turbine/ancillary equipment. • Potential fire spread, due to air flow impact or falling debris from fire-impacted turbines. • Landscape hazards, such as bushfire/grassfire ignition from fire within the facility, or external ignition of site infrastructure from embers or radiant heat. • Falling blades. • Wind turbines as a potential obstruction for aerial firefighting.
Solar Energy Facilities	<ul style="list-style-type: none"> • Electrical hazards, such as panel/inverter electrical faults; power surges; lightning strikes; water ingress; retained DC electricity in solar panels after shut-down/isolation. • Potential fire spread and limited emergency response due to proximity of panel banks to each other, on-site infrastructure and vegetation (including screening vegetation).

Facility Type	Potential Fire Hazards
Battery Energy Storage Systems (BESS)	<ul style="list-style-type: none"> • Electrical hazards, such as battery faults; overcharging; rapid discharge; loss of remote monitoring systems; internal short circuits; overheating; water ingress; lightning strike (leading to thermal events/runaway). • Chemical hazards, such as the inherent hazards of the stored dangerous goods; spills and leaks of transformer oil/diesel, refrigerant gas/coolant; chemical reactions. • Explosions, from ignition of venting gases. • Potential fire spread due to proximity of batteries (and containers/enclosures) to each other, on-site infrastructure and vegetation (including screening vegetation). • Mechanical damage to battery containers/enclosures due to vehicular impact. • Landscape hazards, such as bushfire/grassfire ignition from fire within the facility, or external ignition of site infrastructure from embers, radiant heat and flame contact.

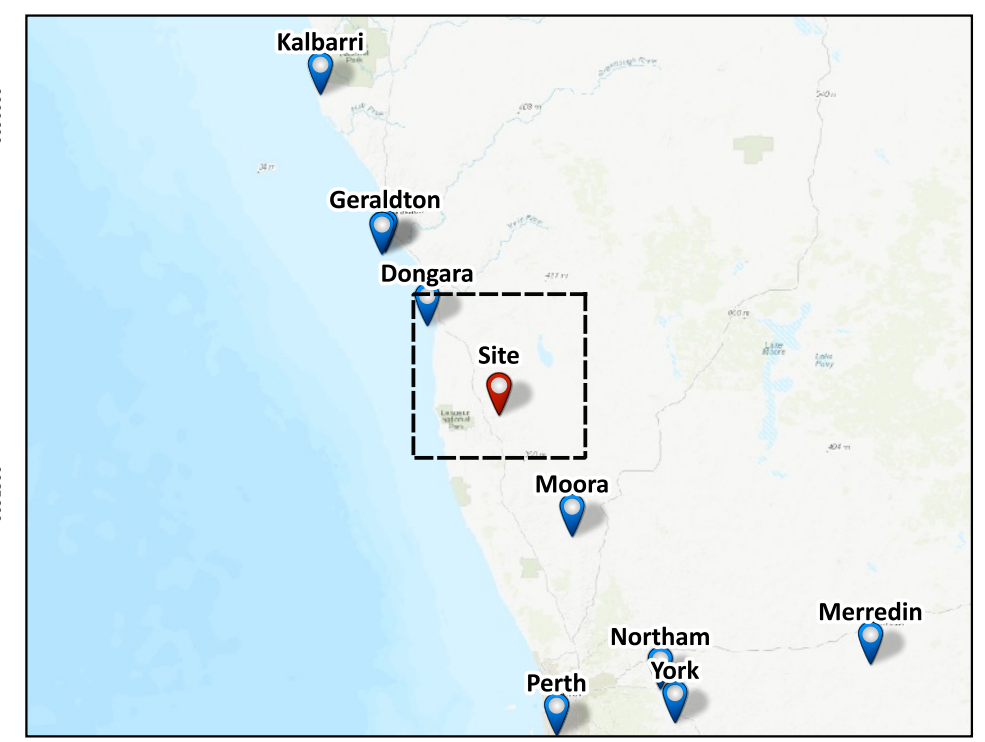


Figure 1: Site Overview

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Tathra Wind Farm Project Area	<table border="1"> <thead> <tr> <th>No</th> <th>Description</th> <th>Drawn</th> <th>Approved</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Original issue</td> <td>SM</td> <td>BF</td> <td>19/6/2025</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No	Description	Drawn	Approved	Date	A	Original issue	SM	BF	19/6/2025																				
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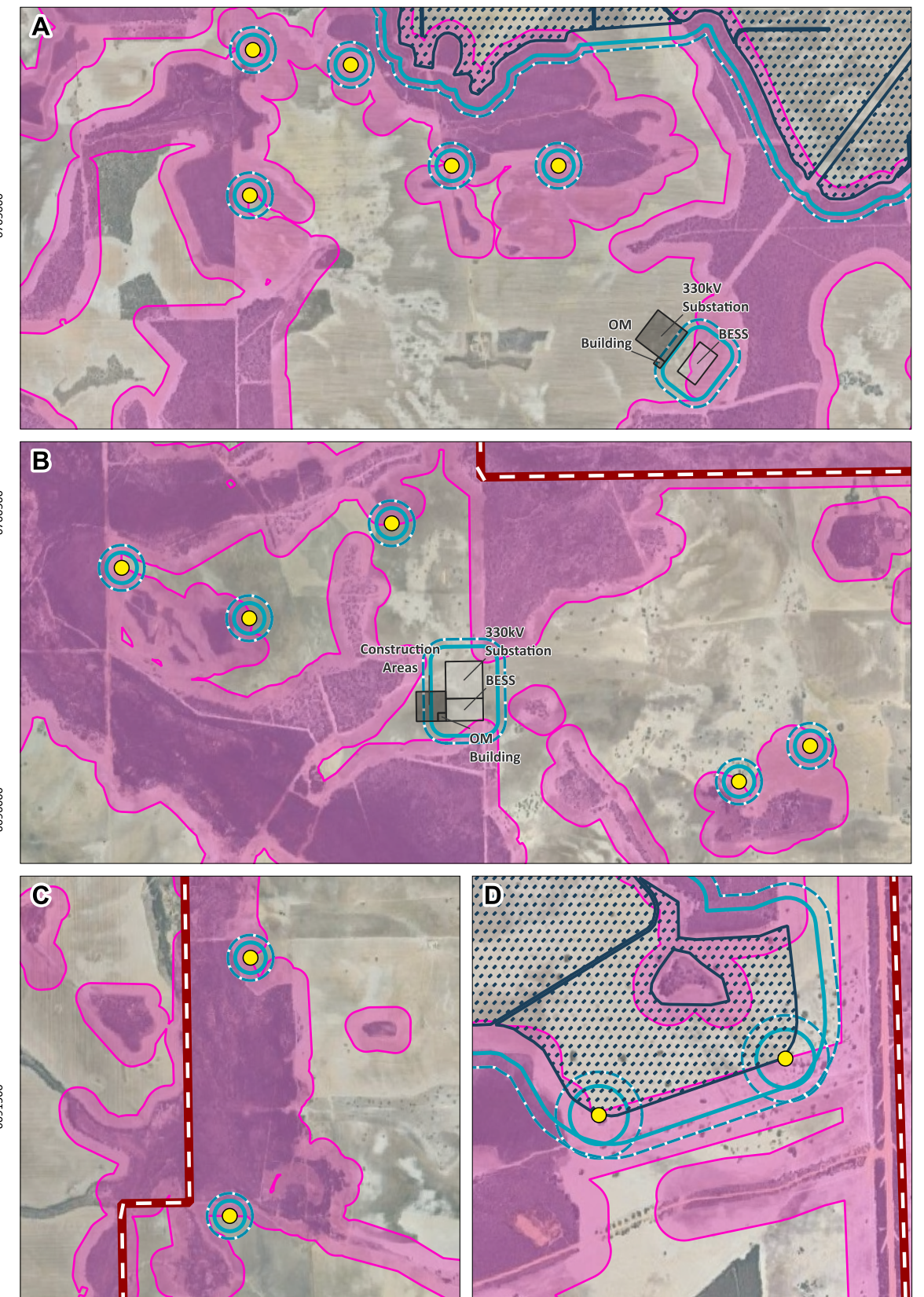
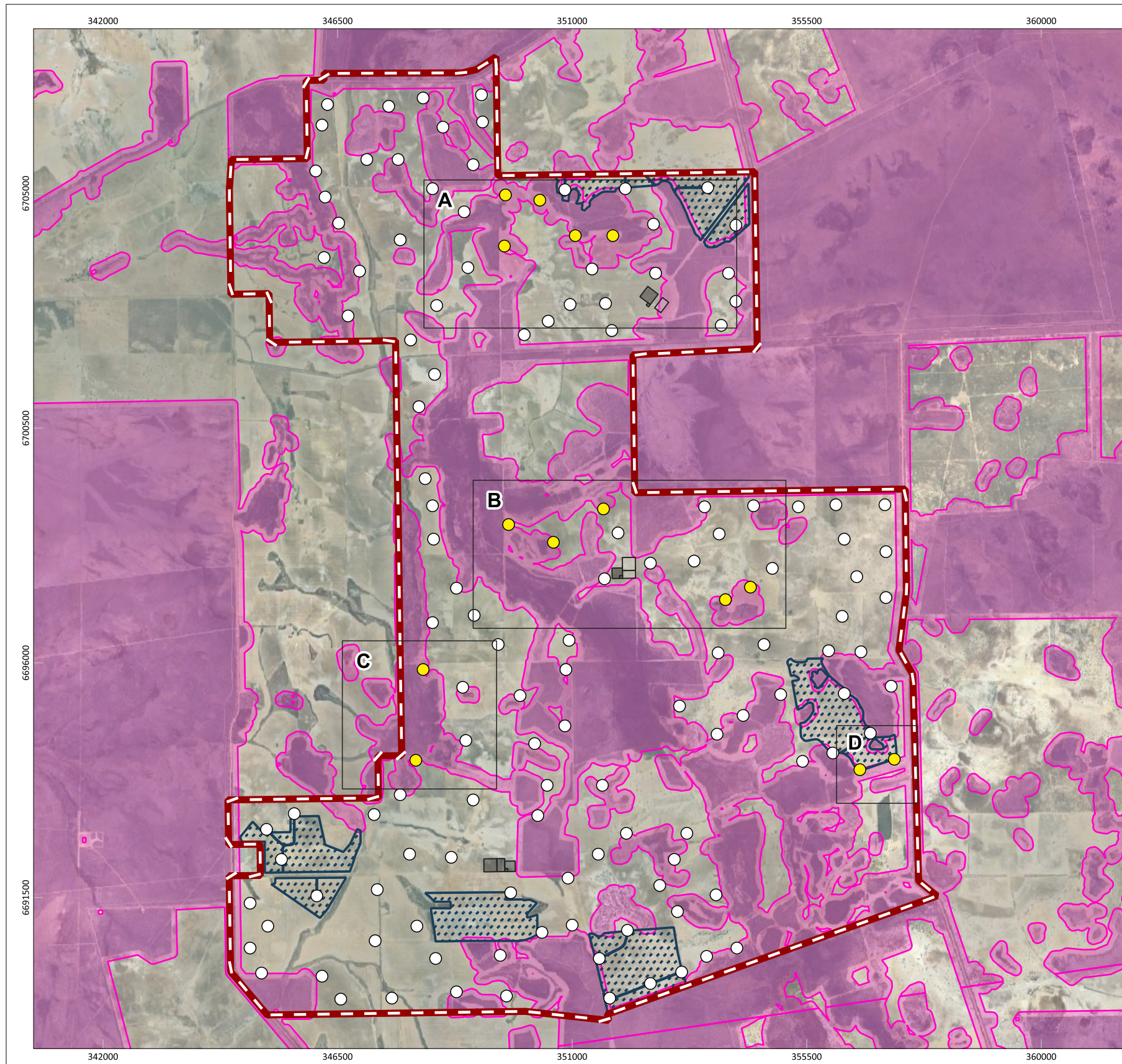


Figure 2: Site Plan and Bushfire Prone Areas

		PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm	Legend <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <ul style="list-style-type: none"> Tathra Wind Farm Project Area Buffer 100m Buffer 150m Bush Fire Prone Area Planning (OBRM-023) Bushfire Prone Area 2 </div> <div style="width: 45%;"> <ul style="list-style-type: none"> ● Indicative Wind Turbine (Bushfire Prone) ○ Indicative Wind Turbine (Not Bushfire Prone) Indicative Asset (Bushfire Prone) Indicative Asset (Not Bushfire Prone) Indicative Solar Array </div> </div>																									
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2. Environmental Considerations

SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values.

2.1 Native Vegetation - Modification and Clearing

WEPL has undertaken a desktop assessment over the site to identify if any environmental values may be impacted by the bushfire mitigation measures proposed within this BMP. The datasets included in this assessment are:

- Ramsar Sites (DBCA-010).
- Geomorphic Wetlands Cervantes Eneabba (DBCA-015).
- Threatened and Priority Flora (DBCA-036).
- Threatened and Priority Fauna (DBCA-037).
- Threatened Ecological Communities (DBCA-038).
- Native Vegetation Extent (DPIRD-005).
- Bush Forever Areas 2000 (DPLH-019).
- Clearing Regulations - Environmentally Sensitive Areas (DWER-046).

Multiple areas within the subject site are mapped as remnant native vegetation (DPIRD-005; Figure 3). The on-ground bushfire assessment noted several anomalies between the publicly available dataset and the actual vegetation extent within the Project Area (i.e. the actual native vegetation extent is far less than the mapped extent). Regardless, no clearing of mapped native vegetation is required to facilitate any of the bushfire mitigation measures outlined in later sections of this BMP. WEPL understands that a flora and vegetation survey was undertaken to support the project and that siting of assets considered the values identified in these surveys.

The desktop search of publicly available data also revealed records of threatened and priority flora and fauna being present in the northwestern portions of the Project Area (Figure 3). No bushfire prone renewable energy infrastructure or habitable buildings are proposed within the northwestern portion of the Project Area and, as such, none of the bushfire mitigation measures proposed in this BMP are expected to negatively impact threatened and priority flora and fauna.

2.2 Revegetation/Landscape Plans

No revegetation is proposed within the subject site and details of landscaped areas have not yet been finalised. WEPL understands that a number of drainage basins may be installed, however these, at the time of preparation of this BMP, are proposed to be non-vegetated and hardscaped only. The Proponent may consider planting screening vegetation in parts of the Project Area, such as around the perimeter of BESS facilities, however this will be determined at detailed design stage. The type and location of screening vegetation will be informed by the recommendation in the CFA Guidelines.

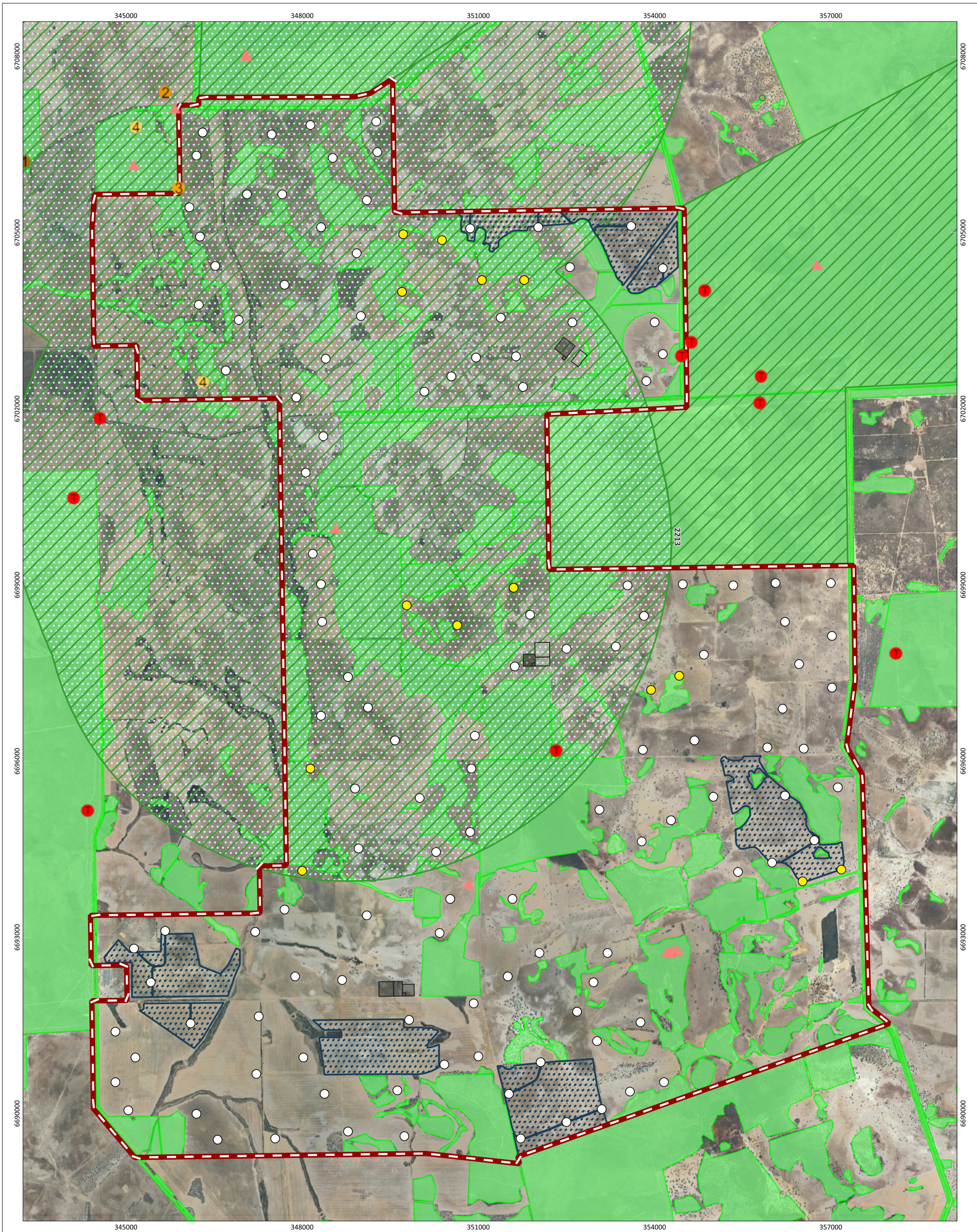


Figure 3: Environmental Considerations

<p>0 0.5 1 1.5 2 km</p> <p>N</p>	<p>PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm</p>	<p>Legend</p> <ul style="list-style-type: none"> Tathra Wind Farm Project Area Indicative Wind Turbine (Bushfire Prone) Indicative Wind Turbine (Not Bushfire Prone) Indicative Asset (Bushfire Prone) Indicative Asset (Not Bushfire Prone) Indicative Solar Array Native Vegetation Extent (DPIRD-005) Environmentally Sensitive Areas (DWER-046) Threatened Ecological Community (DBCA-038) 	<p>Threatened and Priority Fauna (DBCA-037)</p> <ul style="list-style-type: none"> ▲ Threatened - Endangered <p>Threatened and Priority Flora (DBCA-036)</p> <ul style="list-style-type: none"> ● Priority 1 ● Priority 2 ● Priority 3 ● Priority 4 ● Threatened 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No</th> <th>Description</th> <th>Drawn</th> <th>Approved</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Original issue</td> <td>SM</td> <td>BF</td> <td>30/7/2025</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>NOTES: Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.</p>	No	Description	Drawn	Approved	Date	A	Original issue	SM	BF	30/7/2025															
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3. Bushfire Assessment Results

3.1 Bushfire Assessment Inputs

A bushfire assessment has been undertaken for the proposed wind, solar, and BESS assets in accordance with the Guidelines. Inputs to this assessment are detailed below. Given the large scale of the Project Area, each of the bushfire prone assets were assessed as individual sites within the Project Area and have been assigned a site number for clarity of reference only. Each of these sites are assessed and displayed in Table 2 and Appendix B.

3.1.1 Fire Danger Index

A blanket Fire Danger Index (FDI) 80 is adopted for Western Australia, as outlined in *Australian Standard AS 3959: 2018 Construction of Buildings in Bushfire Prone Areas* (SA, 2018).

3.1.2 Pre-Development Vegetation Classification and Slope under Vegetation

Vegetation and effective slope (i.e. slope under vegetation) within the subject site and surrounding 150 m (the assessment area) were assessed on 2/04/2025 and 3/04/2025 in accordance with the Guidelines and AS 3959: 2018.

The pre-development classified vegetation and effective slope for the site from each of the identified vegetation plots are identified below in Table 2 and (Appendix B).

Table 2: Pre-Development Classified Vegetation as per AS 3959: 2018

Plot	Vegetation classification	Effective slope
Site 1		
1	Class E Mallee	Downslope >0 to 5 degrees
2	Class G Grassland	Downslope >0 to 5 degrees
3	Class G Grassland	All upslopes and flat land (0 degrees)
Site 2		
1	Class C Shrubland	Downslope >0 to 5 degrees
2	Class G Grassland	Downslope >0 to 5 degrees
3	Class G Grassland	All upslopes and flat land (0 degrees)
Site 3		
1	Class C Shrubland	Downslope >0 to 5 degrees
2	Class G Grassland	Downslope >0 to 5 degrees
3	Class G Grassland	All upslopes and flat land (0 degrees)

Plot	Vegetation classification	Effective slope
Site 4		
1	Class C Shrubland	Downslope >0 to 5 degrees
2	Class G Grassland	All upslopes and flat land (0 degrees)
3	Class G Grassland	All upslopes and flat land (0 degrees)
Site 5		
1	Class C Shrubland	Downslope >0 to 5 degrees
2	Class D Scrub	All upslopes and flat land (0 degrees)
3	Class G Grassland	Downslope >0 to 5 degrees
4	Class G Grassland	All upslopes and flat land (0 degrees)
Site 6		
1	Class G Grassland	Downslope >0 to 5 degrees
2	Class G Grassland	All upslopes and flat land (0 degrees)
Site 7		
1	Class B Woodland	Downslope >0 to 5 degrees
2	Class B Woodland	All upslopes and flat land (0 degrees)
3	Class C Shrubland	All upslopes and flat land (0 degrees)
4	Class D Scrub	Downslope >0 to 5 degrees
5	Class D Scrub	All upslopes and flat land (0 degrees)
6	Class G Grassland	Downslope >0 to 5 degrees
7	Class G Grassland	All upslopes and flat land (0 degrees)
Site 8		
1	Class C Shrubland	Downslope >0 to 5 degrees
2	Class G Grassland	Downslope >0 to 5 degrees
3	Class G Grassland	All upslopes and flat land (0 degrees)
Site 9		
1	Class C Shrubland	Downslope >0 to 5 degrees
2	Class C Shrubland	All upslopes and flat land (0 degrees)
3	Class G Grassland	Downslope >0 to 5 degrees
4	Class G Grassland	All upslopes and flat land (0 degrees)
5	Excluded - clause 2.2.3.2 (e)	-
Site 10		
1	Class C Shrubland	All upslopes and flat land (0 degrees)
2	Class G Grassland	Downslope >0 to 5 degrees
3	Class G Grassland	All upslopes and flat land (0 degrees)

Plot	Vegetation classification	Effective slope
Site 11		
1	Class C Shrubland	All upslopes and flat land (0 degrees)
2	Class D Scrub	Downslope >0 to 5 degrees
3	Class G Grassland	Downslope >0 to 5 degrees
4	Class G Grassland	All upslopes and flat land (0 degrees)
Site 12		
1	Class A Forest	Downslope >10 to 15 degrees
2	Class A Forest	Downslope >0 to 5 degrees
3	Class G Grassland	Downslope >0 to 5 degrees
4	Class G Grassland	All upslopes and flat land (0 degrees)
Site 13		
1	Class G Grassland	Downslope >0 to 5 degrees
2	Class G Grassland	All upslopes and flat land (0 degrees)
Site 14		
1	Class B Woodland	Downslope >0 to 5 degrees
2	Class B Woodland	All upslopes and flat land (0 degrees)
3	Class G Grassland	Downslope >0 to 5 degrees
4	Class G Grassland	All upslopes and flat land (0 degrees)
Site 15		
1	Class D Scrub	All upslopes and flat land (0 degrees)
2	Class G Grassland	Downslope >0 to 5 degrees
3	Class G Grassland	All upslopes and flat land (0 degrees)
Site 16		
1	Class C Shrubland	Downslope >0 to 5 degrees
2	Class G Grassland	Downslope >0 to 5 degrees
3	Class G Grassland	All upslopes and flat land (0 degrees)
Site 17		
1	Class C Shrubland	Downslope >0 to 5 degrees
2	Class G Grassland	Downslope >0 to 5 degrees
3	Class G Grassland	All upslopes and flat land (0 degrees)

Plot	Vegetation classification	Effective slope
Site 18		
1	Class B Woodland	Downslope >0 to 5 degrees
2	Class C Shrubland	Downslope >0 to 5 degrees
3	Class D Scrub	Downslope >0 to 5 degrees
4	Class D Scrub	All upslopes and flat land (0 degrees)
5	Class G Grassland	Downslope >0 to 5 degrees
6	Class G Grassland	All upslopes and flat land (0 degrees)
Site 19		
1	Class A Forest	Downslope >0 to 5 degrees
2	Class B Woodland	Downslope >0 to 5 degrees
3	Class G Grassland	Downslope >0 to 5 degrees
Site 20		
1	Class B Woodland	Downslope >0 to 5 degrees
2	Class B Woodland	All upslopes and flat land (0 degrees)
3	Class D Scrub	All upslopes and flat land (0 degrees)
4	Class G Grassland	Downslope >0 to 5 degrees
5	Class G Grassland	All upslopes and flat land (0 degrees)
Site 21		
1	Class A Forest	Downslope >0 to 5 degrees
2	Class A Forest	All upslopes and flat land (0 degrees)
3	Class B Woodland	All upslopes and flat land (0 degrees)
4	Class G Grassland	Downslope >0 to 5 degrees
5	Excluded - clause 2.2.3.2 (e)	-

Photographs relating to each area and vegetation type are included in Appendix C.

3.1.3 Post-Development Assumptions

Post-development, each of the sites outlined above will have an additional plot excluded in accordance with Clause 2.2.3.2 (e) of AS 3959: 2018. This plot is associated with the clearing of vegetation to facilitate the construction of internal access tracks, other assets in the Project Area, as well as areas which have been established as an Asset Protection Zone (APZ) as part of the prescribed bushfire mitigation measures. Areas of vegetation will be cleared to ensure that the proposed assets will be subject to a radiant heat flux of no greater than 10 kW/m² in the event of a bushfire. The calculations of these setback distances using Method 2 of AS 3959: 2018 are contained within (Appendix D).

Each of the wind turbines will be constructed with a non-vegetated foundation at its base. Each turbine site will also be constructed with an associated hardstand area.

Some drainage basins may be installed within the BESS facilities; however, these are proposed to be hardscaped and non-vegetated, post development. As discussed in Section 2, some screening vegetation may be installed around the perimeter of BESS facilities. This will be determined at detailed design stage and will be informed by the recommendations of the CFA Guidelines.

The assumed post-development vegetation classifications and effective slopes are presented in Appendix B.

3.2 Bushfire Assessment Outputs

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959: 2018 and the bushfire assessment inputs in Section 3.1.

3.2.1 BAL Assessment

All land located within 100 m of the classified vegetation depicted in Appendix B is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959: 2018.

A Method 1 BAL assessment (as outlined in AS 3959: 2018) has been completed for the proposed development and incorporates the following factors:

- Fire Danger Index (FDI) rating.
- Vegetation class.
- Slope under classified vegetation.
- Distance between proposed assets and the classified vegetation.

Based on the identified BAL, construction requirements for relevant buildings/structures can then be assigned. The BAL rating gives an indication of the expected level of bushfire attack (i.e. radiant heat flux, flame contact and ember penetration) that may be received by proposed buildings and subsequently informs the standard of construction required to increase building survivability. In the context of Tathra Wind Farm, the Method 1 BAL assessment has predominantly been undertaken for the purposes of determining appropriate siting of assets, given no Class 1, 2, 3 or associated Class 10a structures are proposed as part of the project.

3.2.2 Method 1 BAL Assessment

Table 3 and Appendix B display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for each of the identified bushfire prone sites in accordance with AS 3959: 2018 methodology.

Post-development, bushfire prone assets within the Project Area will be subject to BAL ratings of \leq BAL-12.5.

Table 3: Method 1 BAL Calculation (BAL Contours)

Plot	Vegetation classification	Effective slope	Separation distances required (m)				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
Site 1							
1	Class E Mallee	Downslope >0 to 5 degrees	<7	7 - <9	9 - <13	13 - <20	20 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
3	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 2							
1	Class C Shrubland	Downslope >0 to 5 degrees	<7	7 - <10	10 - <15	15 - <22	22 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
3	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 3							
1	Class C Shrubland	Downslope >0 to 5 degrees	<7	7 - <10	10 - <15	15 - <22	22 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
3	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 4							
1	Class C Shrubland	All upslopes and flat land (0 degrees)	<7	7 - <9	9 - <13	13 - <19	19 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
3	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				

Plot	Vegetation classification	Effective slope	Separation distances required (m)				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
Site 5							
1	Class C Shrubland	Downslope >0 to 5 degrees	<7	7 - <10	10 - <15	15 - <22	22 - <100
2	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10 - <13	13 - <19	19 - <27	27 - <100
3	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
4	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
5	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 6							
1	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
2	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
3	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 7							
1	Class B Woodland	Downslope >0 to 5 degrees	<13	13 - <17	17 - <25	25 - <35	35 - <100
2	Class B Woodland	All upslopes and flat land (0 degrees)	<10	10 - <14	14 - <20	20 - <29	29 - <100
3	Class C Shrubland	All upslopes and flat land (0 degrees)	<7	7 - <9	9 - <13	13 - <19	19 - <100
4	Class D Scrub	Downslope >0 to 5 degrees	<11	11 - <15	15 - <22	22 - <31	31 - <100
5	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10 - <13	13 - <19	19 - <27	27 - <100
6	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
7	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
8	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				

Plot	Vegetation classification	Effective slope	Separation distances required (m)				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
Site 8							
1	Class C Shrubland	Downslope >0 to 5 degrees	<7	7 - <10	10 - <15	15 - <22	22 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
3	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 9							
1	Class C Shrubland	Downslope >0 to 5 degrees	<7	7 - <10	10 - <15	15 - <22	22 - <100
2	Class C Shrubland	All upslopes and flat land (0 degrees)	<7	7 - <9	9 - <13	13 - <19	19 - <100
3	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
4	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
5	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 10							
1	Class C Shrubland	All upslopes and flat land (0 degrees)	<7	7 - <9	9 - <13	13 - <19	19 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
3	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 11							
1	Class C Shrubland	All upslopes and flat land (0 degrees)	<7	7 - <9	9 - <13	13 - <19	19 - <100
2	Class D Scrub	Downslope >0 to 5 degrees	<11	11 - <15	15 - <22	22 - <31	31 - <100
3	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
4	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50

Plot	Vegetation classification	Effective slope	Separation distances required (m)				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
5	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 12							
1	Class A Forest	Downslope >10 to 15 degrees	<33	33 - <42	42 - <56	56 - <73	73 - <100
2	Class A Forest	Downslope >0 to 5 degrees	<20	20 - <27	27 - <37	37 - <50	50 - <100
3	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
4	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
5	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 13							
1	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
2	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
3	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 14							
1	Class B Woodland	Downslope >0 to 5 degrees	<13	13 - <17	17 - <25	25 - <35	35 - <100
2	Class B Woodland	All upslopes and flat land (0 degrees)	<10	10 - <14	14 - <20	20 - <29	29 - <100
3	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
4	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
5	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 15							
1	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10 - <13	13 - <19	19 - <27	27 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50

Plot	Vegetation classification	Effective slope	Separation distances required (m)				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
3	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 16							
1	Class C Shrubland	Downslope >0 to 5 degrees	<7	7 - <10	10 - <15	15 - <22	22 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
3	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 17							
1	Class C Shrubland	Downslope >0 to 5 degrees	<7	7 - <10	10 - <15	15 - <22	22 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
3	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 18							
1	Class B Woodland	Downslope >0 to 5 degrees	<13	13 - <17	17 - <25	25 - <35	35 - <100
2	Class C Shrubland	Downslope >0 to 5 degrees	<7	7 - <10	10 - <15	15 - <22	22 - <100
3	Class D Scrub	Downslope >0 to 5 degrees	<11	11 - <15	15 - <22	22 - <31	31 - <100
4	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10 - <13	13 - <19	19 - <27	27 - <100
5	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
6	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
7	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				

Plot	Vegetation classification	Effective slope	Separation distances required (m)				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
Site 19							
1	Class A Forest	Downslope >0 to 5 degrees	<20	20 - <27	27 - <37	37 - <50	50 - <100
2	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
3	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 20							
1	Class B Woodland	Downslope >0 to 5 degrees	<13	13 - <17	17 - <25	25 - <35	35 - <100
2	Class B Woodland	All upslopes and flat land (0 degrees)	<10	10 - <14	14 - <20	20 - <29	29 - <100
3	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10 - <13	13 - <19	19 - <27	27 - <100
4	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
5	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
6	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
Site 21							
1	Class A Forest	Downslope >0 to 5 degrees	<20	20 - <27	27 - <37	37 - <50	50 - <100
2	Class A Forest	All upslopes and flat land (0 degrees)	<16	16 - <21	21 - <31	31 - <42	42 - <100
3	Class B Woodland	All upslopes and flat land (0 degrees)	<10	10 - <14	14 - <20	20 - <29	29 - <100
4	Class G Grassland	Downslope >0 to 5 degrees	<7	7 - <9	9 - <14	14 - <20	20 - <50
5	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				

3.2.3 Method 2 Radiant Heat Flux Calculations

The Guidelines mandates that future assets be sited within areas which are subject to a radiant heat flux \leq BAL-29 where possible to do so. In lieu of a Western Australian bushfire framework for assessing renewable energy facilities, the CFA Guidelines offer further guidance on appropriate siting for such facilities.

The CFA Guidelines state that *separation* [of classified vegetation and renewable energy infrastructure] *must be at least the distance where radiant heat flux (output) from the vegetation does not create the potential for ignition of on-site infrastructure*. A 10 kW/m² radiant heat flux threshold is widely adopted as best practice to ensure sufficient separation distance is established. This threshold has been applied to all wind, BESS and solar assets given the associated fire hazards they may pose.

A Method 2 BAL calculation was undertaken to determine the required separation distance for renewable energy assets to be sited in areas subject to a radiant heat flux of 10 kW/m² or less. Table 4 and Appendix B display the Method 2 BAL assessment and associated setback distances that have been calculated for the proposed wind, solar and BESS assets in accordance with AS 3959: 2018 methodology (Appendix D). This Method 2 calculation has not been undertaken to demonstrate compliance with the bushfire protection criteria.

Table 4: Method 2 Radiant Heat Flux and Setback Distances Calculation

Vegetation classification	Effective slope	Separation distances required (m)	
		10 kW/m ² @ 1090 K	10 kW/m ² @ 1200 K
Class A Forest	Downslope 15 degrees	>88	>105
Class A Forest	Downslope 5 degrees	>60	>75
Class A Forest	Flat land 0 degrees	>49	>64
Class B Woodland	Downslope 5 degrees	>43	>56
Class B Woodland	Flat land 0 degrees	>35	>47
Class C Shrubland	Downslope 5 degrees	>27	>37
Class C Shrubland	Flat land 0 degrees	>24	>33
Class D Scrub	Downslope 5 degrees	>38	>49
Class D Scrub	Flat land 0 degrees	>33	>44
Class E Mallee	Downslope 5 degrees	>25	>34
Class G Grassland	Downslope 5 degrees	>25	>34
Class G Grassland	Flat land 0 degrees	>22	>30
Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW	

3.2.4 Determined BAL Rating for Proposed Assets

Based on the site assessment inputs and Method 1 BAL assessment, all proposed bushfire prone assets are exposed to BAL ratings \leq BAL-12.5. A summary of the BAL ratings for these assets within the subject site is provided in Table 5.

Given the detailed design of the BESS and solar assets have not yet been determined, these assets do not yet have a determined BAL rating. Appendix B displays the 10 kW/m² radiant heat flux threshold contour line, within which no renewables energy assets are to be sited (i.e. no BESS, solar panels, substations, etc.). This contour will guide future detailed design of the facility and siting of assets to ensure they are constructed in areas which are subject to BAL-12.5 or lower.

Table 5: BAL Ratings for Assets Within the Subject Site

Proposed Building/Asset	Plot Most Affecting BAL Rating	Separation Distance	BAL Rating
Site 1 (Wind Turbine)	Plot 2	25 m	BAL-12.5
Site 2 (Wind Turbine)	Plot 2	25 m	BAL-12.5
Site 3 (Wind Turbine)	Plot 2	25 m	BAL-12.5
Site 4 (Wind Turbine)	Plot 2	25 m	BAL-12.5
Site 5 (Wind Turbine)	Plot 3	25 m	BAL-12.5
Site 6 (BESS)	To be determined at detailed design stage		BAL-12.5 or BAL-LOW
Site 7 (Solar Farm)	To be determined at detailed design stage		BAL-12.5 or BAL-LOW
Site 8 (Wind Turbine)	Plot 2	25 m	BAL-12.5
Site 9 (Wind Turbine)	Plot 3	25 m	BAL-12.5
Site 10 (Wind Turbine)	Plot 2	25 m	BAL-12.5
Site 11 (BESS)	To be determined at detailed design stage		BAL-12.5 or BAL-LOW
Site 12 (Wind Turbine)	Plot 3	25 m	BAL-12.5
Site 13 (Wind Turbine)	Plot 1	25 m	BAL-12.5
Site 14 (Wind Turbine)	Plot 1	43 m	BAL-12.5
Site 15 (Wind Turbine)	Plot 2	25 m	BAL-12.5
Site 16 (Wind Turbine)	Plot 2	25 m	BAL-12.5
Site 17 (Wind Turbine)	Plot 2	25 m	BAL-12.5
Site 18 (Solar Farm)	To be determined at detailed design stage		BAL-12.5 or BAL-LOW
Site 19 (Solar Farm)	To be determined at detailed design stage		BAL-12.5 or BAL-LOW
Site 20 (Solar Farm)	To be determined at detailed design stage		BAL-12.5 or BAL-LOW
Site 21 (Solar Farm)	To be determined at detailed design stage		BAL-12.5 or BAL-LOW

4. Identification of Issues Arising from the BAL Assessment

Post-development, all bushfire prone assets will be subject to BAL ratings of \leq BAL-12.5. Measures to ensure that BAL ratings on future solar and BESS assets can be restricted to \leq BAL-12.5 are discussed below.

As the detailed design of the BESS and solar facilities has not yet been determined, the radiant heat flux has been modelled on these areas based on the following assumptions:

- The entirety of the site is cleared for development and hardscaped or contains low-threat vegetation, post-development.
- None of the vegetation directly adjacent to the site is removed, except to facilitate the construction of internal access tracks and other infrastructure.

An APZ has been placed over the section of Site 21 which overlaps with the bushfire prone area mapping (Appendix B). This APZ will function as an exclusion zone to ensure that all future built assets (solar panels and infrastructure, buildings etc.) within Site 21 will be sited in a non-bushfire prone area. As such, no further bushfire mitigation measures have been prescribed for Site 21, given future solar panels and habitable buildings will not be bushfire prone and therefore will not trigger an assessment under SPP 3.7 and the Guidelines.

A reassessment of BAL ratings, through either a BMP addendum or revised BMP will be undertaken if changes to development design or classified vegetation within the assessment area which require a modified bushfire management response occur.

5. Assessment Against the Bushfire Protection Criteria

5.1 Compliance

The proposed windfarm is required to comply with policy measure 7.1 of SPP 3.7 and Bushfire Protection Criteria 7 in the Guidelines.

Table 6 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summarises how the intent of each Bushfire Protection Criteria has been achieved through the application of bushfire risk management measures. No Outcomes-based Approaches (OA) have been proposed for this development. These management measures are depicted in Figure 4 where relevant.

Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

Table 6: Assessment Against the Bushfire Protection Criteria 7

Bushfire Protection Criteria 7	AS	OA	N/A
Element 1: Location			
A1.1 Development location	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Not Applicable - This Element does not apply to commercial and industrial developments.			
Element 2: Siting and design			
A2.1 Siting and design	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Post-development, all proposed bushfire prone assets will be situated in areas subject to BAL ratings of \leq BAL-12.5 (Appendix B). Additionally, renewable energy infrastructure will be sited in areas which are subject to a radiant heat flux not exceeding 10 kW/m ² with a 1090 K flame temperature. The proposed development is considered to be compliant with A1.1.			
A2.2 Asset Protection Zone (APZ)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The proposed development has several APZs sufficient for the potential radiant heat flux to not exceed 10 kW/m ² and will be managed in accordance with the requirements of <i>Standards for Asset Protection Zones</i> (WAPC, 2024b; Appendix E). Each wind turbine has an APZ sufficient for the radiant heat flux to not exceed 10 kW/m ² at a 1090 K flame temperature. Each BESS yard and solar farm has an APZ sufficient for the radiant heat flux not to exceed 10 kW/m ² at a 1200 K flame temperature. These APZs will not only perform the function of an enforceable mechanism for any required vegetation management, but also as a building exclusion zone for any renewable any infrastructure or habitable buildings (such as O&M buildings) which may be incorporated in the facility design at detailed design stage. A higher flame temperature has been used in the calculation of these APZs as a precautionary measure to ensure the appropriate siting of any habitable buildings which may be included at the facility. These buildings should be designed and constructed to the relevant standard in AS 3959: 2018 to make these a safer option as a last resort shelter in place option in the event of a bushfire. An APZ has been placed over the section of Site 21 which overlaps with the bushfire prone area mapping (Appendix B). This APZ will function as an exclusion zone to ensure that all future built assets (e.g. solar panels, buildings etc.) within Site 21 will be sited in a non-bushfire prone area. As such, no further bushfire mitigation measures have been prescribed for Site 21, given future solar panels and habitable buildings will not be bushfire prone and therefore will not trigger an assessment under SPP 3.7 and the Guidelines.			

Bushfire Protection Criteria 7	AS	OA	N/A
<p>The APZs can be contained within the boundaries of the Project Area and managed in perpetuity in a low fuel state by the facility operator.</p> <p>The proposed development is considered to be compliant with A2.2.</p>			
<p>A2.3 Clearing of native vegetation</p> <p>No native vegetation is proposed to be cleared to facilitate the integration of any bushfire mitigation measures contained within this BMP, as discussed in Section 2.</p> <p>The proposed development is considered to be compliant with A2.3.</p>	✓	<input type="checkbox"/>	<input type="checkbox"/>
<p>A2.4 Storage of hazardous, flammable and/or combustible materials</p> <p>There are no significant quantities of hazardous, flammable or combustible materials associated with the proposed development.</p> <p>The batteries in BESS can be considered hazardous but will be addressed under the BESS specific CFA guideline requirements.</p> <p>Notwithstanding, if any significant quantities of hazardous, flammable and/or combustible materials are introduced to the development, they should be sited in areas of BAL-29 or lower as a minimum and protected from bushfire impact, with the final siting and bushfire risk management to be reviewed by an accredited bushfire practitioner.</p> <p>The proposed development is considered to be compliant with A2.4.</p>	✓	<input type="checkbox"/>	<input type="checkbox"/>
<p>Element 3: Vehicular access</p> <p>A3.1 Private driveways</p> <p>Tathra Wind Farm will include a number of internal access tracks which will provide access to assets in all parts of the facility Figure 4. These access tracks are proposed to have a minimum width of 6 m throughout the facility and will have a turnaround head which complies with the specification set out in the <i>Vehicular Access Technical Requirements</i> (WAPC, 2024b; Appendix F), allowing for sufficient vehicular access and egress for Type 3.4 firefighting appliances in the event of a infrastructure fire or bushfire. The exact location and type of turnaround areas will be determined at detailed design stage. It is anticipated that due to environmental constraints at the site, a 6 m road width may not be achievable in all areas. Where this is the case, roads will have a minimum trafficable width of 4 m for no longer than 200 m to allow access for firefighting appliances by navigating around potential obstacles or retained environmental values.</p> <p>Vehicular access design is discussed further in Appendix A.</p> <p>The proposed development is considered to be compliant with A3.1.</p>	✓	<input type="checkbox"/>	<input type="checkbox"/>
<p>Element 4: Water</p> <p>A4.1 Water supply</p> <p>No existing reticulated water is present within Project Area. Water tanks will be provided for firefighting purposes and, based on the current proposal, will include a minimum of seventy-eight 50 kL firefighting water tanks (Figure 4), offering a total of 3.9 ML of water for bushfire protection of the habitable buildings and renewable energy infrastructure which is sited within a bushfire prone area, in line with the specifications of the CFA Guidelines, further discussed in Appendix A. It should be noted that the site plan is subject to change, and the siting of many assets (specifically BESS and solar assets) is subject to detailed design. These assets may be sited in non-bushfire prone areas which would likely alter the volume of water required to be provided for firefighting purposes. The above calculations of water are conservative and assume that all assets are sited within bushfire prone areas.</p> <p>The proposed development is considered to be compliant with A4.1.</p>	✓	<input type="checkbox"/>	<input type="checkbox"/>

Note: AS - Acceptable Solution, OA - Outcomes-based Approach, N/A - Not applicable.

5.2 Additional Bushfire Mitigation Measures

5.2.1 Water tank requirements

Each tank and associated stand will be above-ground, constructed of non-combustible material and comply with AS/NZS 3500.1:2018 Plumbing and drainage Water Services.

All exposed water supply pipes and fittings will be metal. Fittings should be located away from the source of bushfire attack.

Each tank will be fitted with a 50 mm male camlock coupling with full flow valve.

As this is a static fire water supply, no pumps will be supplied to accompany the water tanks.

5.2.2 Renewable Energy Assessment Framework

SPP 3.7 and the Guidelines do not currently provide a comprehensive assessment framework for the assessment of renewable energy facilities, with many of the bushfire requirements only applicable to habitable buildings. Consequently, assessment of Tathra Wind Farm against the bushfire protection criteria of the Guidelines may be considered insufficient given the additional risk associated with the proposed development. In the absence of a bushfire assessment framework catered towards renewable energy facilities in Western Australia, the CFA Guidelines are considered the most appropriate framework currently available in Australia. The proposed development has therefore been assessed against the requirements of the CFA Guidelines, tailored to Western Australia. The assessment against the CFA Guidelines (Appendix A) is considered to meet the general objectives and policy requirements of SPP 3.7.

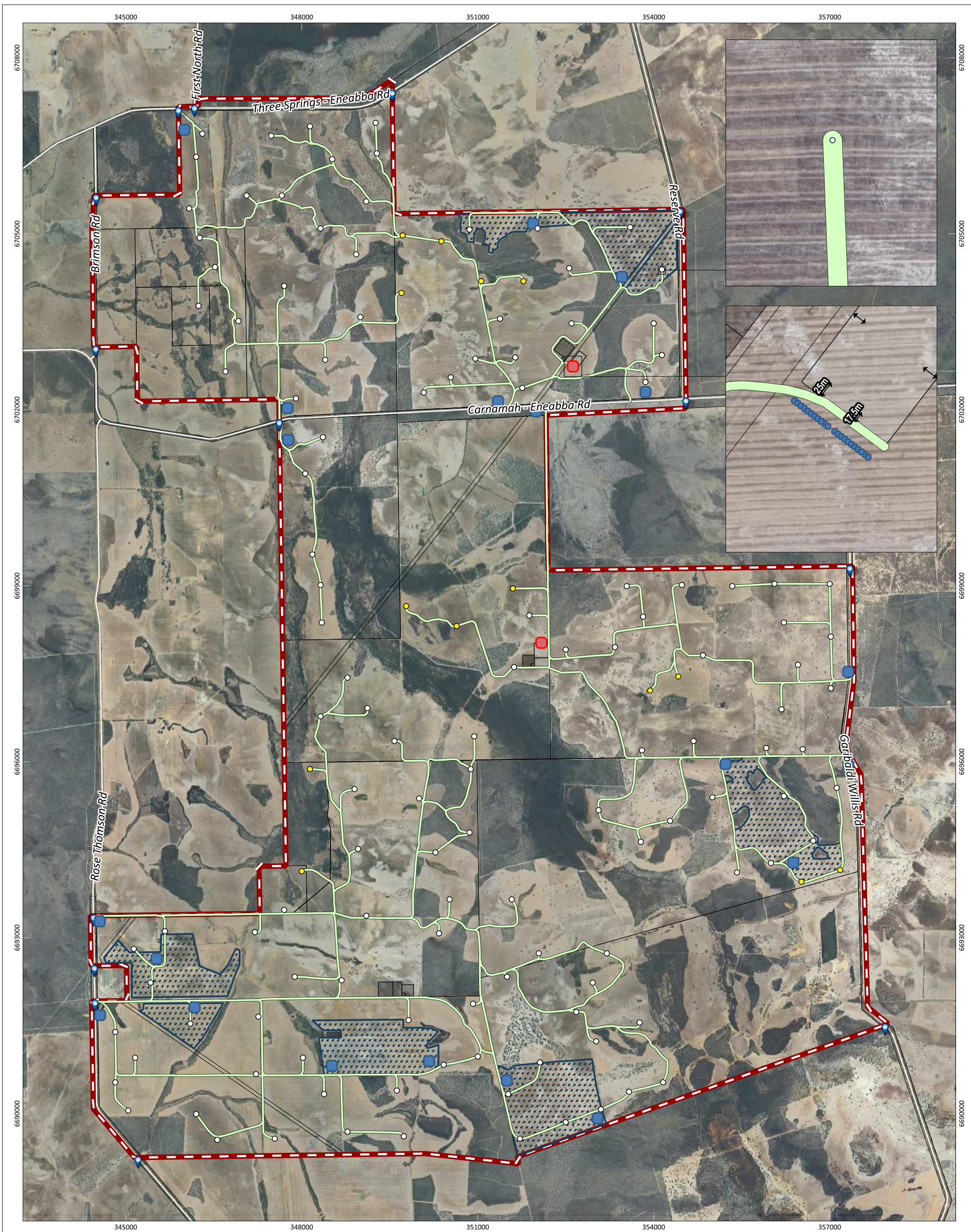


Figure 4: Bushfire Mitigation Measures*

		PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Tathra Wind Farm Project Area Lot boundaries Indicative road reserve Access point Indicative 50kL firefighting water tank 24x Indicative 50kL firefighting water tank		Indicative Wind Turbine (Bushfire Prone) Indicative Wind Turbine (Not Bushfire Prone) Indicative Asset (Bushfire Prone) Indicative Asset (Not Bushfire Prone) Indicative Solar Array		<table border="1"> <thead> <tr> <th>No</th> <th>Description</th> <th>Drawn</th> <th>Approved</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Original issue</td> <td>SM</td> <td>BF</td> <td>30/7/2025</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No	Description	Drawn	Approved	Date	A	Original issue	SM	BF	30/7/2025																 Western Environmental Pty Ltd 08 6244 2310 enquiries@westenv.com.au Level 3/25 Prowse St, West Perth WA 6005 westenv.com.au
No	Description	Drawn	Approved	Date																														
A	Original issue	SM	BF	30/7/2025																														
SCALE 1:60,000	SHEET SIZE A3 COLOUR	CLIENT SynergyRED		VERSION 0		NOTES: *Refer to Appendix B for bushfire mitigation measures specific to each site																												
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		PROJECT NUMBER A24.281	DRAWN BY / REVIEWED BY SM/BF		DATE 30/7/2025																													
DATA SOURCE Google Earth Imagery																																		

6. Responsibilities for Implementation and Management of Bushfire Management Measures

Responsibility for implementation of the bushfire risk management measures outlined in Section 5 of this BMP applies to the developer, future owners/builders within the subject site and the local government. Table 7 provides a works program detailing these measures, timing of implementation and responsibility.

Table 7: Proposed Works Program

No.	Bushfire management measure
Developer responsibilities - Prior to occupation	
1	Ensure that Asset Protection Zones (APZs) are established and maintained as per the design in Appendix B.
2	Install firefighting water tanks at all locations depicted on Figure 4 or otherwise in line with the CFA Guidelines requirements. All water tanks must meet the standards for water tanks outlined in Section 5.4 of this BMP.
3	Construct internal access tracks in accordance with the design in Figure 4.
4	Update this BMP at detailed design stage to ensure that appropriate bushfire mitigation measures are incorporated in the design.
Facility operator responsibilities - Ongoing	
5	Maintain APZs to the standard in the Guidelines.
6	Maintain access tracks to the standards in the Guidelines.
7	Ensure that all firefighting water tanks are full at the beginning of the Fire Danger Period and are refilled immediately after using the supply during an incident.

7. Conclusion

In the professional opinion of the author, the proposed development satisfies the intent, aim and objectives of SPP 3.7 and the Guidelines as well as addressing additional requirements of the CFA Guidelines and is recommended for approval.

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Appendix A: CFA Guidelines Assessment

Background

New and emerging renewable energy technology has outpaced the development of fire and emergency management standards and guidance, especially in Western Australia. The State Government has identified the need for a comprehensive bushfire assessment framework specific to renewable energy facilities however this is yet to be developed. In the absence of a Western Australian assessment framework, the Country Fire Authority (CFA) *Design Guidelines and Model Requirements for Renewable Energy Facilities Version 4* (CFA Guidelines; State of Victoria, 2023) is considered to provide the most appropriate framework for the assessment of renewable energy facilities in designated bushfire prone areas.

The proposed wind turbines, solar assets, BESS assets and associated infrastructure have been assessed against the requirements of the CFA Guidelines tailored to the Western Australian planning system as documented below. It should be noted that only tangible and spatial considerations from the CFA Guidelines have been incorporated into the assessment, given the policy measures in the CFA Guidelines are not relevant in Western Australia and SPP 3.7 and the Guidelines are considered to sufficiently address the bushfire planning requirements.

Facility Location

The subject sites are considered a high-risk environment under the CFA Guidelines given it is designated as bushfire prone. Renewable energy facilities proposed in high-risk environments must address the following:

- An assessment against SPP 3.7 and the associated Guidelines.
- The impact of any ignitions arising from the renewable energy infrastructure on nearby communities, infrastructure and assets.
- The impact of bushfire on the renewable energy infrastructure (e.g. ember attack, radiant heat impact and flame contact).
- Assessment of whether the proposal will lead to an increase in risk to adjacent land and how the proposal will reduce risks on site to an acceptable level.

The above requirements have been appropriately addressed through the preparation of the BMP (WEPL, 2025) and information provided by the Proponent.

WEPL is not aware of peat soils within 10 m of the proposed infrastructure.

Facility Design

Emergency Vehicle Access

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
All Facilities		
Roads must be of all-weather construction and capable of accommodating a vehicle of 15 tonnes.	✓	Internal access roads will be constructed of an all-weather surface material and designed to accommodate a 15-tonne vehicle.
Constructed roads should be a minimum of four (4) metres in trafficable width with a four (4) metre vertical clearance for the width of the formed road surface.	✓	All internal access roads are proposed to be a minimum 6 m in width constructed of an all-weather surface material. In some parts of the facility this may be reduced to a 4 m trafficable width to minimise impacts to native vegetation. These 4 m wide portions will extend no further than 200 m. A 4 m vertical clearance will be maintained at all times.
The average grade should be no more than 1 in 7 (14.4% or 8.1°) with a maximum of no more than 1 in 5 (20% or 11.3°) for no more than 50 metres.	✓	Finished ground levels will be determined during detailed design stage. Road grades will be designed to adhere to the relevant requirements of the Guidelines.
Dips in the road should have no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle.	✓	Finished ground levels will be determined during detailed design stage. Road grades will be designed to adhere to the relevant requirements of the Guidelines.
Roads must incorporate passing bays at least every 600m, which must be at least 20 metres long and have a minimum trafficable width of six (6) metres. At least one passing bay must be incorporated where roads are less than 600 metres long.	✓	The internal access roads will allow vehicles to pass, given the internal access tracks are generally 6 m wide and intersect at regular intervals. The wind turbines will be isolated with a cleared hardstand at the base. Other infrastructure such as batteries and O&M buildings will be located on a hardstand with 6 m clearance between obstructions. The intent of this requirement has therefore been met given there is adequate opportunity for vehicles to pass.
Road networks must enable responding emergency services to access all areas of the facility, including fire service infrastructure, buildings, BESS and related infrastructure, substations and grid connection areas.	✓	The existing public road networks provide adequate access for emergency vehicles given there are 10 access points to the farms within the Project Area. The Project Area is

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
		<p>accessed from Three Springs-Eneabba Road, Carnamah-Eneabba Road, Garibaldi Willis Road and Rose Thomson Road. Three Springs-Eneabba Road and Carnamah-Eneabba Road are sealed roads whilst Garibaldi Willis Road and Rose Thomson Road are unsealed, however are highly trafficable with road trains frequently using these routes. All these roads have a minimum width of 7 m for two-way access.</p> <p>The internal private road network will include a series of roads surrounding and throughout the BESS facilities and solar farms. These will be determined at detailed design stage.</p>
<p>Provision of at least two (2) but preferably more access points to each part of the facility. The number of access points must be informed through a risk management process.</p>	<p>✓</p>	<p>Multiple access points are available into the Project Area as discussed above. Internal access tracks facilitate vehicular access to each part of the wind farm, including all wind turbines.</p>
Wind Energy Specific Requirements		
<p>Internal road access is required to each turbine and building on-site.</p>	<p>✓</p>	<p>Multiple access points are available into the Project Area as discussed above. Internal access tracks facilitate vehicular access to each part of the wind farm, including all wind turbines.</p>
<p>Constructed roads developed during the construction phase of facilities must be maintained post-commissioning and throughout the operational life of the facility, to allow access to each turbine for maintenance and emergency management purposes.</p>	<p>✓</p>	<p>The internal access tracks will be maintained to satisfy the standards set out in the Guidelines and the CFA Guidelines by the facility operator throughout the life of its operation.</p>
Solar Energy Specific Requirements		
<p>Where solar energy facilities are designed over several land parcels separated by private or public roads, overhead powerlines, and/or water courses, vehicle entrances are to be provided into each section.</p>	<p>✓</p>	<p>Vehicle entrances are available to each lot containing solar farms. The solar farm at Site 20, is located on a different land parcel with no direct access from a public road, however vehicle access is available via multiple other lots within the Tathra Wind Farm Project Area with no obstruction from any overhead powerlines, private or public roads, or watercourses.</p>

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
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BESS Specific Requirements

<p>At least two access points are to be provided into each section where battery energy storage systems are located.</p>	<p>✓</p>	<p>Access to the BESS at Site 6 is available at several points along Carnamah-Eneabba Road and Three Springs-Eneabba Road.</p> <p>At least two access points are available to the proposed BESS at Site 11 via Carnamah-Eneabba Road and Garibaldi Willis Road.</p>
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Firefighting Water Supply

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
All Facilities		
Water access points must be clearly identifiable and unobstructed to ensure efficient access.	✓	Water tanks will be provided on site for the storage static water for firefighting purposes. Water access points will be clearly identifiable through signage. All water tanks are located for ease of access and will remain unobstructed.
Static water storage tank installations must comply with AS 2419.1-2021: Fire hydrant installations – System design, installation and commissioning.	✓	The water supply system will be designed in accordance with AS 2419.1-2021. This will be documented at detailed design stage.
The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel.	✓	The static water storage tanks will be above ground and constructed from concrete or steel.
The static water storage tank(s) must be capable of being completely refilled automatically or manually within 24 hours.	✓	The static water storage tanks will be refilled within 24 hours either automatically via a groundwater bore or manually through a local water supply contractor. This will be documented at detailed design stage.
The static water storage tanks must be located at vehicle access points to the facility and must be positioned at least ten (10) metres from any infrastructure (solar panels, wind turbines, battery energy storage systems, etc.).	✓	Two 50 kL static water storage tanks will be located at each entrance and setback a minimum 10 m from the renewable energy infrastructure. One of these tanks satisfied the water requirements for the proposed solar assets, whilst the other is proposed for the wind turbines.
The hard-suction point must be provided, with a 150 mm full bore isolation valve equipped with a Storz connection, sized to comply with the required suction hydraulic performance.	✓	The static water storage system is subject to detailed design however it is expected that each tank will be fitted with the required connection valves and adapters, including a Storz connection.
The hard-suction point must be positioned within four (4) metres to a hardstand area and provide a clear access for emergency services personnel.	✓	The static water storage tanks and connection points will be located within 4 m of the internal access roads for ease of access. This will be documented at detailed design stage.
An all-weather road access and hardstand must be provided to the hard-suction point. The hardstand must be maintained to a minimum of 15 tonne GVM, 15m long and 6m wide, in accordance with GL-11: DFES Site Planning and Fire Appliance Specifications.	✓	A hardstand will be provided to the water connection points for fire service access. The hardstands will be designed to DFES specifications, including minimum 15 tonne GVM, 15 m in length and 6 m wide. This will

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
		be documented at detailed design stage.
The road access and hardstand must be kept clear at all times.	✓	The internal roads and hardstands will be kept clear at all times.
The hard-suction point must be protected from mechanical damage (e.g. bollards) where necessary.	✓	The static water supply system is subject to detailed design. It is likely that bollards will be installed to protect the water connection points from damage.
Where the access road has one entrance, an eight (8) metre radius turning circle must be provided at the tank.	N/A	No static water supply tanks are proposed on dead-end roads.
An external water level indicator must be provided to the tank and be visible from the hardstand area.	✓	All static water storage tanks will be fitted with a level indicator, visible from the hardstand area. This will be documented at detailed design stage.
Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank.	✓	Signage will be installed on each static water storage tank.
Signage must be provided at each vehicle entrance to the facility, indicating the direction to the nearest static water tank(s).	✓	Signage will be installed at each of the entrances to the renewable energy facility.

Wind Energy Specific Requirements

The fire protection system for wind energy facilities must incorporate at least one static fire water storage tank of at least 45,000 L effective capacity at each entrance.	✓	Two 50 kL static fire water storage tanks will be installed at each entrance to the Project Area. One of these will service the wind turbines, whilst the other satisfies the solar energy specific requirements.
Additional static fire water storage tanks of at least 45,000 L effective capacity must also be incorporated in facility design.	✓	Multiple firefighting water tanks will be installed across the Tathra Wind Farm Project Area. These are located at the entrances to the Project Area as well as at the BESS yards and solar farms.
Nacelles must be equipped with automatic fire detection, alarm and fire suppression systems.	✓	Wind turbine designs which feature nacelles that are equipped with automatic fire detection, alarm and fire suppression systems will be considered at detailed design stage.

Solar Energy Specific Requirements

The fire protection system for solar energy facilities must incorporate at least one (1) x 45,000 L static water tank at the primary vehicle entrance to each part of the facility.	✓	Two 50 kL static fire water storage tanks will be installed at each entrance to the Project Area. One will service the solar energy assets, whilst the other satisfies the requirements for the wind turbines.
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CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
<p>Additional static fire water tanks of at least 45,000 L effective capacity must also be incorporated for every 100 ha.</p>	✓	<p>Each of the four bushfire prone solar farms (Sites 7, 18, 19 and 20) are approximately 200 ha in size. These sites will each contain two 50 kL static fire water tanks.</p>
BESS Specific Requirements		
<p>For standalone BESS facilities where there is no reticulated water available, the fire hydrant system that complies with AS 2419.1-2021 must provide:</p>		
<ul style="list-style-type: none"> i. the fire water supply must be of a quantity no less than 288,000L or as per the provisions of AS2419.1-2021: Fire hydrant installations, Table 2.2.5 (D) for open yards flowing for a period no less than four hours at 20L/s, whichever is the greater. ii. The quantity of static fire water storage is to be calculated from the number of hydrants required to flow from AS 2419.1-2021: Fire hydrant installations, Table 2.2.5 (D). iii. Fire hydrants must be provided and located so that every part of the BESS is within reach of a 10m hose stream issuing from a nozzle at the end of a 60m length of hose connected to a fire hydrant outlet (70 m coverage). iv. The fire water supply must be located at vehicle entrances to the facility, at least 10m from any infrastructure (electrical substations, inverters, BESS, buildings, etc). v. The fire water supply must be reasonably adjacent to the BESS and shall be accessible without undue danger in an emergency (E.g. fire water tanks are to be located closer to the site entrance than the BESS). vi. The fire water supply must comply with AS 2419.1-2021: Fire hydrant installations, Section 5: Water storage tanks. 	✓	<p>The proposed development design includes provisions for twenty-four 50 kL static fire water tanks for each bushfire prone BESS yard, in line with the requirements of Table 2.2.5 (D) of AS 2419.1-2021: <i>Fire hydrant installations</i> (SA, 2021). This totals 1.2 ML of water per BESS yard. This volume of water may be provided with any configuration of water tank number and sizes, as long as the volume is sufficient.</p> <p>It should be noted that this calculation of water is conservative and is based on the worst-case assumption that all BESS units will be sited in bushfire prone areas. If the BESS assets are sited outside of the bushfire prone areas, this volume of water may not be required.</p>



Figure 9: Best-practice arrangement of fire service infrastructure at facilities with centralised battery energy storage systems without reticulated water supply, or a reticulated water supply that does not meet the performance requirements of AS 2419.1-2021: Fire hydrant installations.

Fire Detection and Suppression Equipment

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
All Facilities		
<p>Suitable fire detection and suppression equipment must be provided:</p>		
<ul style="list-style-type: none"> a. For on-site buildings and structures, according to the requirements of the National Construction Code (NCC). b. For storage of dangerous goods, according to the requirements of any Australian Standards for storing and handling dangerous goods. c. For electrical installations, a minimum of two (2) suitable fire extinguishers must be provided within 3m - 20m of each Power Conversion Unit. d. In all vehicles and heavy equipment, each vehicle must carry at least a nine (9) litre water stored pressure fire extinguisher with a minimum rating of 3A, or other firefighting equipment as a minimum when on-site during the Fire Danger Period. 	<p>✓</p>	<p>Fire detection and suppression equipment will be provided in accordance with the relevant legislation.</p> <p>Each power conversion unit will be fitted with aerosol fire extinguishing device along with smoke detectors, heat detectors, combustible gas detectors, water fire suppression system and audible alarm.</p> <p>All authorised vehicles will be required to carry a fire extinguisher which will be confirmed during site inductions as part of the operational management plan.</p>

Landscape Screening and On-Site Vegetation

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
All Facilities		
Any proposed or existing vegetation must be considered in the BMP for its potential to intensify and propagate fire within and away from the site.	✓	The BMP considers all existing and proposed vegetation within 150 m of the subject site.
Where landscape screening is required, for example, to screen visual impacts, the design must consider any potential increase in fire risk due to the type (species), density, height, location and overall width of the screening.	✓	No screening vegetation is proposed as part of the development. Landscape screening may be incorporated at detail design stage. In such a case, the BMP will be updated to ensure no intensification of bushfire risk.
Facilities must be designed so that the radiant heat flux (output) from vegetation does not create the potential for ignition of on-site infrastructure or other vegetation.	✓	The proposed assets within the Project Area will be surrounded by an APZ to ensure the radiant heat flux from vegetation is maintained at 10 kW/m ² which exceeds SPP 3.7 policy requirements.
Radiant heat impact leading to ignition may be mitigated through: <ul style="list-style-type: none"> • Vegetation removal (where permitted). • Separation from nearby infrastructure (e.g., fire breaks; refer below). • The provision of thermal barriers at nearby infrastructure. 	✓	The radiant heat impact has been reduced through the establishment of an APZ to maintain separation between infrastructure and retained vegetation.
Wind Energy Specific Requirements		
Where wind turbines are sited in bushfire prone areas or areas with peat, additional vegetation management must be considered in the BMP.	✓	The radiant heat impact has been reduced through the establishment of an APZ to maintain separation between infrastructure and retained vegetation.
It is recommended that the implementation of an additional reduced-fuel zone be considered around the base of wind turbines, abutting the fire break. The reduced fuel zone may be: <ul style="list-style-type: none"> • No less than 20 m, or • To the envelope of the wind turbine blades. This zone is to be cleared of trees and scrub (where permitted by the responsible authority) and grass must be no more than 100 mm during the Fire Danger Period.	✓	he proposed assets within the Project Area will be surrounded by an APZ to ensure the radiant heat flux from vegetation is maintained at 10 kW/m ² which exceeds the CFA Guidelines requirements. The minimum separation distance between classified vegetation and the base of the wind turbine is 22 m for Class G Grassland on flat land.

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
Solar Energy Specific Requirements		
<p>Where practicable, low flammability vegetation (such as root vegetables) may be planted under solar panels provided foliage does not extend beyond the panel footprint.</p>	✓	<p>No vegetation is proposed to be planted below solar panels. If this is considered at later stages in the design and operation process, the facility operator will ensure the foliage does not extend beyond the panel footprint.</p>
Substation Specific Requirements		
<p>Substations should be surfaced to eliminate all vegetation including grasses.</p>	✓	<p>All substations will be non-vegetated and surfaced, post-development.</p>

Firebreaks

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
All Facilities		
<p>A firebreak must be established and maintained around the perimeter of the facility, commencing from the boundary of the facility or from the vegetation screening inside the property boundary.</p>	✓	<p>A perimeter firebreak with minimum width of 3 m will be maintained along the boundary of the external boundaries of properties within the Project Area, in accordance with the Shire of Carnamah 2024/2025 Fire Break Notice and Bushfire Information (Shire of Carnamah, 2024).</p>
<p>A firebreak must be established and maintained around the perimeter of controls rooms, electricity compounds, substations and all other buildings onsite.</p>	✓	<p>Internal access roads will provide perimeter access around the BESS, substations and all other associated infrastructure and buildings. This will be documented at detail design stage.</p>
<p>The width of fire breaks must be a minimum of 10 m, and at least the distance where radiant heat flux (output) from the vegetation does not create the potential for ignition of on-site infrastructure.</p>	✓	<p>A minimum 10 m wide cleared buffer will be provided inside the boundary of BESS yards and solar farms. The firebreak buffer will contain non-combustible retaining walls, internal access roads and/or cleared land (non-vegetated) managed as part of the APZ. The APZs have been calculated in relation to the 10 kW/m² radiant heat threshold which well exceeds the 10 m minimum requirement.</p>
Wind Energy Specific Requirements		
<p>A firebreak must be established and maintained around the base of wind turbines.</p>	✓	<p>The wind turbine foundation, a hardstand area and additional clearing, if required, will be undertaken at each of the proposed wind turbines to ensure that they are not exposed to radiant heat flux exceeding 10 kW/m². This will be maintained by the facility operator throughout the operational life of Tathra Wind Farm.</p>

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
BESS Specific Requirements		
<p>A firebreak must be established and maintained around battery energy storage systems and related infrastructure.</p>	✓	<p>A minimum 10 m wide cleared buffer will be provided inside the boundary of BESS yards and solar farms. The firebreak buffer will contain non-combustible retaining walls, internal access roads and/or cleared land (non-vegetated) managed as part of the APZ. The APZs have been calculated in relation to the 10 kW/m² radiant heat threshold.</p>
<p>In addition to radiant heat flux (output) from vegetation, the width of fire breaks between vegetation and battery energy storage systems must be at least the distance where the radiant heat flux (output) from the battery energy storage system fully involved in fire does not create the potential for ignition of vegetation.</p>	✓	<p>A minimum 10 m wide cleared buffer will be provided inside the boundary of BESS yards and solar farms. The firebreak buffer will contain non-combustible retaining walls, internal access roads and/or cleared land (non-vegetated) managed as part of the APZ. The APZs have been calculated in relation to the 10 kW/m² radiant heat threshold.</p>

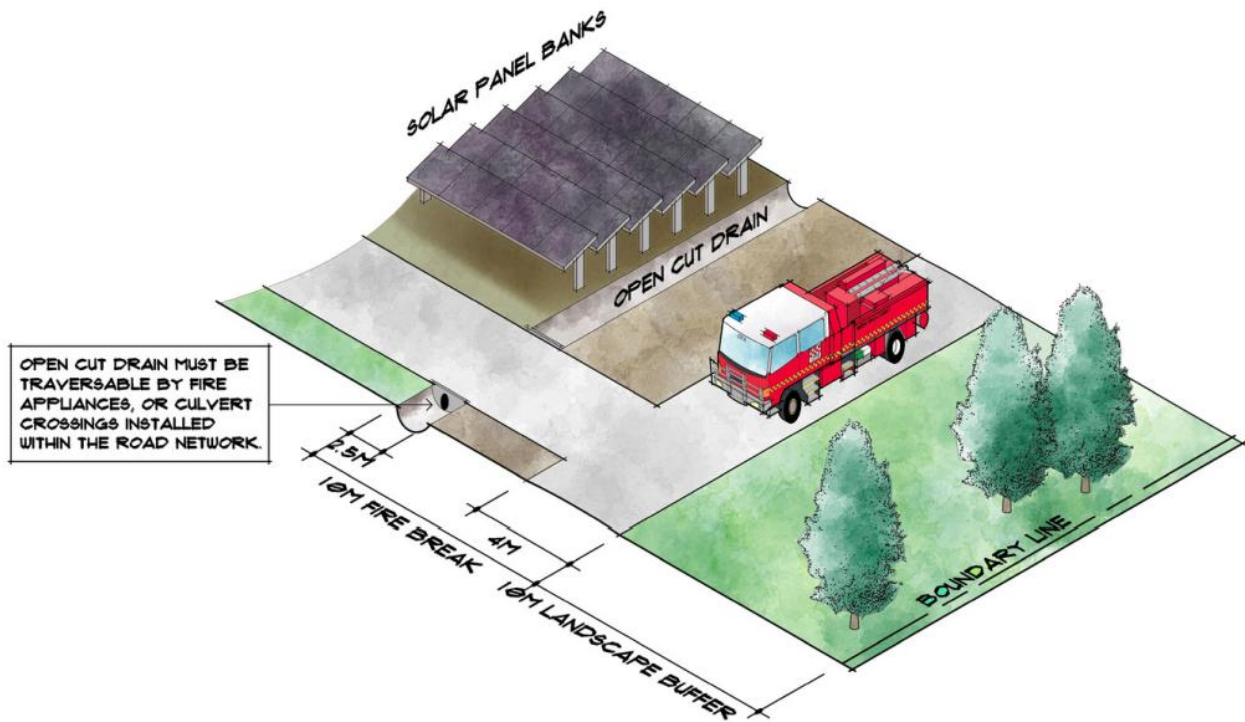


Figure 10: Typical cross-section indicating fire break requirements at a solar energy facility.

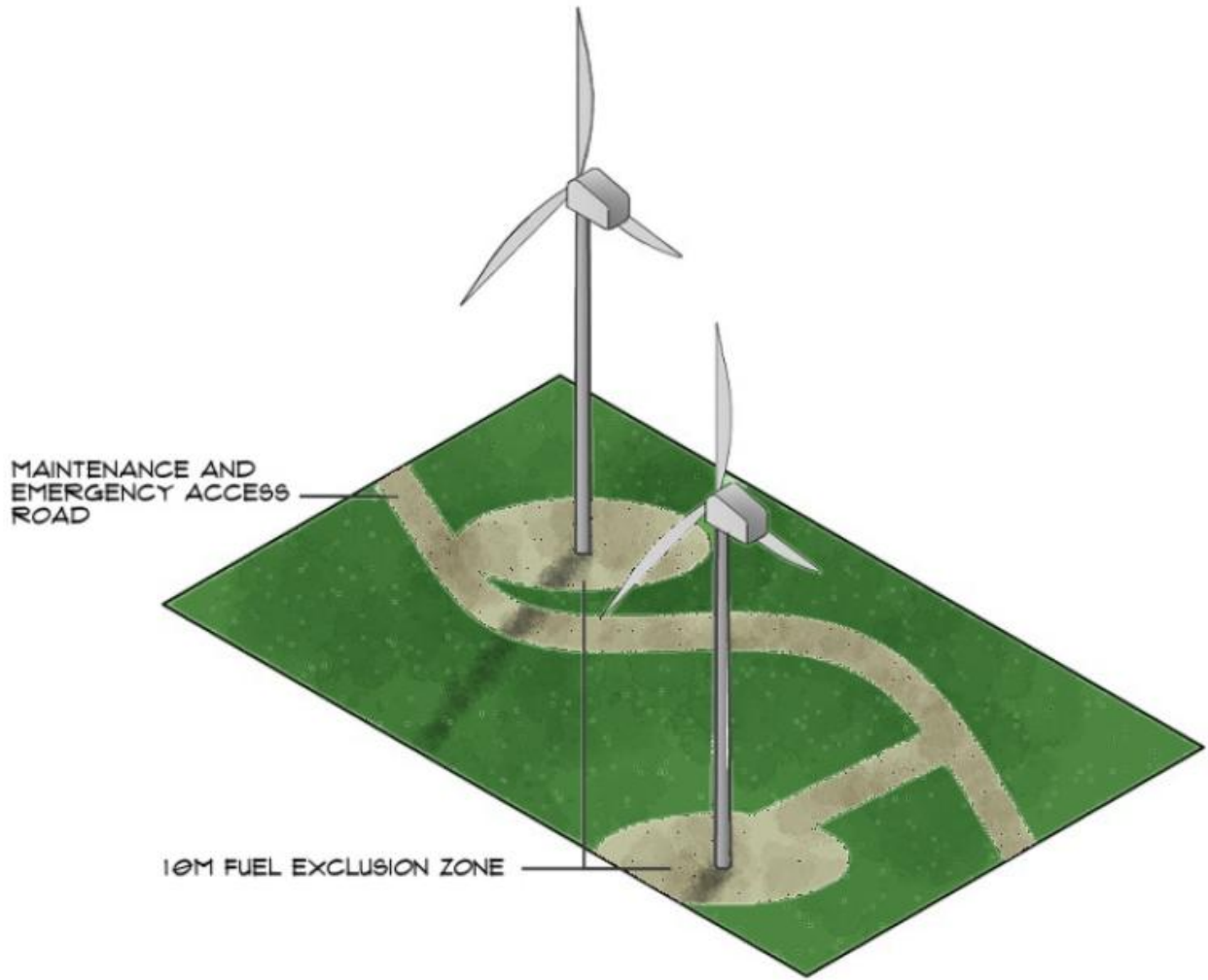


Figure 11: Typical wind turbine arrangement with fuel exclusion zone and access roads.

Design Specific to Facility Type

Wind Energy Specific Requirements

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
Wind turbines must be located no less than 300 m apart.	✓	No Wind turbines are proposed to be situated within 300 m of one another.
Wind turbines must be provided with automatic shut-down, and the ability to be completely disconnected from the power supply in the event of fire.	✓	Wind turbines will be provided with automatic shut-down, and the ability to be completely disconnected from the power supply in the event of a fire. This will be documented at detailed design stage.
Installed weather monitoring stations must be notified to the civil Aviation Safety Authority (CASA) as per CASA Advisory Circular AC 139.E-05 v1.1, October 2022 (as for all structures 110 m or more above the ground).	✓	All weather monitoring stations will be notified to CASA.
All guy wires and monitoring towers must be clearly marked, even where marking is not required by CASA.	✓	All guy wires will be clearly marked. This will be documented at detailed design stage.

Solar Energy Specific Requirements

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
Solar energy facilities are to have a minimum six (6) metre separation between solar panel banks.	✓	When detailed design of the solar farms is undertaken following the planning approval of the proposed development, 6 m separation between solar panels banks will be incorporated in the design.

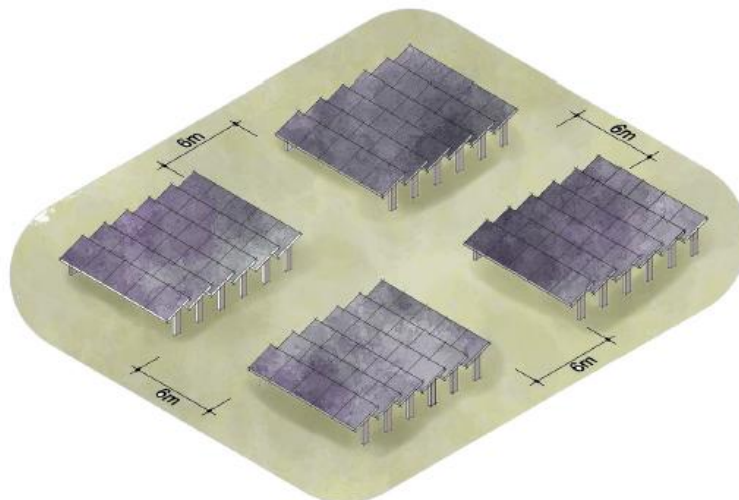


Figure 12: Six metre separation between solar panel banks (indicative only).

BESS Specific Requirements

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
<p>The design of the BESS facility must incorporate a separation distance that prevents fire spread between battery containers / enclosures and:</p> <ul style="list-style-type: none"> • Other battery containers / enclosures. • On-site buildings. • Substations. • The site boundary. • Any other site buildings. • Vegetation. 	✓	<p>All components of the BESS facility will be designed to prevent fire spread.</p> <p>Detailed design will ensure separation distances within the subject site are in line with globally accepted standard NFPA 855 - <i>Standard for Installation of Statutory Energy Storage Systems</i> (NFPA, 2023) and manufacturers specifications.</p>
<p>The design must incorporate a firebreak around the BESS and related infrastructure, of a width of no less than 10 m.</p>	✓	<p>A 10 m firebreak will be provided (refer above).</p>
<p>The design must incorporate a layout of site infrastructure that:</p> <ul style="list-style-type: none"> • Considers the safety of emergency responders. • Minimises the potential for grassfire and/or bushfire to impact the BESS. • Minimises the potential for fires to battery containers / enclosures to impact on-site and off-site infrastructure. 	✓	<p>The centralised layout enables first responders to safely access the site and fire suppression infrastructure in an emergency.</p> <p>The APZ also provide permanent separation between the proposed BESS facility and areas of vegetation.</p> <p>The BESS yards will utilise infrastructure that integrates fire prevention systems and controls to prevent potential fires. This will be finalised in detailed design.</p> <p>The BESS yards are accessible via multiple access tracks for ease of emergency responders' access and egress in the event of a fire.</p>
<p>The BESS must be located reasonably adjacent to a site vehicle entrance suitable for emergency vehicles.</p>	✓	<p>The BESS yard at Site 6 has a reasonably adjacent access point onto Carnamah-Eneabba Road, approximately 1.3 km away.</p> <p>The BESS yard at Site 11 is approximately 4 km from the access point on Carnamah-Eneabba Road and approximately 6.4 km from Garibaldi Willis Road.</p> <p>Each of the above entrances are suitable for Type 3.4 firefighting appliances.</p>
<p>The BESS must be located so that the site entrance and any fire water tanks are not aligned to the prevailing wind direction (therefore least likely to be impacted by smoke in the event of a fire at the BESS).</p>	✓	<p>Both of the BESS yards can be accessed from multiple entrances and as such, different sides depending on the approach of bushfire.</p>

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
<p>The BESS must be provided with in-built fire and gas detection systems. Where these systems are not provided, measure to effectively detect fires within containers must be detailed within the Risk Management Plan.</p>		<p>The exact locations of BESS units and water tanks will be documented at detailed design stage. Locations will ensure that firefighting water will be accessible under differing wind conditions.</p> <p>The BESS will be provided with in-built smoke detectors, heat detectors and combustible gas detectors.</p>
<p>The BESS must be provided with explosion prevention via sensing and venting, or explosion mitigation through deflagration panels.</p>	✓	<p>The BESS will be provided with in-built smoke detectors and hydrogen gas detectors to prevent explosions.</p>
<p>The BESS must be provided with suitable ember protection to prevent embers from penetrating battery containers / enclosures.</p>	✓	<p>Any external gaps or ventilation systems can be fitted with ember protection. This will be documented at detailed design stage.</p>
<p>The BESS must be provided with suitable access roads for emergency services vehicles, to and within the site, including to BESS and fire service infrastructure.</p>	✓	<p>The access arrangements enable emergency service vehicles to effectively manoeuvre the site and access the fire service infrastructure, as demonstrated in the Emergency Vehicle Access section.</p>
<p>The BESS must be installed on a non-combustible surface such as concrete.</p>	✓	<p>The BESS will be installed on a non-combustible surface.</p>
<p>The BESS must be provided with suitable ventilation.</p>	✓	<p>The BESS will be fitted with automatic ventilation system.</p>
<p>The BESS must be provided with impact protection to at least the equivalent of a W guardrail-type barrier, to prevent mechanical damage to battery containers / enclosures.</p>	✓	<p>Suitable impact protection measures may be developed, subject to final hazard risk assessment to be completed during detailed design stage.</p>
<p>The BESS must be provided with enclosed wiring and buried cabling, except where required to be above-ground for grid connection.</p>	✓	<p>All wiring will be enclosed and all cabling connecting the individual components will be underground.</p>
<p>The BESS must be provided with spill containment that includes provision for management of fire water runoff.</p>	✓	<p>BESS containers will be equipped with spill containment. Fire water runoff will be managed through detailed hydrology design.</p>

Facility Construction and Commissioning

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
All Facilities		
Install and commission fire detection and suppression for the facility at the earliest possible stage of construction.	TBC	A construction programme is yet to be prepared for the project.
Provide first-aid firefighting equipment, such as fire extinguishers (and where possible, portable fire hose reels), appropriate to the identified emergency scenarios, at all construction portables / buildings onsite, in the vicinity of all construction activities, and in site-based vehicles.	✓	Transportable buildings used during the construction phase of the project will include first-aid firefighting equipment.
Provide the required fire protection equipment for any storage of dangerous goods as per the relevant Australian Standards.	✓	Fire protection equipment will be provided in accordance with the relevant standards for the storage of dangerous goods.
Obtain appropriate permits for work during the restricted and prohibited burning periods and ensure that any conditions on the permits are adhered to.	✓	The proponent will be responsible for obtaining any necessary permits during restricted burn periods.
Adhere to restrictions on Total Fire Ban or days of elevated fire danger according to Emergency WA website.	✓	The proponent will adhere to the restrictions of Total Fire Ban days.
During the restricted and prohibited burning periods, ensure vehicle operators are instructed to remain on tracks and are not permitted to drive through paddocks.	✓	Vehicles will only be permitted on designated access roads.
Restrict smoking to prescribed areas and provide suitable ash and butt disposal facilities.	✓	Smoking will be restricted to a prescribed area, away from all fire hazards.
Provide remotely accessible site/system security monitoring at the facility.	TBC	This will be determined during the detailed design phase.
Provide training for personnel in the use of on-site first aid firefighting equipment, and responsibilities during emergencies.	✓	Personnel nominated as part of the emergency response team will be required to undertake first aid and firefighting equipment training.
Develop an Emergency Plan for the construction and commissioning phase of the project.	✓	A construction management plan will be developed for the project which will include emergency procedures during the construction and commissioning phase of the project.
Provide an emergency communication system that is reliable and will operate in the event of power failure.	✓	All vehicles will be fitted with two-way radios to enable communication during an emergency. Mobile phone reception is also available at the site.

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
<p>Notify DFES at least seven days prior to the commissioning of any renewable energy infrastructure at the facility.</p>	✓	<p>DFES will be notified prior to commissioning of Tathra Wind Farm.</p>
<p>Develop safe work procedures for the facility, including but not limited to:</p> <ul style="list-style-type: none"> • Electricity and chemical management. • Vegetation management. • Site security. • Ignition source control, including hot works. • Infrastructure, equipment and vehicle maintenance. • Emergency management. 	✓	<p>The proponent will develop an operational management plan which will include safe work procedures for the facility.</p>

Facility Operation

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
All Facilities		
<p>A BMP must be developed for the facility, in consultation with DFES, before development starts.</p>	✓	<p>A BMP has been prepared in accordance with SPP 3.7 and the Guidelines. The BMP may be referred to DFES in accordance with SPP 3.7 for advice as part of the assessment process. This is at the discretion of the Shire of Carnamah.</p>
<p>Undertake bushfire prevention and preparedness activities.</p>	✓	<p>An emergency plan will be prepared which will outline bushfire prevention and preparedness activities.</p> <p>In addition, bushfire prevention and preparedness activities will be undertaken in accordance with the Shire of Carnamah 2024/2025 Fire Break Notice and Bushfire Information (Shire of Carnamah, 2024).</p>
<p>Facility operators must undertake the following measures:</p> <ul style="list-style-type: none"> • Grass must be maintained at or below 100 mm in height. • Long grass and/or deep leaf litter must not be present in areas where heavy equipment will be working, during construction or operation. • Restrictions and guidance must be adhered to during days of high (and above) fire danger or Total Fire Ban days. 	✓	<p>The proposed renewable energy infrastructure will be surrounded by an APZ to ensure the radiant heat flux from vegetation is maintained at 10 kW/m². All grass within the APZ will be maintained at or below 100 mm and leaf litter will be removed on a regular basis.</p>
<p>Appropriate monitoring for facility infrastructure must be provided to ensure that any shorts, faults or equipment failures with the potential to ignite or propagate fire are rapidly identified and controlled.</p>	✓	<p>The facility will be subject to routine monitoring to identify any shorts, faults or equipment failures. The monitoring regime will be detailed in the operational management plan.</p>
<p>Inspection, maintenance and any required repair activities must be conducted for all infrastructure, equipment and vehicles at the facility. Maintenance must be in line with any relevant Australian Standards and manufacturers requirements.</p>	✓	<p>Inspection, maintenance and repairs will be undertaken in accordance with the relevant Australian Standards and manufacturers requirements.</p>

Vegetation Management

Effective vegetation management can reduce both the risk of fire entering your facility, and the consequences of fire if it does occur.

- Gutters, roof surfaces and valleys, kerbs, traps, sumps, bunds, drains, rooves or any other accumulation points for leaf litter, dry vegetation, or any other combustible materials must be cleared, and the debris removed from site.
- Vegetation management activities must be conducted across the entire facility (eg., grass slashing or mowing, removal of dead/fallen vegetation).
- Extraneous materials or vegetation in fire breaks at the site perimeter, at external building walls, and at other any site plant/assets must be cleared and removed from site.
- Extraneous or unnecessary materials (fuel loads) must be removed from site, eg., mulch piles; dilapidated/stored vehicles, plant or equipment; excess fuel/chemicals; any combustible waste materials. Vehicles must not be parked on unmanaged vegetation.

All Facilities	Solar Energy Facilities	BESS Facilities	Substations and Electric Lines
<p>Facility operators must undertake the following measures during the Fire Danger Period:</p> <ol style="list-style-type: none"> Grass must be maintained at or below 100mm in height during the declared Fire Danger Period. Long grass and/or deep leaf litter must not be present in areas where heavy equipment will be working, during construction or operation. Restrictions and guidance must be adhered to during the Fire Danger Period, days of High (and above) fire danger and Total Fire Ban days. 	<p>Solar energy facilities must have grass maintained to no more than 100 mm under solar panels during the Fire Danger Period.</p> <p>Operators of solar energy facilities on grazed paddocks must ensure that if additional measures to maintain grass to this level are required, they are implemented prior to, and for the duration of the Fire Danger Period.</p>	<p>Containers/enclosures and infrastructure for battery energy storage systems must be maintained to be clear of vegetation, including grass, for at least ten (10) metres on all sides, or greater as informed by the BMP.</p>	<p>Vegetation management within any electric line easement must ensure that falling trees would not impact the transmission lines, towers and associated infrastructure.</p>

Emergency Planning

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
All Facilities		
<p>An Emergency Plan must be developed specific to the facility before the development starts.</p>	✓	<p>An emergency plan will be prepared and approved prior to operation of the development.</p>
<p>The Emergency Plan should be developed in accordance with AS 3745-2010: Planning for emergencies in facilities and include the following:</p> <ul style="list-style-type: none"> • Emergency prevention, preparedness and mitigation activities. • Activities for preparing for emergencies. • Control and coordination arrangements for emergency response (e.g. Evacuation procedures, shelter-in-place arrangements, emergency assembly areas and emergency response procedures). <p>The agreed roles and responsibilities of on-site personnel (e.g. equipment isolation, fire brigade liaison, evacuation management, shelter-in-place management, if applicable).</p>	✓	<p>The emergency plan will be developed in accordance with AS 3745-2010: <i>Planning for emergencies</i> (SA, 2010) and any other relevant guidelines.</p>
Wind Energy Specific Requirements		
<p>A wind energy facility Emergency plan must additionally include:</p> <ul style="list-style-type: none"> • Emergency procedures for fires within, and near, wind turbines. • Details of any triggers or circumstances for ceasing the operation of wind turbines or shutting down the facility, such as on Extreme or above days or approach of bushfire/grassfire to the facility. • Maximum (safe) operational wind speed and temperature conditions and operating procedures to limit fire risk. 	✓	<p>The emergency plan will be prepared in consultation with the relevant experts, taking into consideration the hazards identified in the risk assessment.</p>
Solar Energy Specific Requirements		
<p>A solar energy facility Emergency Plan must additionally include:</p> <ul style="list-style-type: none"> • Emergency procedures for isolation and shut-down where solar panels and/or related infrastructure are involved in fire. • Emergency procedures for fires within the vicinity of solar energy facilities. • Specifications for safe operating conditions for temperature, and the hazards related to electricity generation at the facility. 	✓	<p>The emergency plan will be prepared in consultation with the relevant experts, taking into consideration the hazards identified in the risk assessment.</p>

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
BESS Specific Requirements		
<p>The Emergency Plan for a BESS facility should also include:</p> <ul style="list-style-type: none"> • The contact information for specialist technical support for the BESS. • Emergency response procedures based on identified risks and hazards of the BESS and related infrastructure. • Details of the elements monitored / controlled by the Battery Management System (BMS), including internal temperature, state of charge, voltage, etc. and the locations this information is available (e.g. BESS containers, in an on-site control room, off-site monitoring facility). • A plan for partial or full decommissioning of the BESS in the event of an emergency incident that renders the facility inoperable or unsafe, before its anticipated end-of-life. 	✓	<p>The emergency plan will be prepared in consultation with the relevant experts, taking into consideration the hazards identified in the risk assessment.</p>

Provision of Emergency Information

CFA Guideline Requirements (Adapted to WA)	Compliance can be achieved	Compliance comments
<p>An Emergency Information Book must be developed and available to emergency responders. Emergency Information Books must be located in Emergency Information Containers, provided at each vehicle entrance to the facility.</p>	✓	<p>The Proponent will be responsible for preparing emergency information which are to be provided at the main entrance to the BESS facility.</p>

References

Country Fire Authority (CFA). (2023). *Design Guidelines and Model Requirements for Renewables Energy Facilities Version 4*. State of Victoria.

National Fire Protection Association (NFPA). (2023). *Standard for the Installation of Stationary Energy Storage Systems (NFPA 855)*.

Shire of Carnamah. (2024). *2024/25 Firebreak Notice and Bushfire Information*.

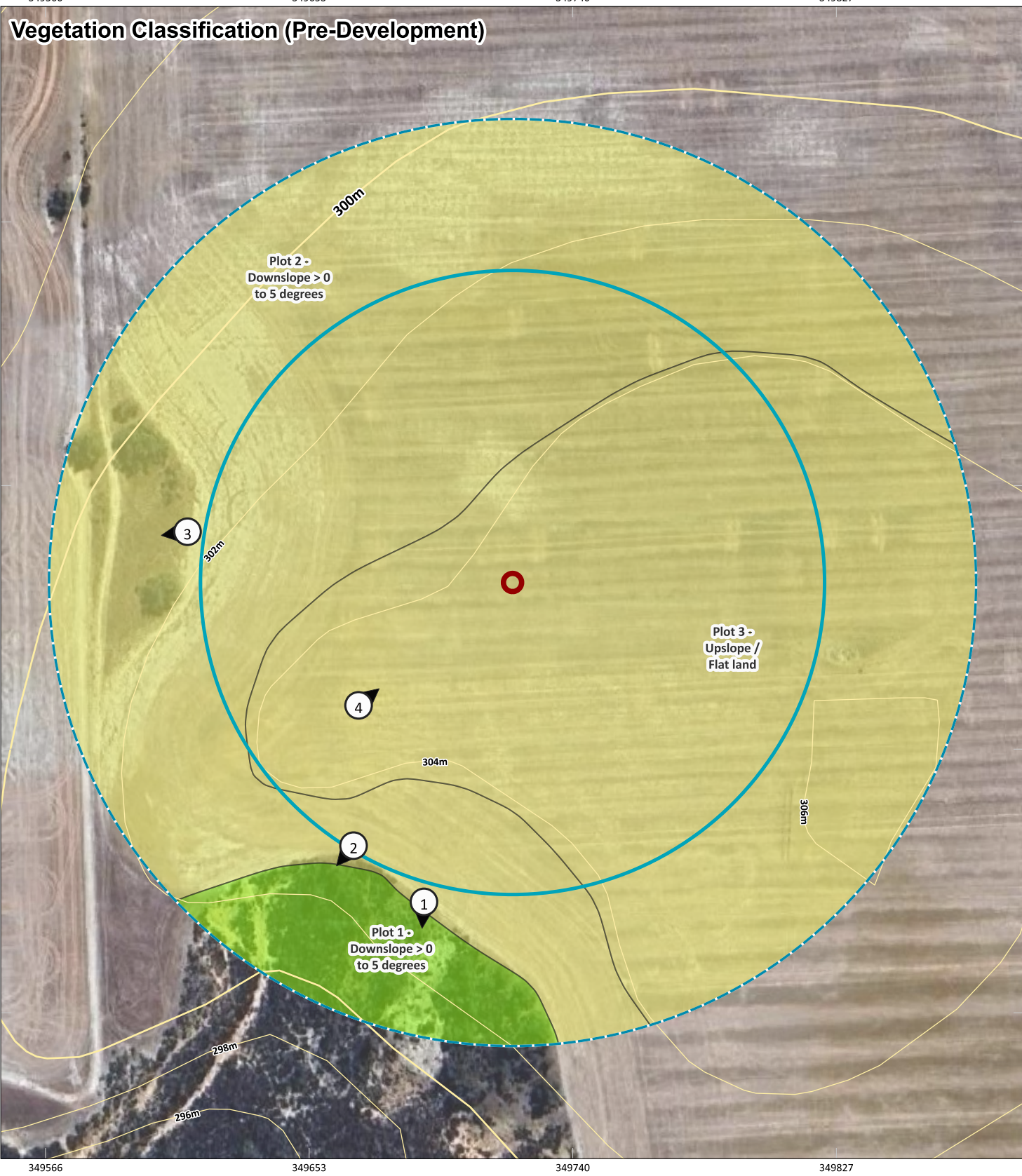
Standards Australia (SA). (2021). *Fire hydrant installations (AS 2419.1-2021)*.

Standards Australia (SA). (2010). *Planning for emergencies (AS 3745-2010)*.

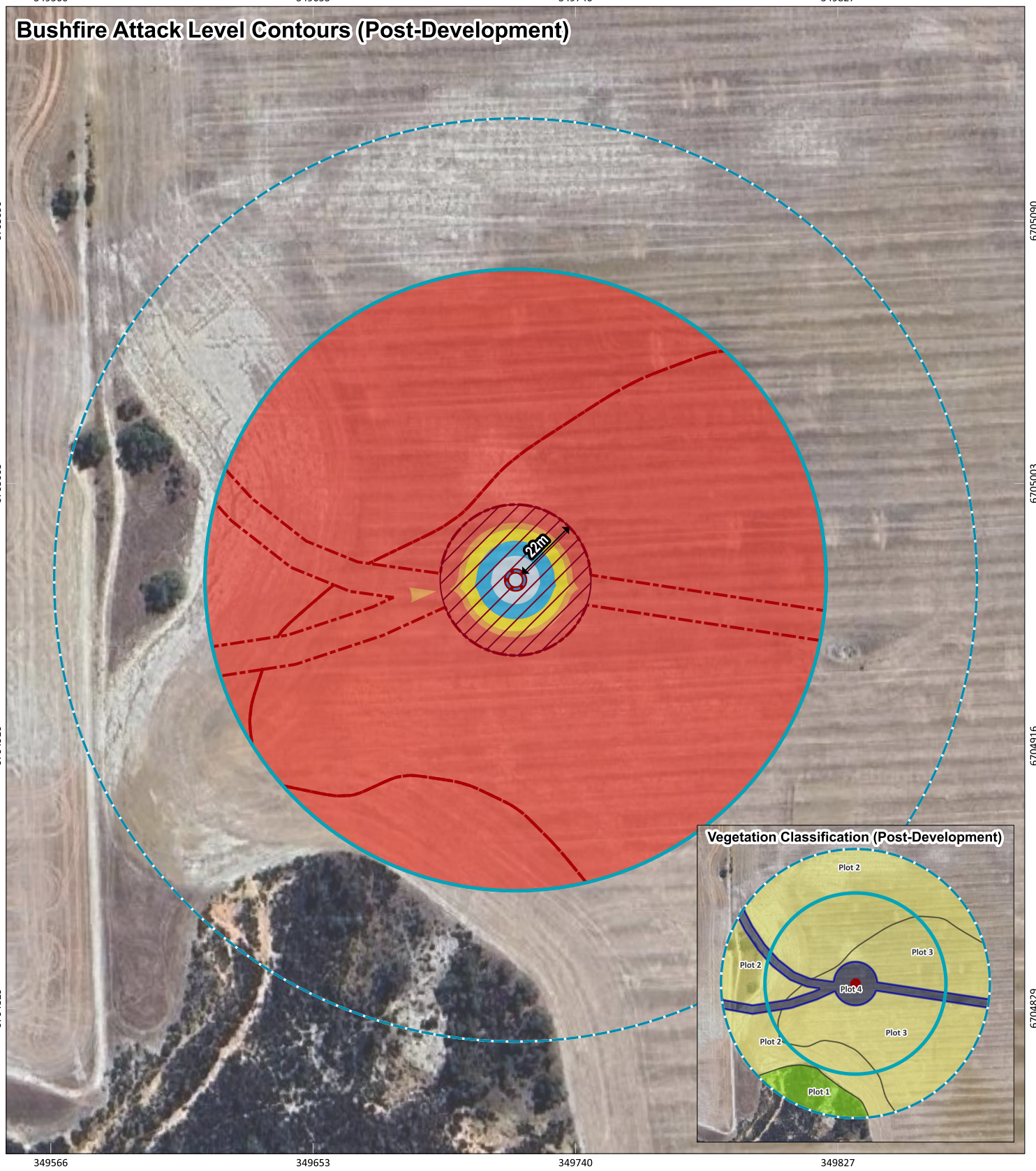
Western Environmental Approvals Pty Ltd (WEPL). (2025). *Bushfire Management Plan: Development Application: Tathra Wind Farm*.

Appendix B: Vegetation Classification and Bushfire Attack Level (BAL) Contours

Vegetation Classification (Pre-Development)

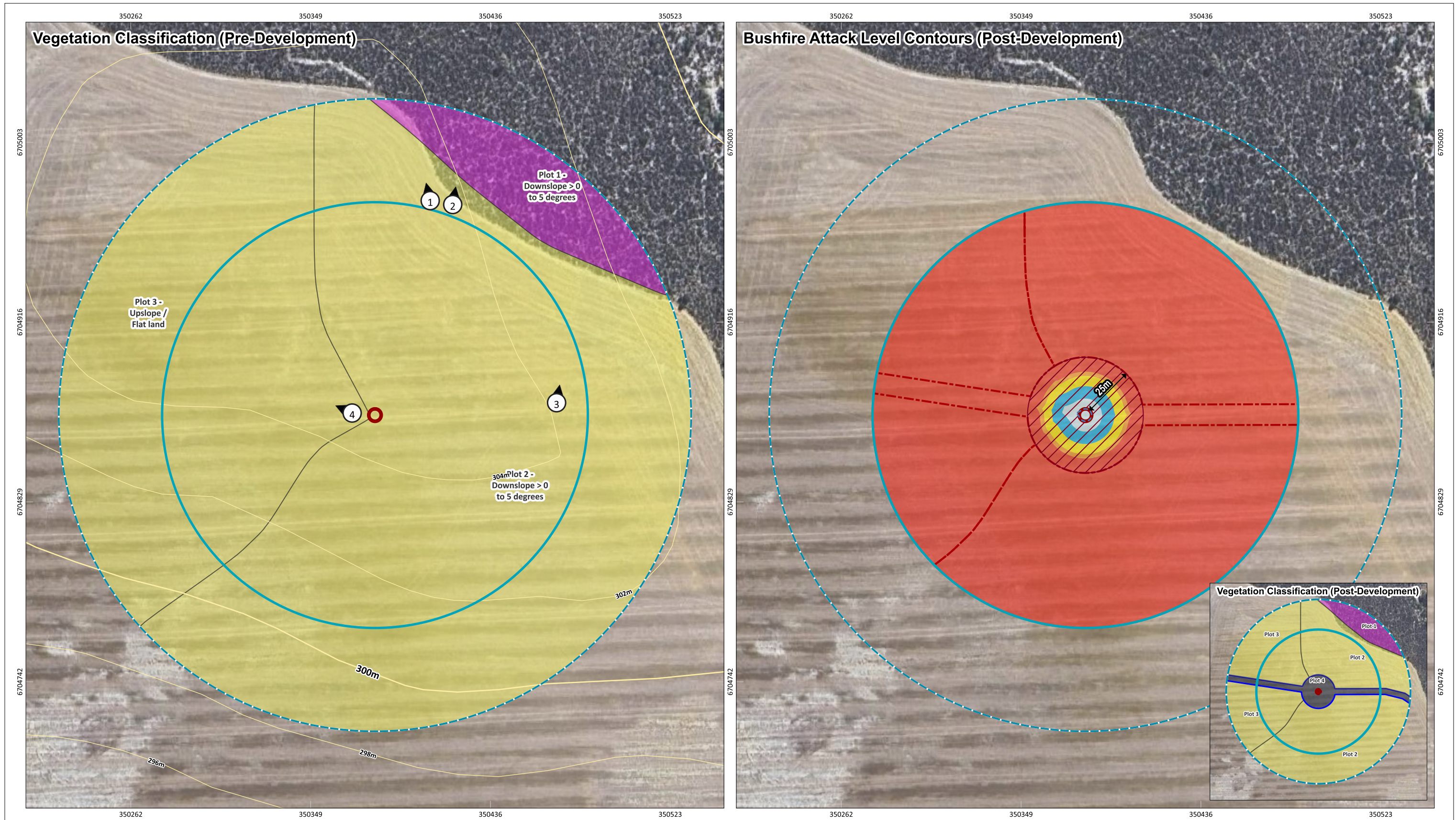


Bushfire Attack Level Contours (Post-Development)



Appendix B.1: Site 1 - Wind Turbine (ES_31) Vegetation Classification and Bushfire Attack Level (BAL) contours

		PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class E - Mallee/Mulga Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Provese St, West Perth WA 6005 western.com.au
SCALE 1:1,750	SHEET SIZE A3 COLOUR	CLIENT SynergyRED	PROJECT NUMBER A24.281						



Appendix B.2: Site 2 - Wind Turbine (ES_33) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class C - Shrubland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 WESTERN ENVIRONMENTAL Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Proville St, West Perth WA 6005 western.com.au
	SCALE 1:1,750	SHEET SIZE A3 COLOUR						

Vegetation Classification (Pre-Development)



Bushfire Attack Level Contours (Post-Development)



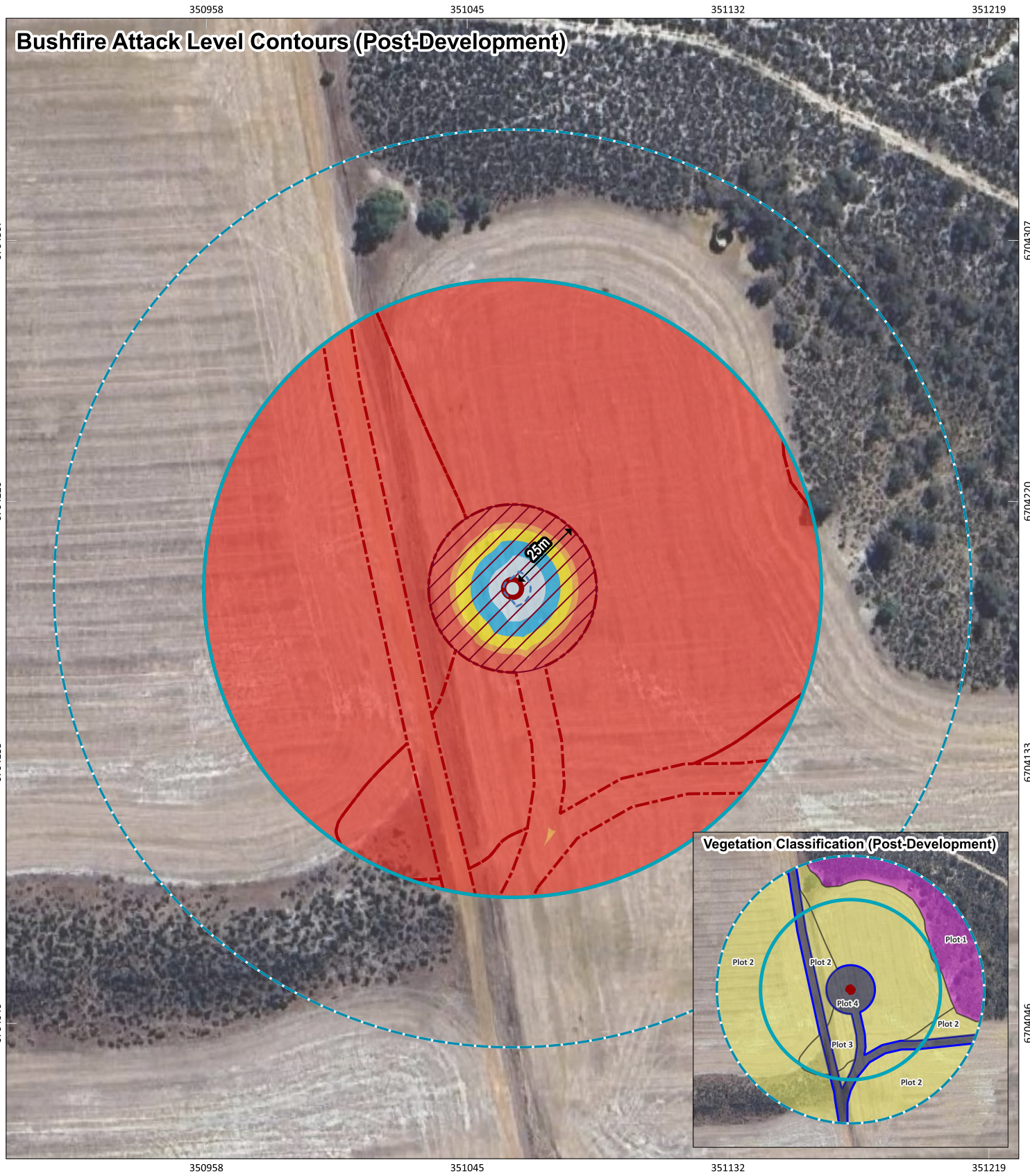
Appendix B.3: Site 3 - Wind Turbine (ES_30) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class C - Shrubland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		<p>Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Proville St, West Perth WA 6005 western.com.au</p>
	SCALE 1:1,750	SHEET SIZE A3 COLOUR						

Vegetation Classification (Pre-Development)



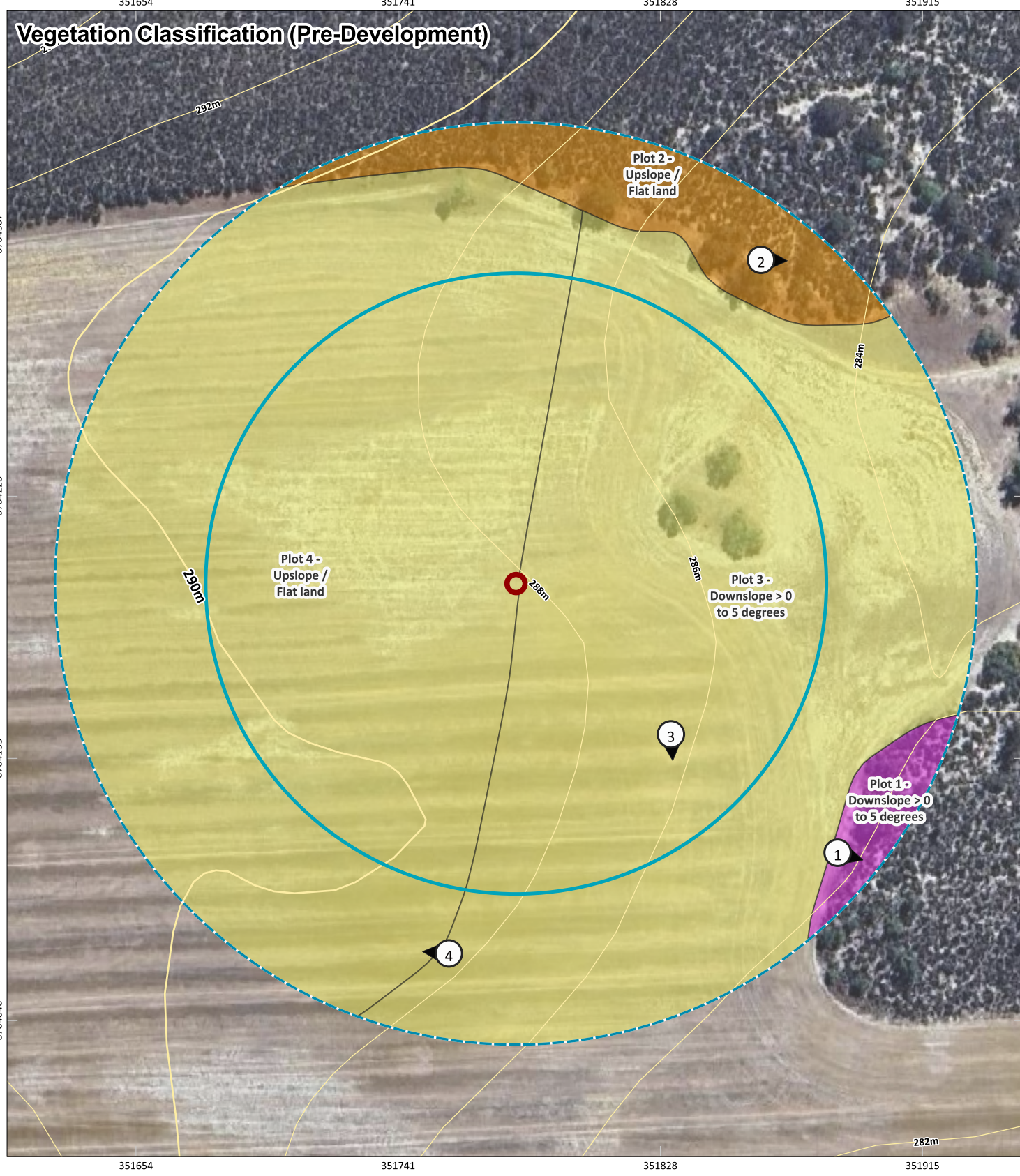
Bushfire Attack Level Contours (Post-Development)



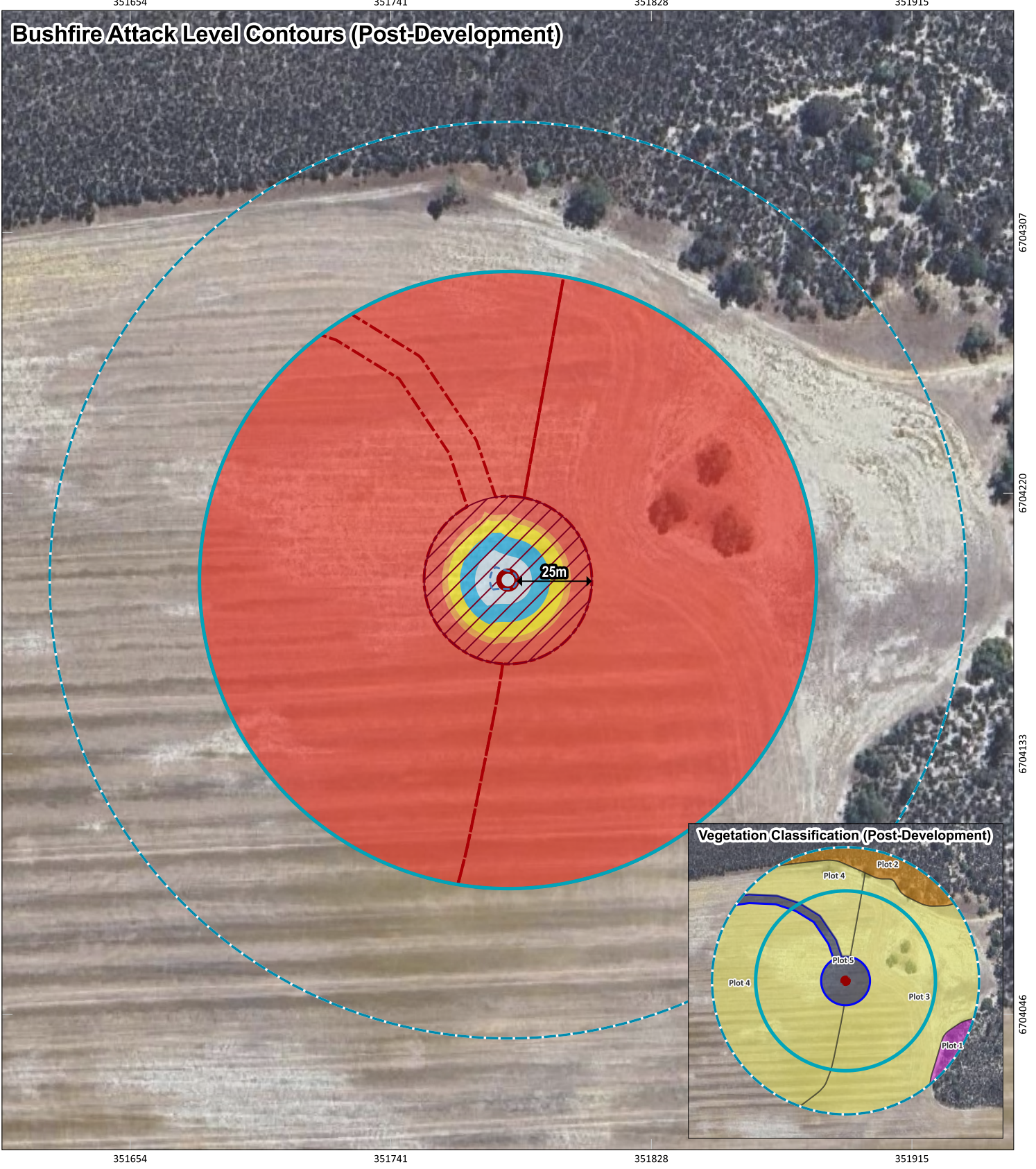
Appendix B.4: Site 4 - Wind Turbine (ES_37) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class C - Shrubland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 Western Environmental Pty Ltd 08 6242 2310 enquiries@western.com.au Level 3/25 Proville St, West Perth WA 6005 western.com.au
	SCALE 1:1,750	SHEET SIZE A3 COLOUR						
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		DRAWN BY / REVIEWED BY SM/BF	DATE 30/7/2025					

Vegetation Classification (Pre-Development)



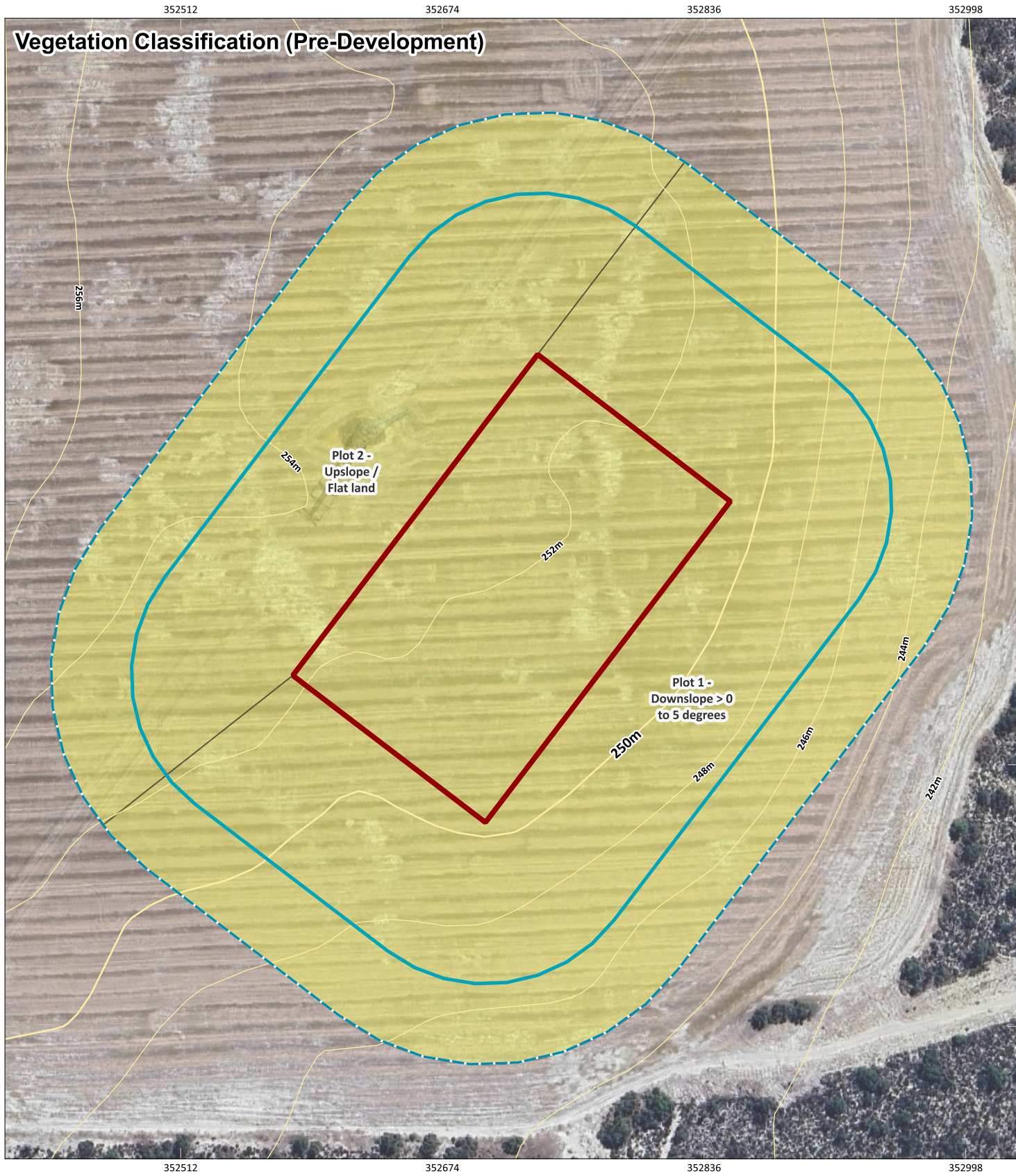
Bushfire Attack Level Contours (Post-Development)



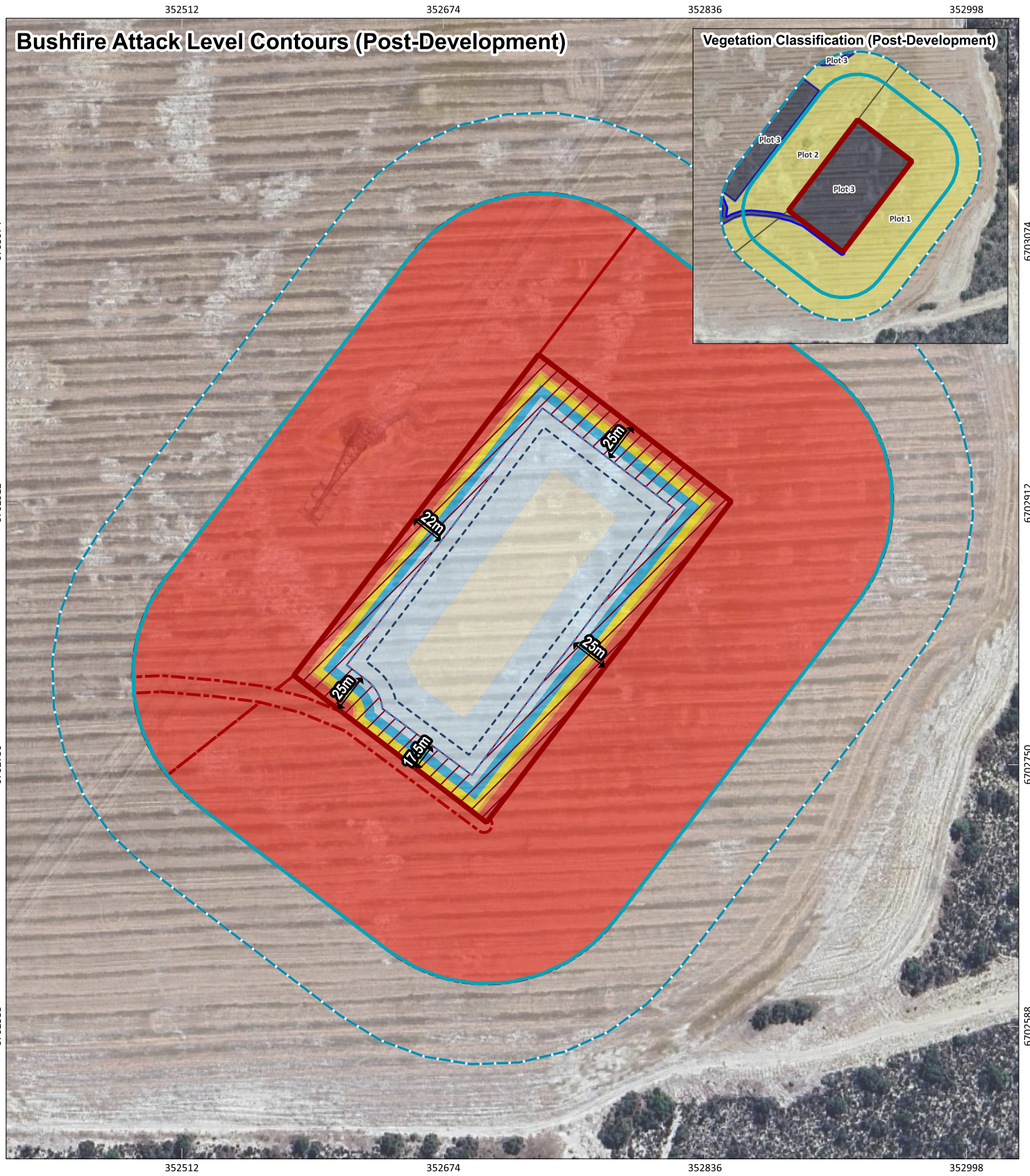
Appendix B.5: Site 5 - Wind Turbine (ES_41) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class C - Shrubland Class D - Scrub Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Proville St, West Perth WA 6005 western.com.au
	SCALE 1:1,750	SHEET SIZE A3 COLOUR						

Vegetation Classification (Pre-Development)

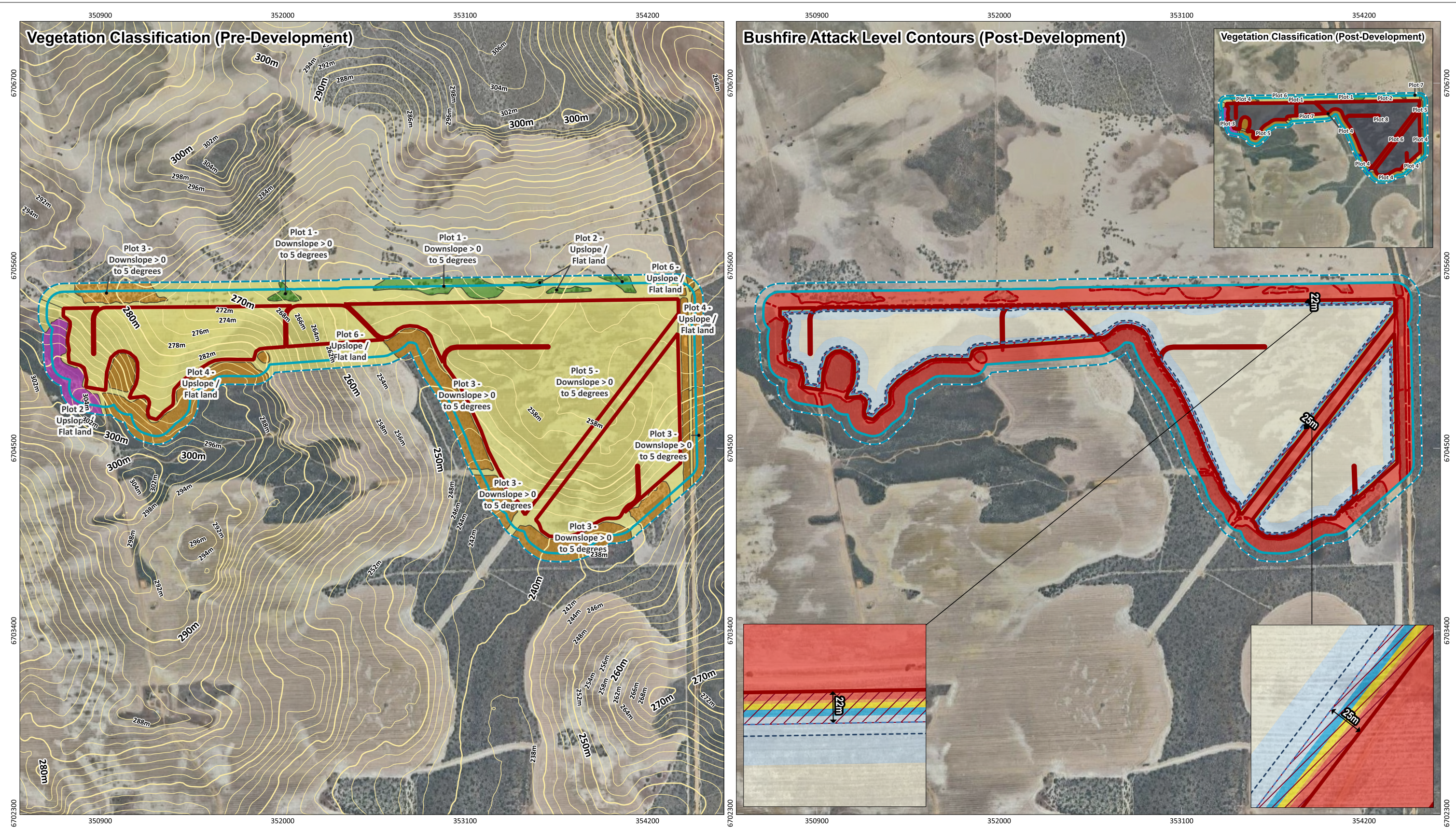


Bushfire Attack Level Contours (Post-Development)



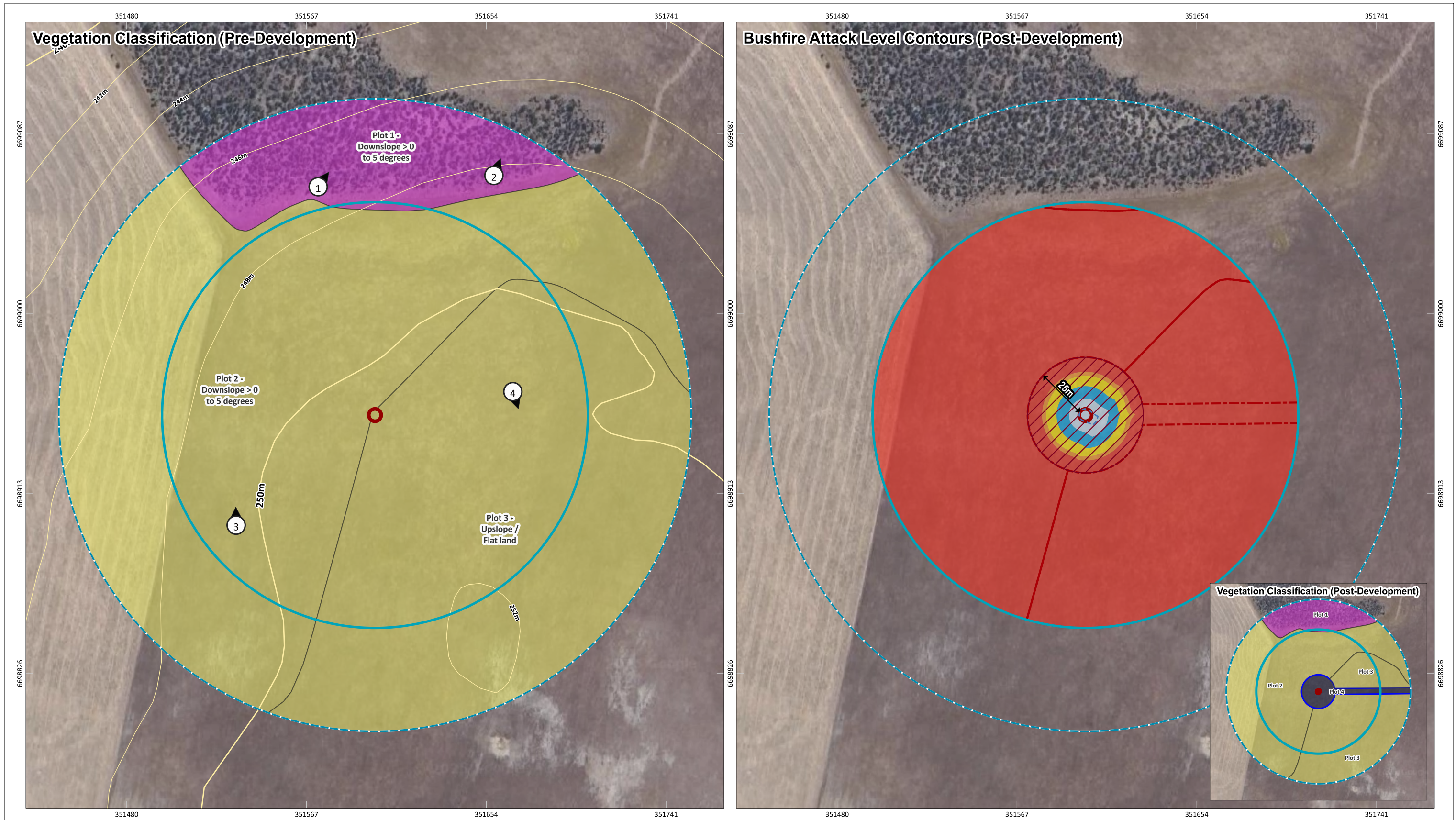
Appendix B.6: Site 6 - (BESS) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 10 kW/m ² (1200K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 WESTERN ENVIRONMENTAL Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Proville St, West Perth WA 6005 western.com.au
	SCALE 1:3,250	SHEET SIZE A3 COLOUR						



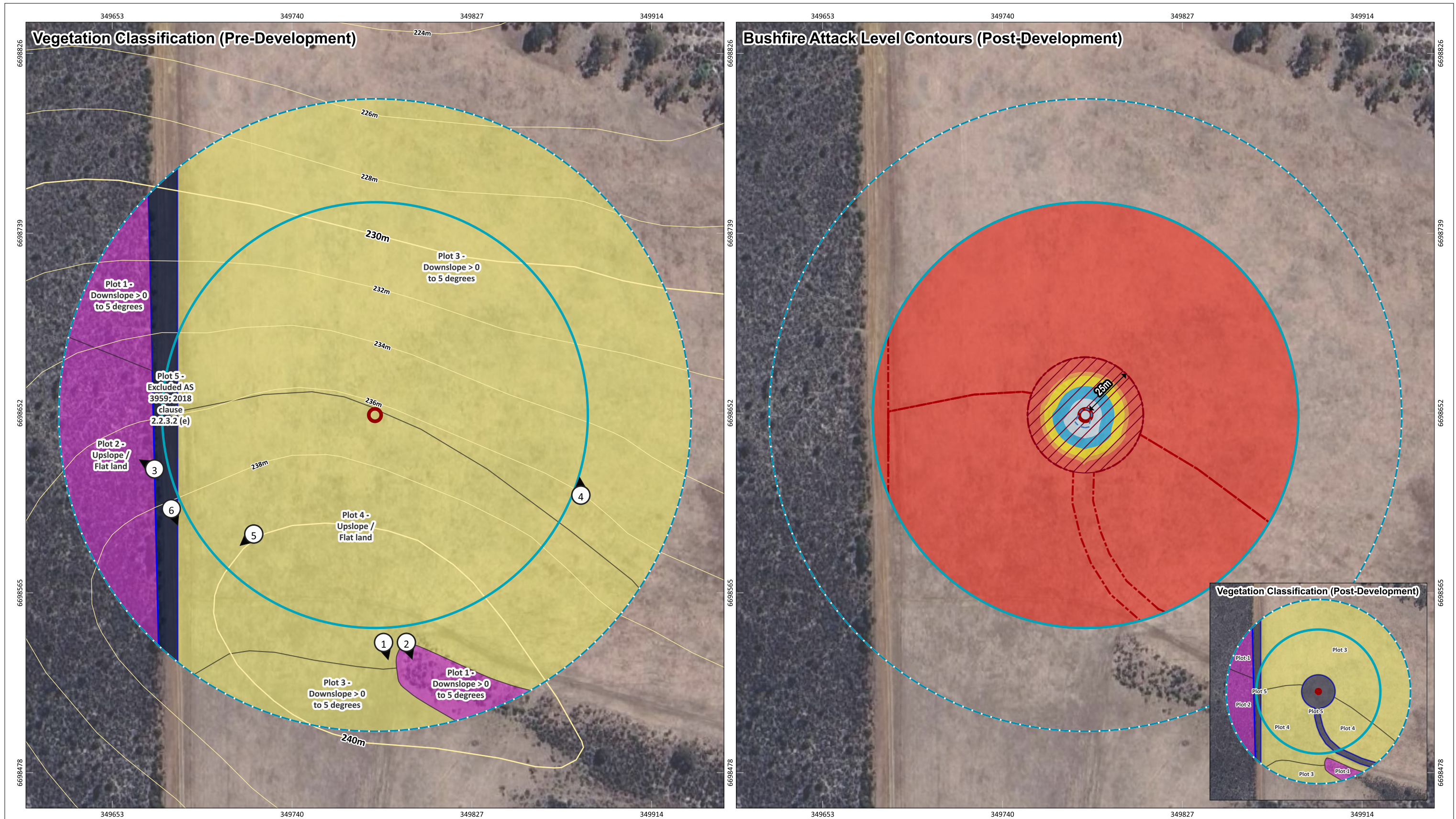
Appendix B.7: Site 7 - (Solar Array) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm	Legend Subject Site Buffer 100m Buffer 150m Photos	Vegetation Classification Class B - Woodland Class C - Shrubland Class D - Scrub Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 WESTERN ENVIRONMENTAL <small>Western Environmental Pty Ltd 08 6242 2310 enquiries@western.com.au Level 3/25 Prosser St, West Perth WA 6005 western.com.au</small>
	SCALE 1:22,000					
SHEET SIZE A3 COLOUR	PROJECT NUMBER A24.281	VERSION 0				
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50	DRAWN BY / REVIEWED BY SM/BF	DATE 30/7/2025				
DATA SOURCE Google Earth Imagery						



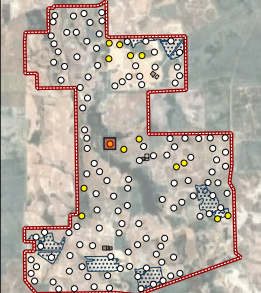
Appendix B.8: Site 8 - Wind Turbine (TN_3) Vegetation Classification and Bushfire Attack Level (BAL) contours


	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class C - Shrubland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 WESTERN ENVIRONMENTAL <small>Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Prowise St, West Perth WA 6005 western.com.au</small>
	SCALE 1:1,750	SHEET SIZE A3 COLOUR					
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		PROJECT NUMBER A24.281	VERSION 0				
DATA SOURCE Google Earth Imagery		DRAWN BY / REVIEWED BY SM/BF	DATE 30/7/2025				

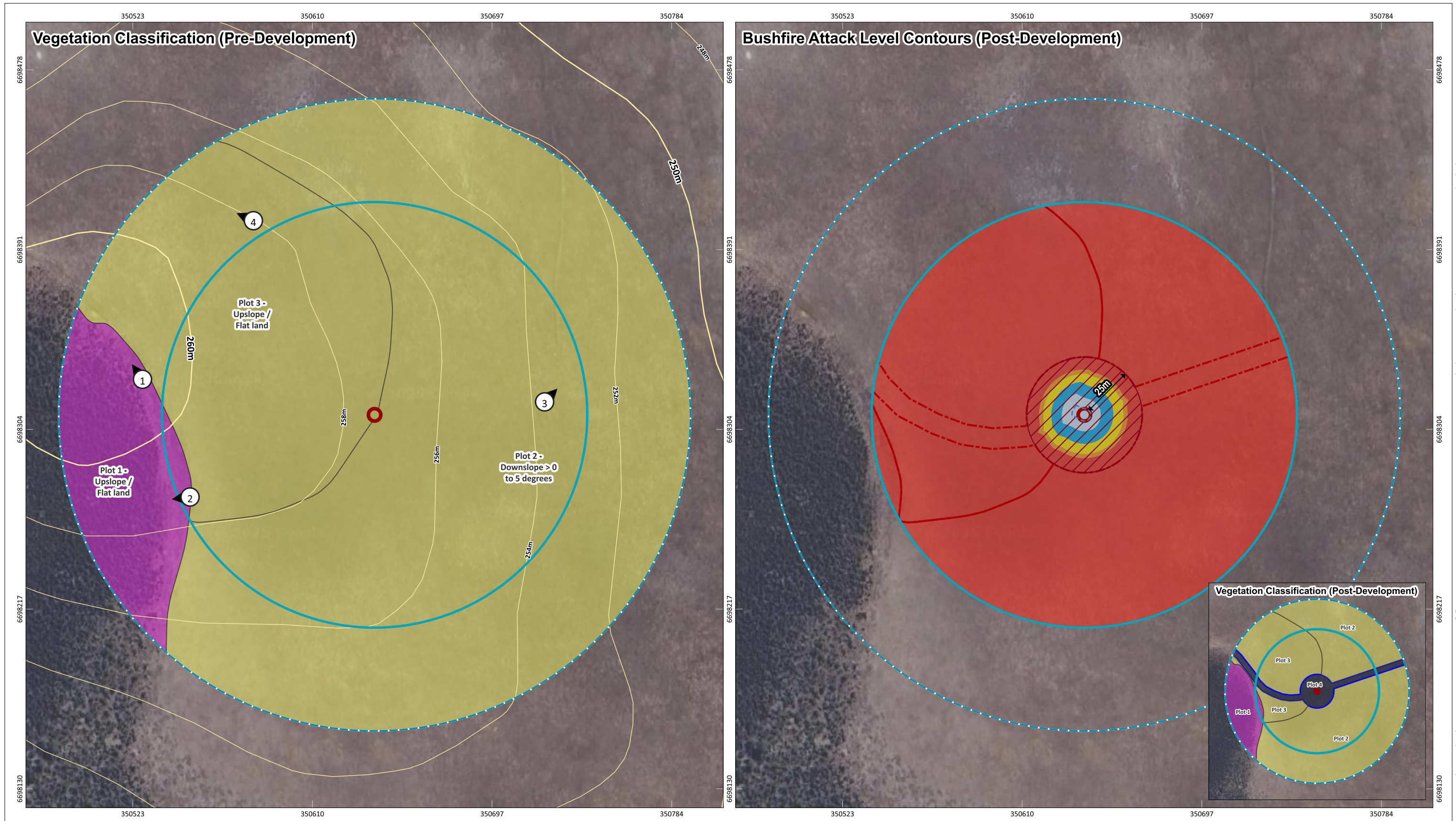


Appendix B.9: Site 9 - Wind Turbine (TN_1) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm	Legend		Vegetation Classification Class C - Shrubland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW
	SCALE 1:1,750	SHEET SIZE A3 COLOUR	CLIENT SynergyRED		
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50	PROJECT NUMBER A24.281	VERSION 0			
DATA SOURCE Google Earth Imagery	DRAWN BY / REVIEWED BY SM/BF	DATE 30/7/2025			



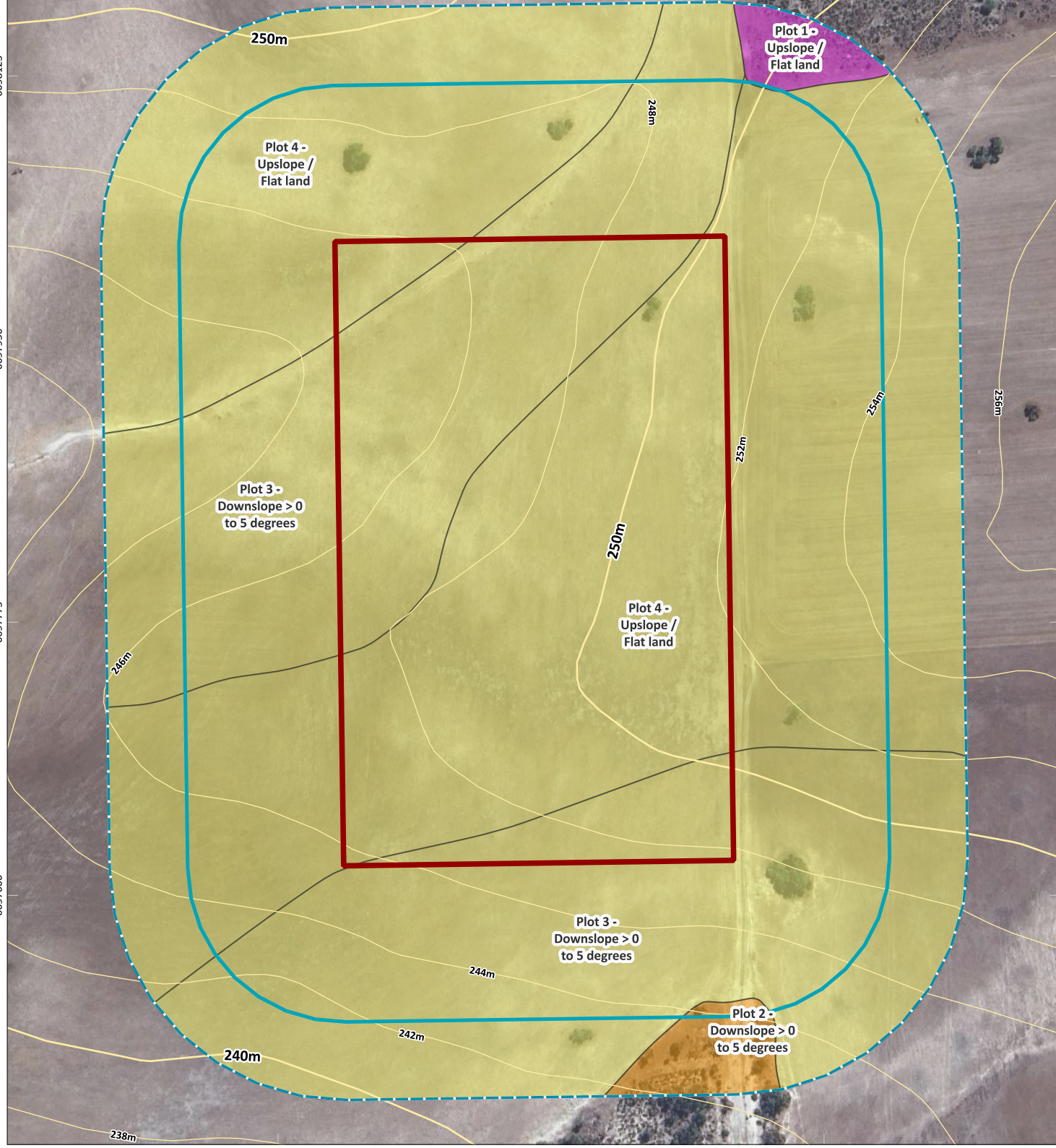

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western.com.au



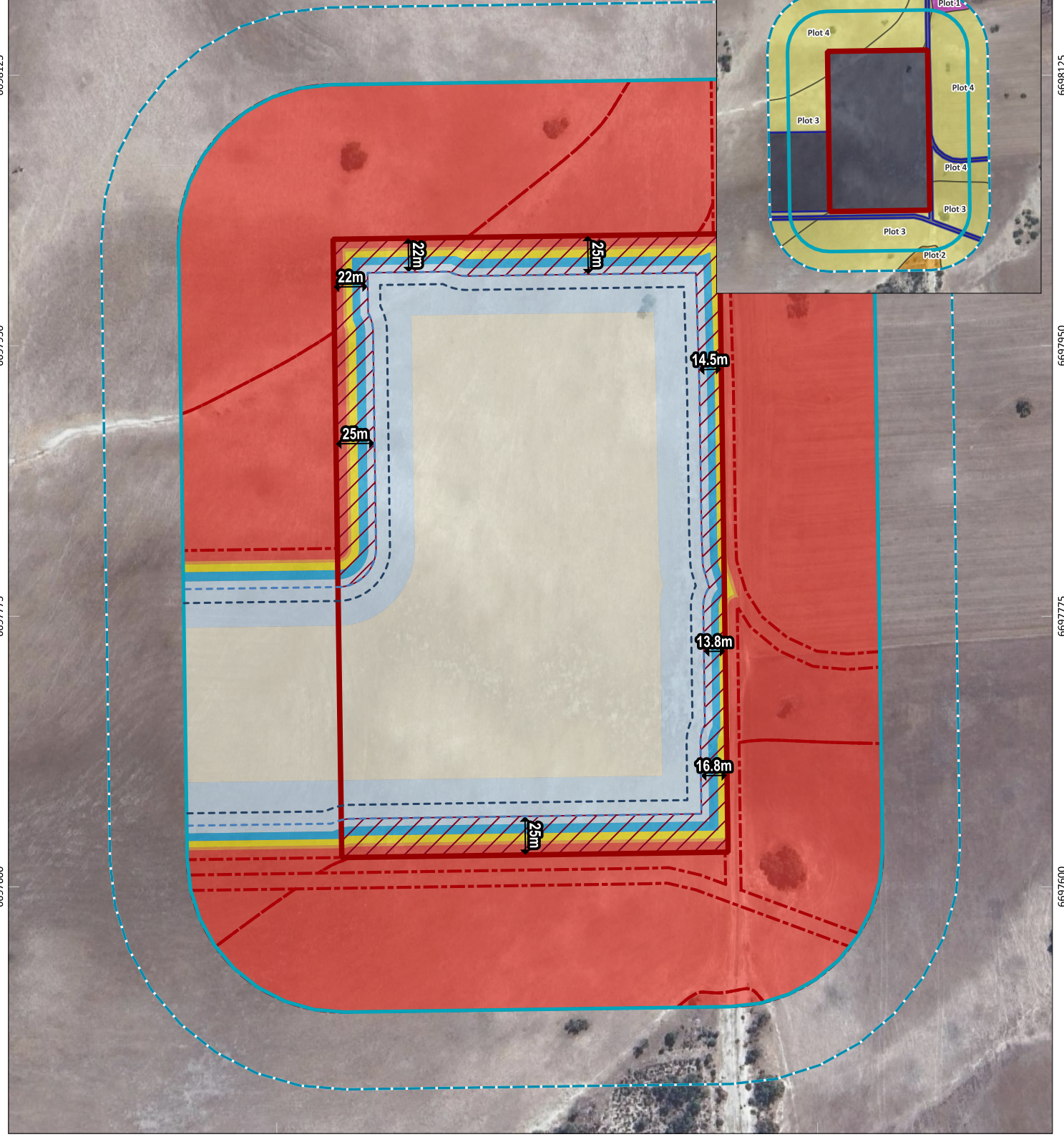
Appendix B.10: Site 10 - Wind Turbine (TN_2) Vegetation Classification and Bushfire Attack Level (BAL) contours

		PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos		Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m		Vegetation Classification Class C - Shrubland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)		Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW			 Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Proville St, West Perth WA 6005 western.com.au
SCALE 1:1,750	SHEET SIZE A3 COLOUR	CLIENT SynergyRED	PROJECT NUMBER A24.281	VERSION 0	DRAWN BY / REVIEWED BY SM/BF		DATE 30/7/2025						

Vegetation Classification (Pre-Development)



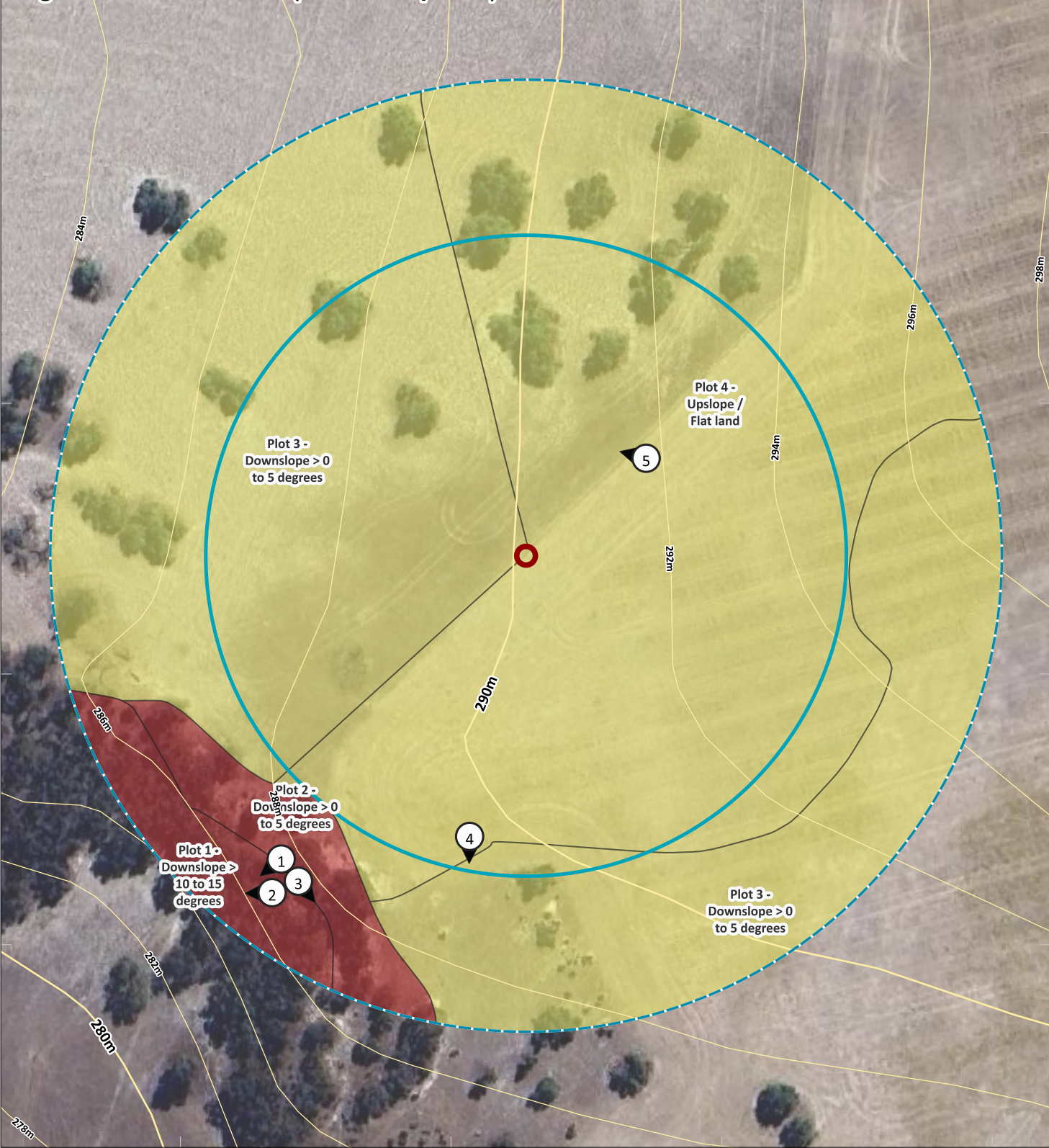
Bushfire Attack Level Contours (Post-Development)



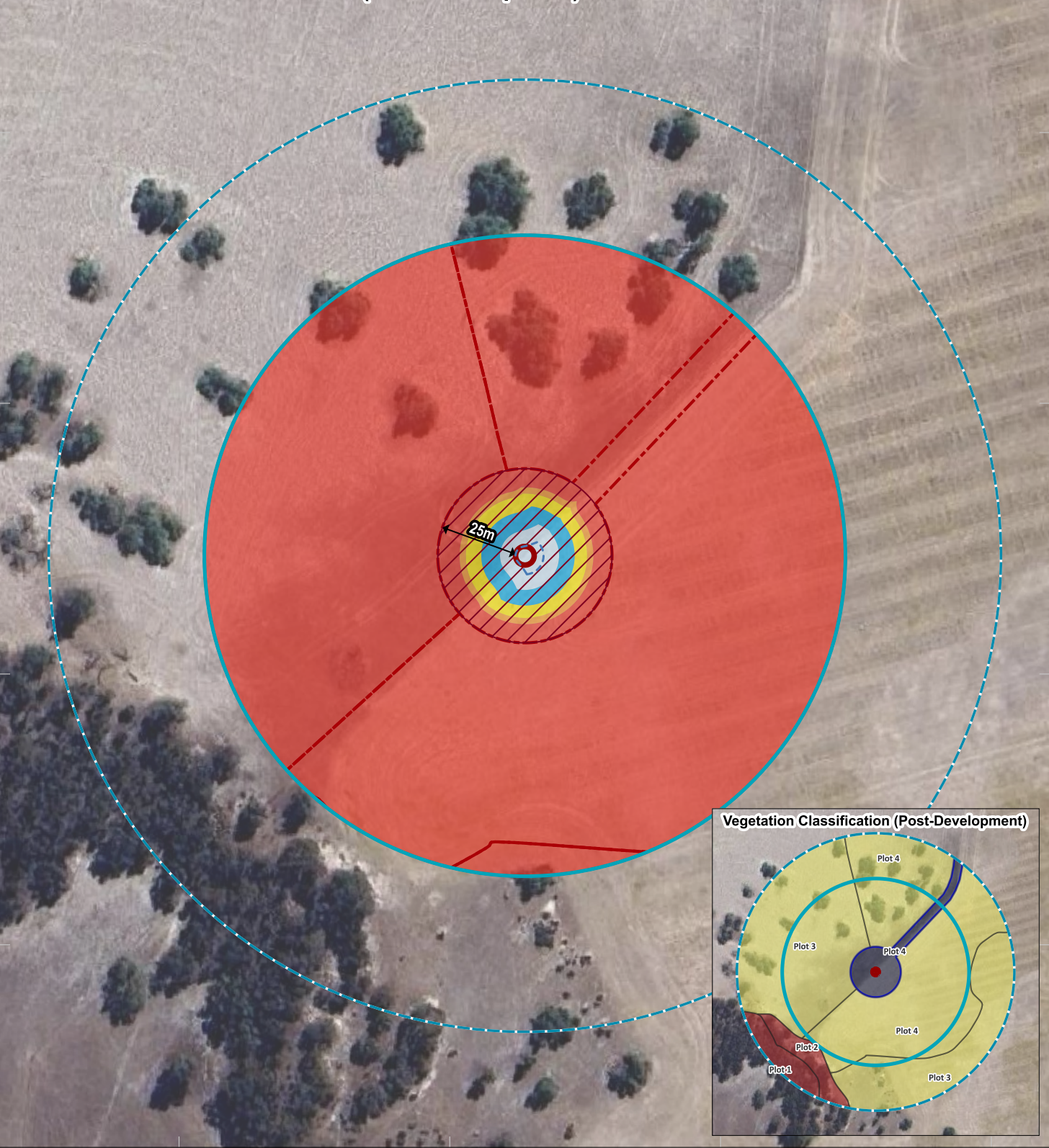
Appendix B.11: Site 11 - (BESS) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 10 kW/m ² (1200K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class C - Shrubland Class D - Scrub Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Provese St, West Perth WA 6005 western.com.au
	SCALE 1:3,500	SHEET SIZE A3 COLOUR						

Vegetation Classification (Pre-Development)



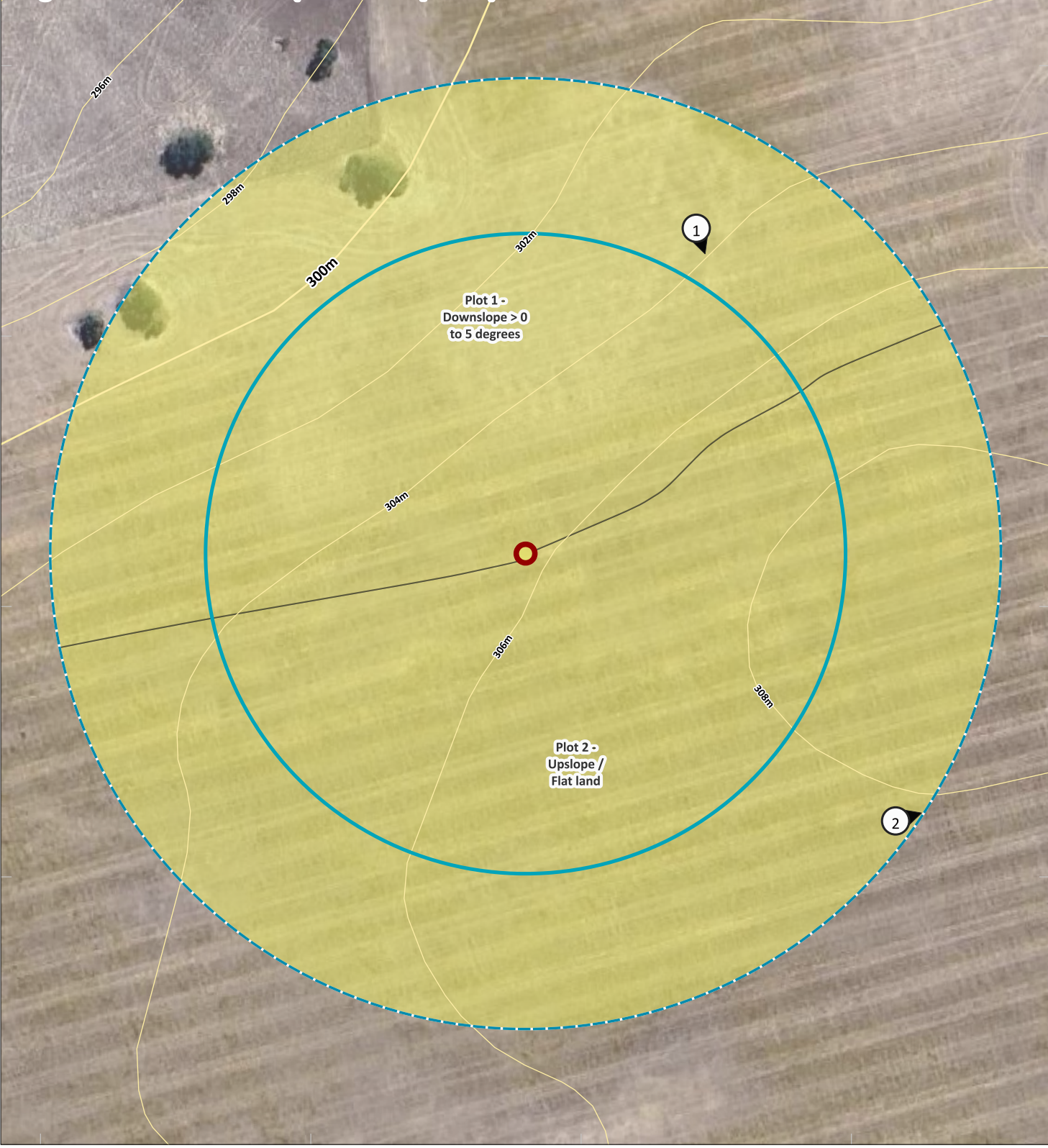
Bushfire Attack Level Contours (Post-Development)



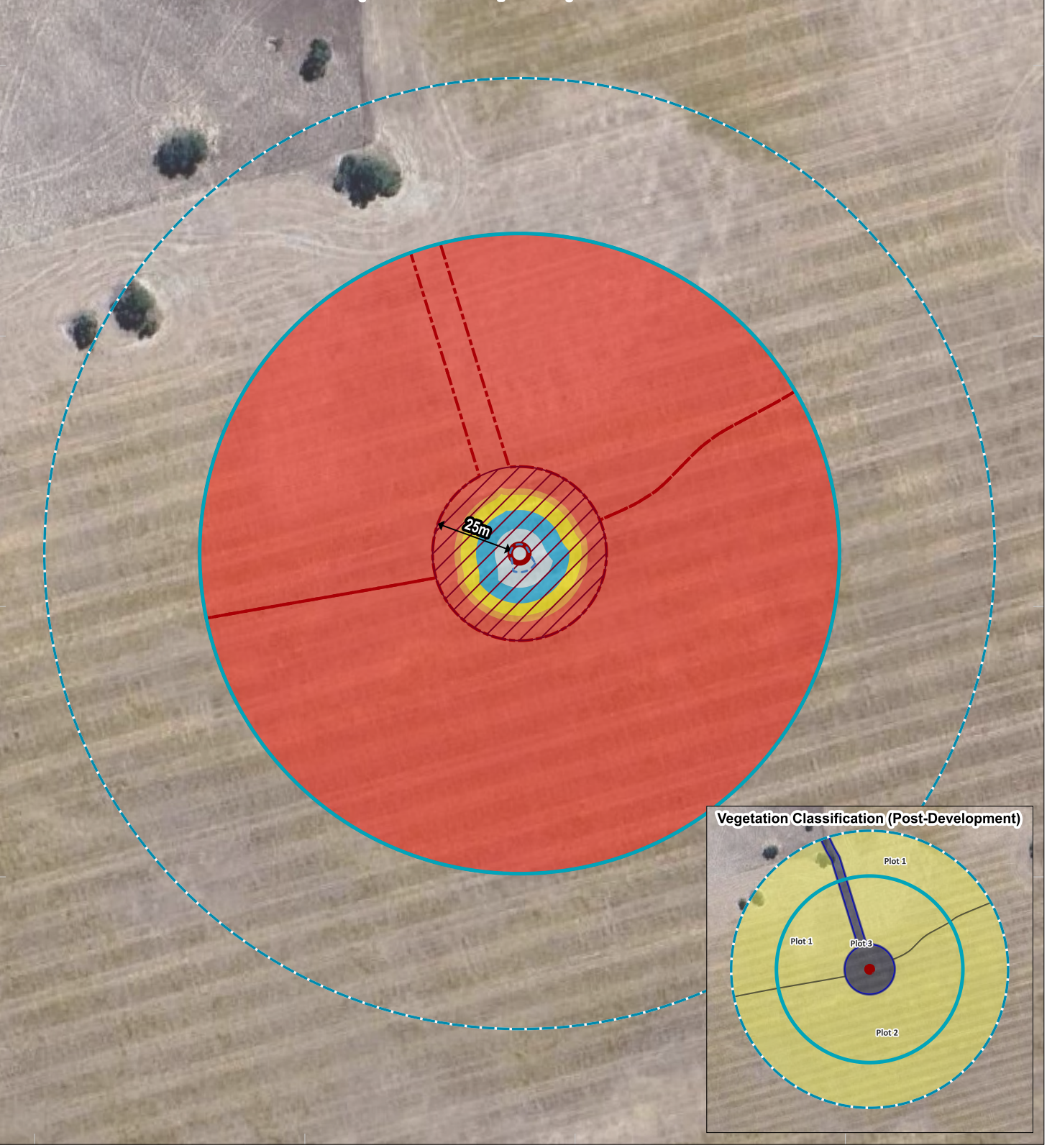
Appendix B.12: Site 12 - Wind Turbine (TN_14) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME	Legend	
	Bushfire Management Plan Tathra Wind Farm	Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m
SCALE 1:1,750	SHEET SIZE A3 COLOUR	CLIENT SynergyRED	Vegetation Classification Class A - Forest Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50	PROJECT NUMBER A24.281	VERSION 0	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW
DATA SOURCE Google Earth Imagery	DRAWN BY / REVIEWED BY SM/BF	DATE 30/7/2025	

Vegetation Classification (Pre-Development)



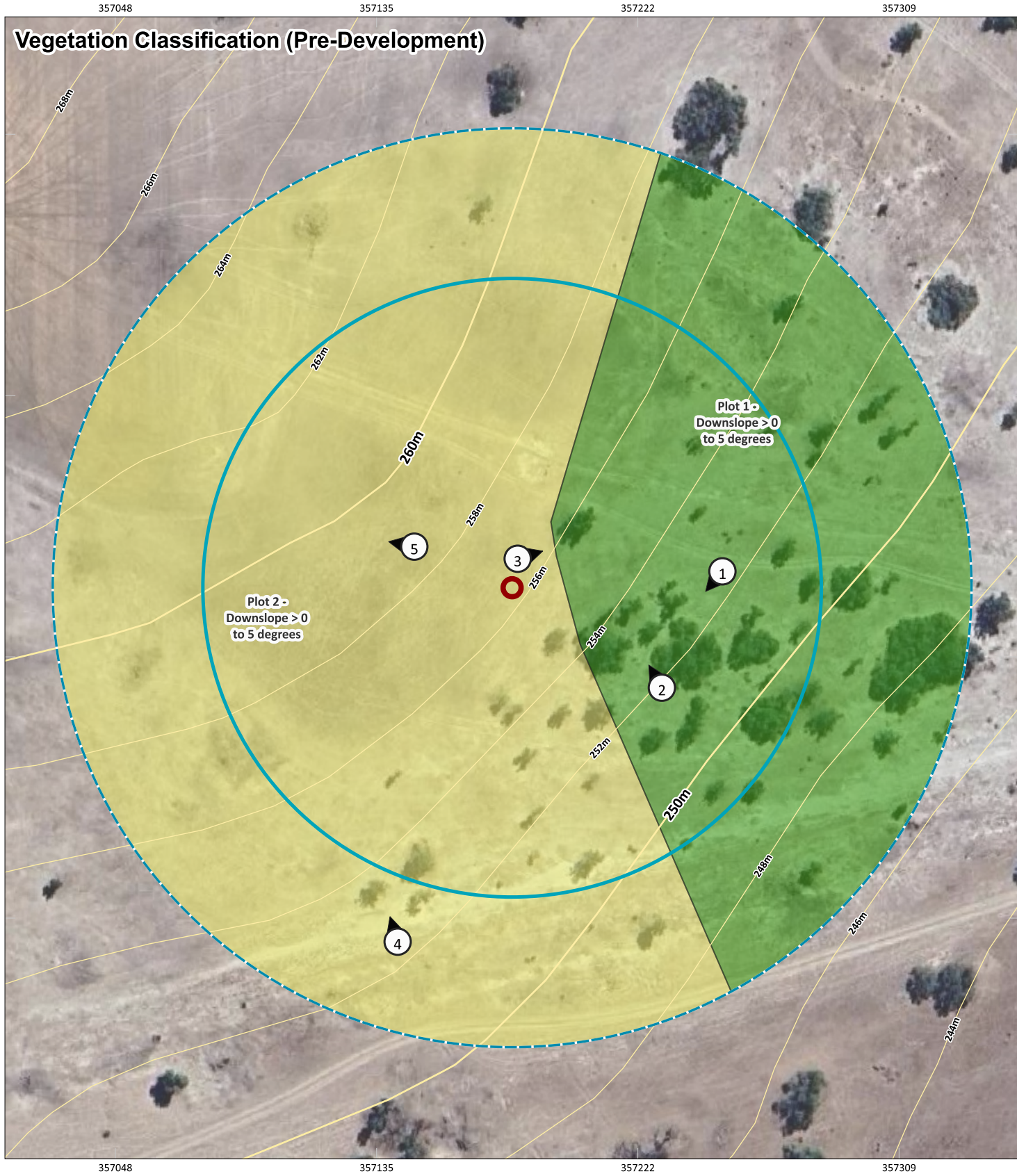
Bushfire Attack Level Contours (Post-Development)



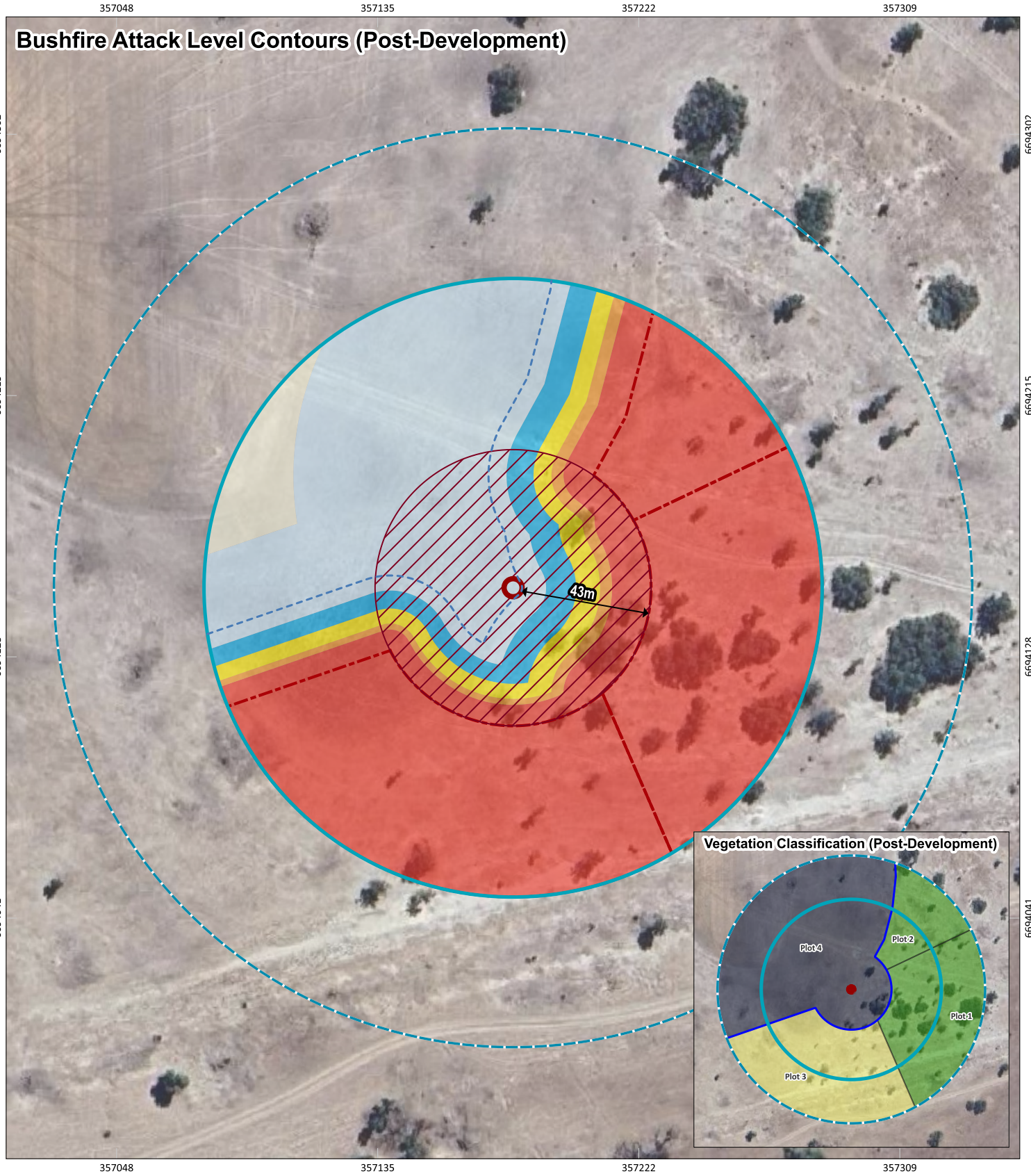
Appendix B.13: Site 13 - Wind Turbine (TN_16) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Prowise St, West Perth WA 6005 western.com.au
	SCALE 1:1,750	SHEET SIZE A3 COLOUR						

Vegetation Classification (Pre-Development)

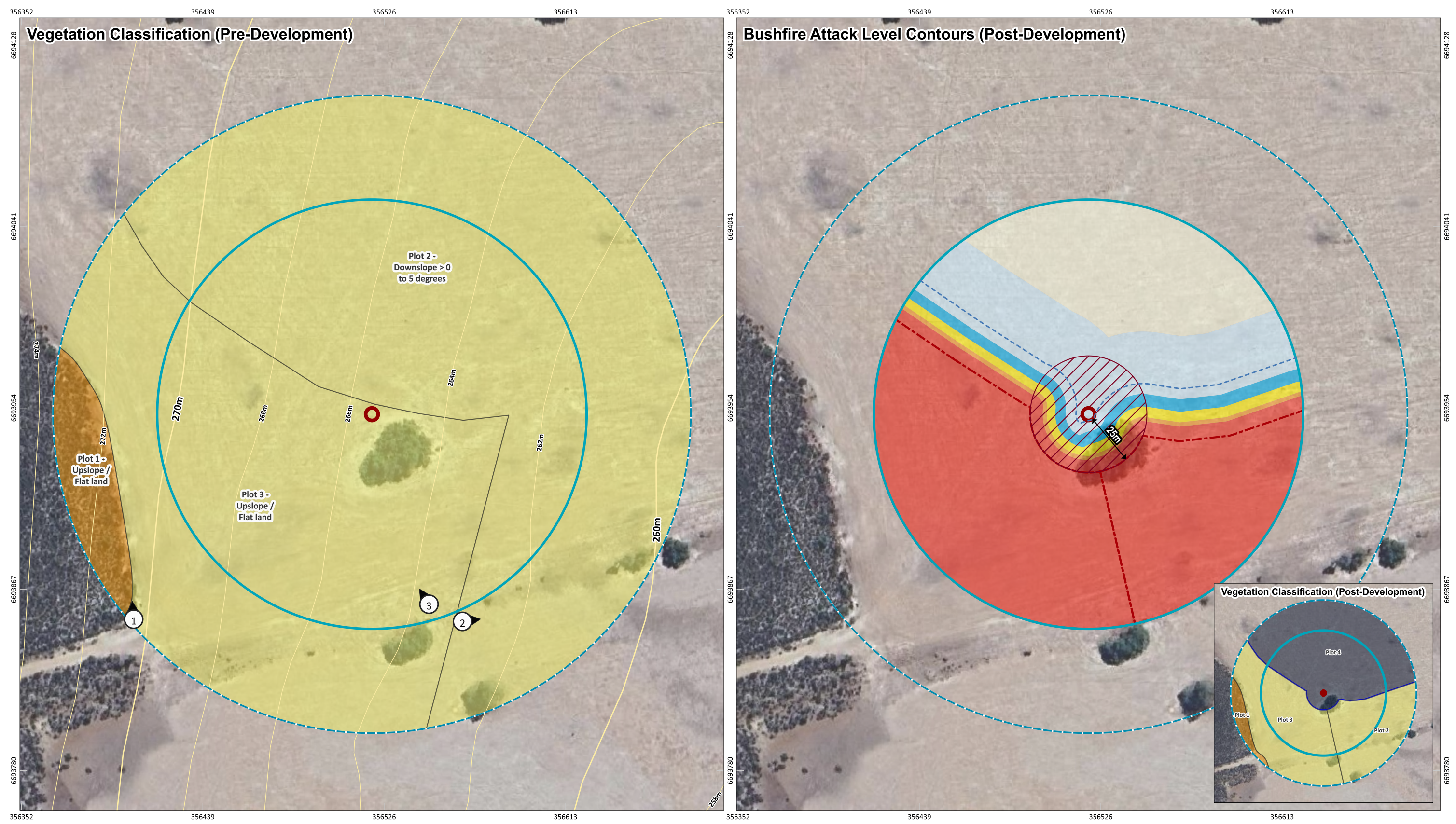


Bushfire Attack Level Contours (Post-Development)



Appendix B.14: Site 14 - Wind Turbine (TN_37) Vegetation Classification and Bushfire Attack Level (BAL) contours

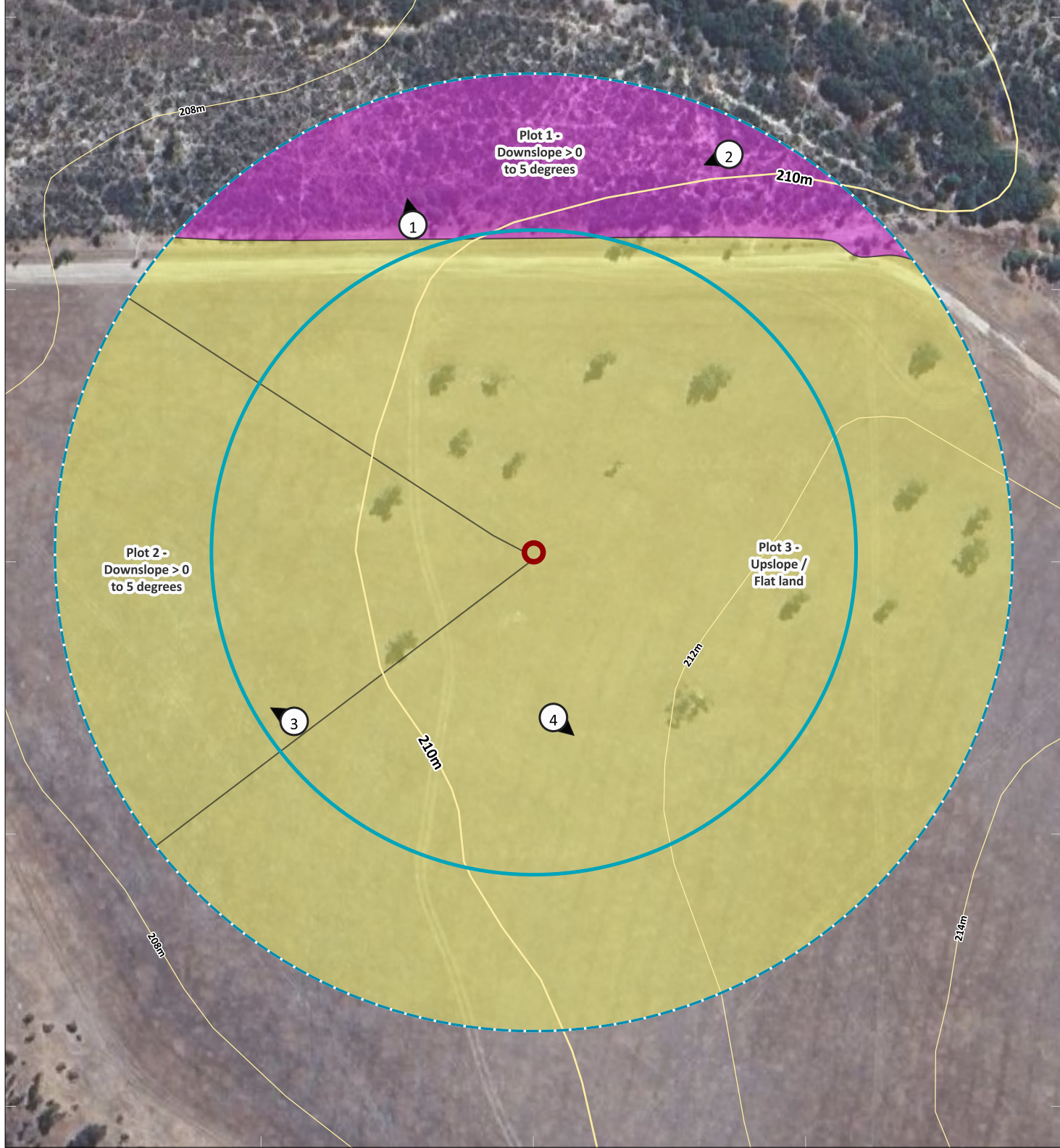
	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class B - Woodland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 Western Environmental Pty Ltd 08 6242 2310 enquiries@western.com.au Level 3/25 Proovse St, West Perth WA 6005 western.com.au
	SCALE 1:1,750	SHEET SIZE A3 COLOUR						



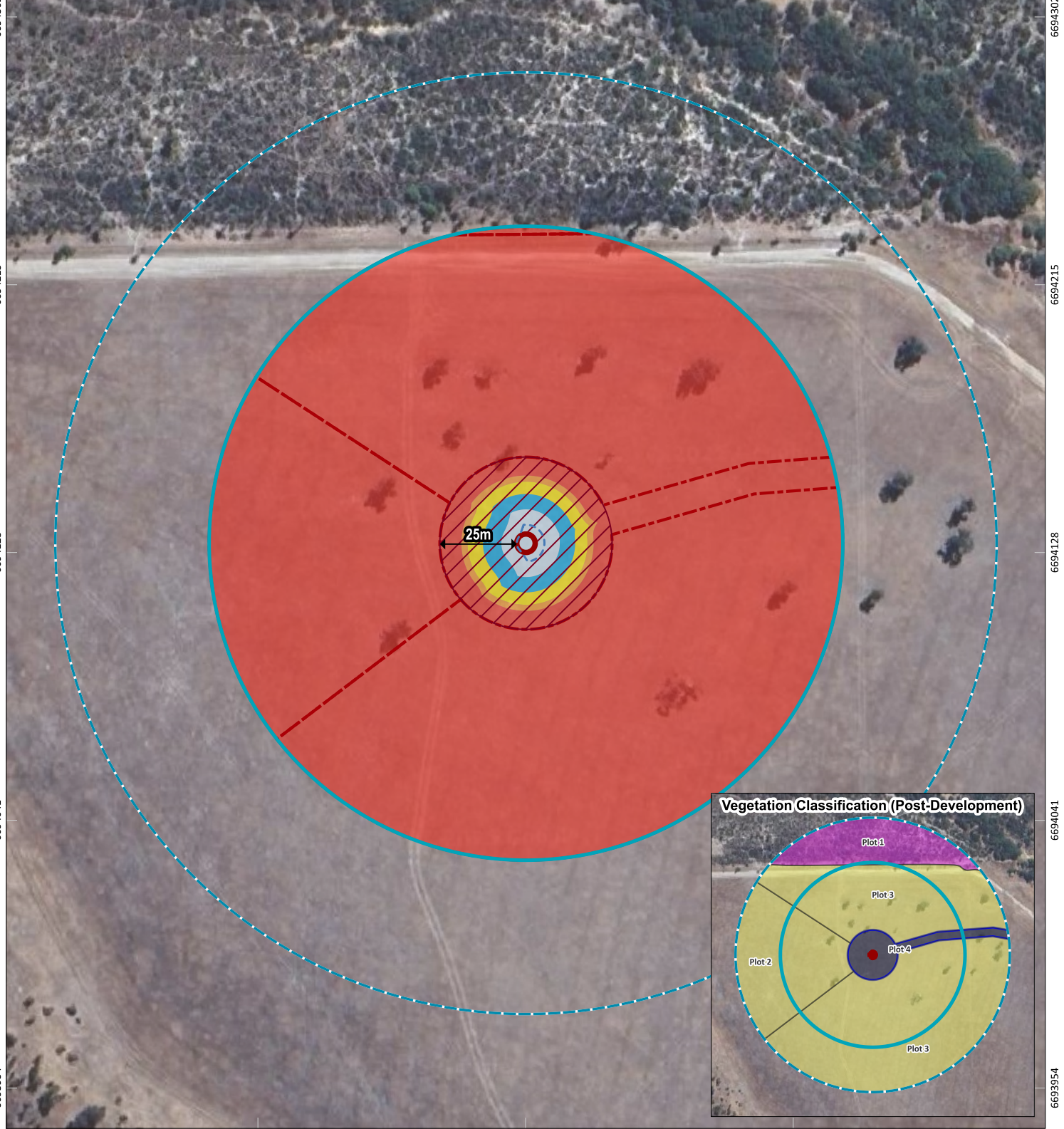
Appendix B.15: Site 15 - Wind Turbine (TN_30) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class D - Scrub Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Prorowse St, West Perth WA 6005 western.com.au
	SCALE 1:1,750	SHEET SIZE A3 COLOUR						

Vegetation Classification (Pre-Development)

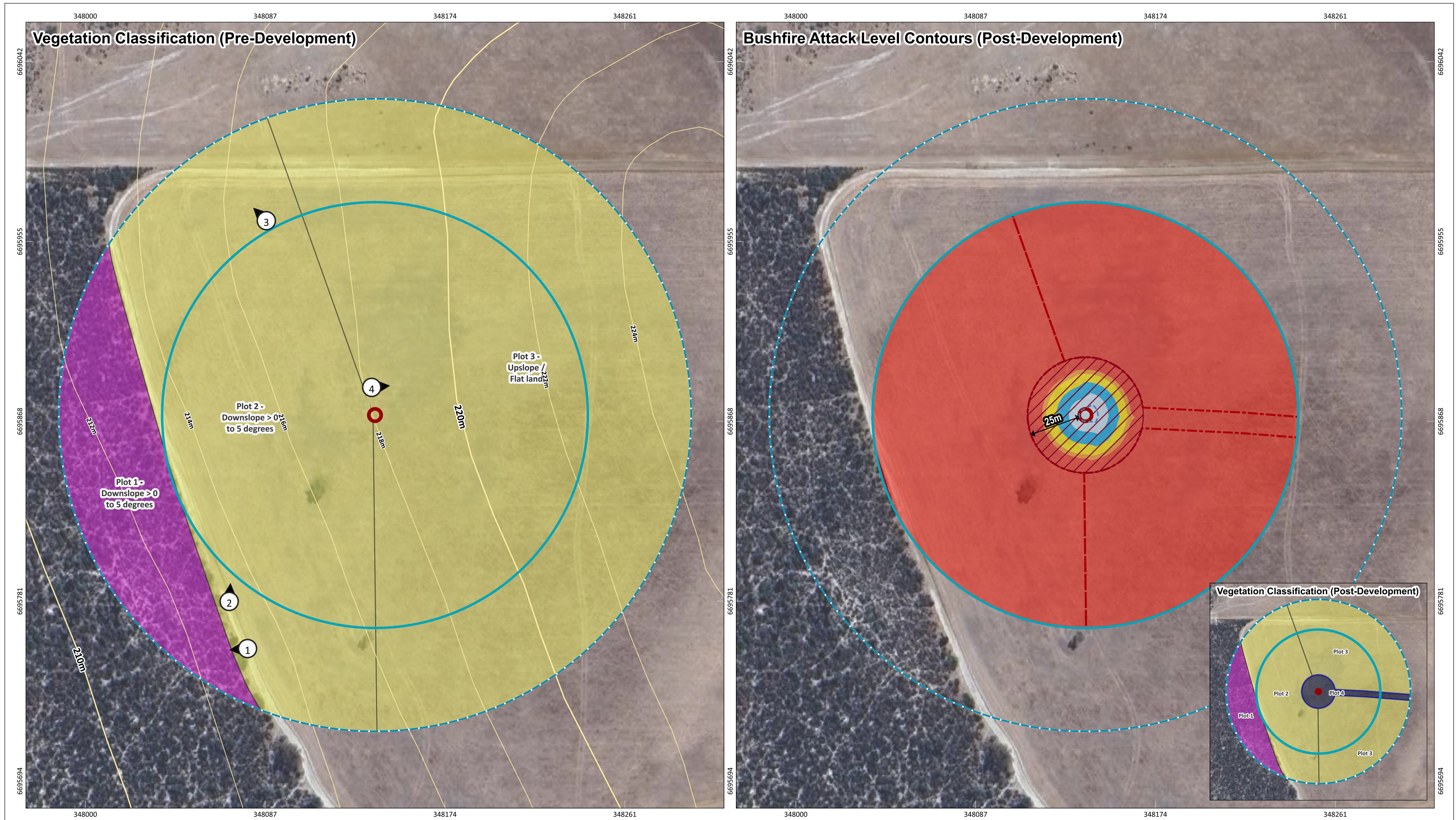


Bushfire Attack Level Contours (Post-Development)



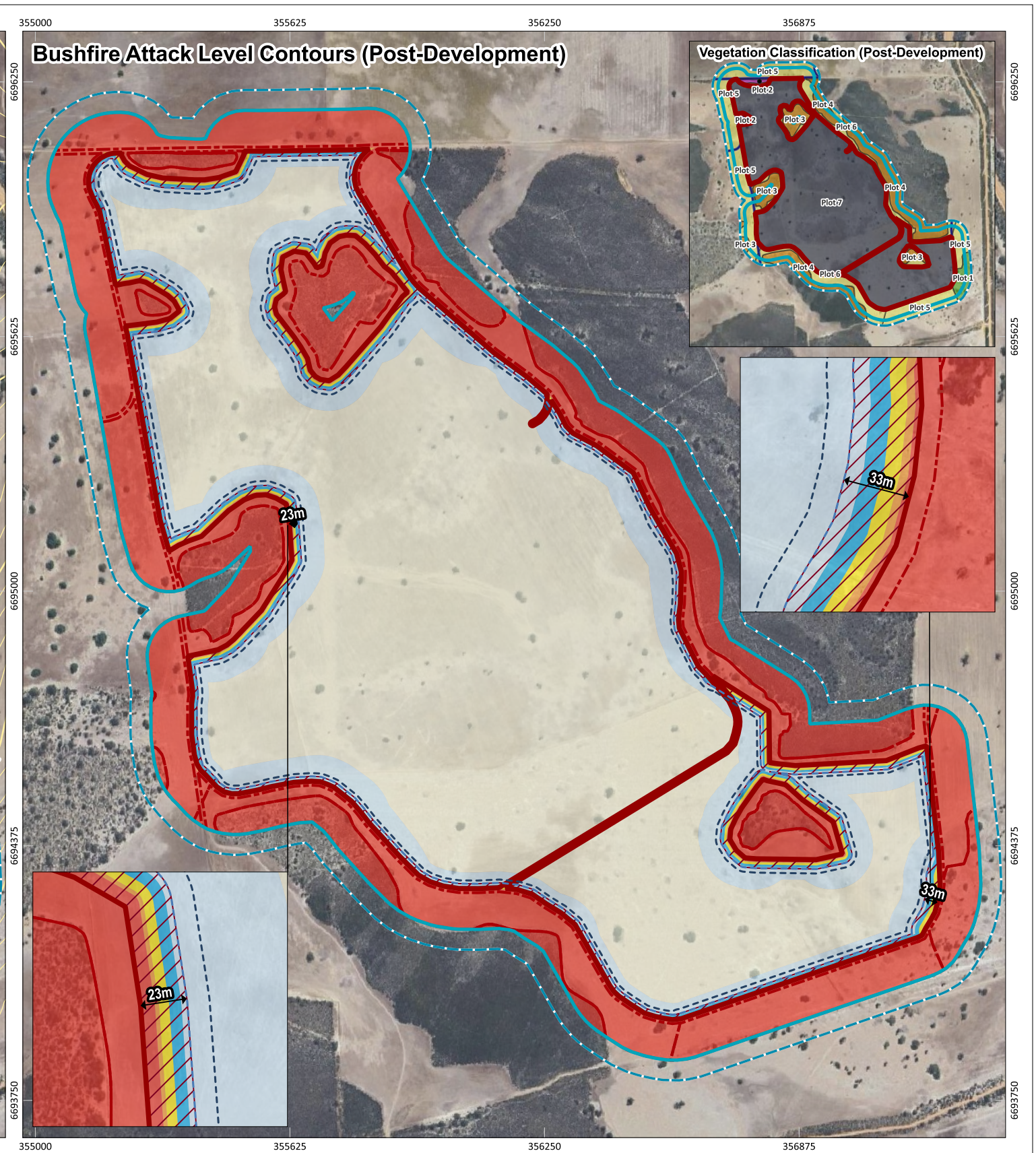
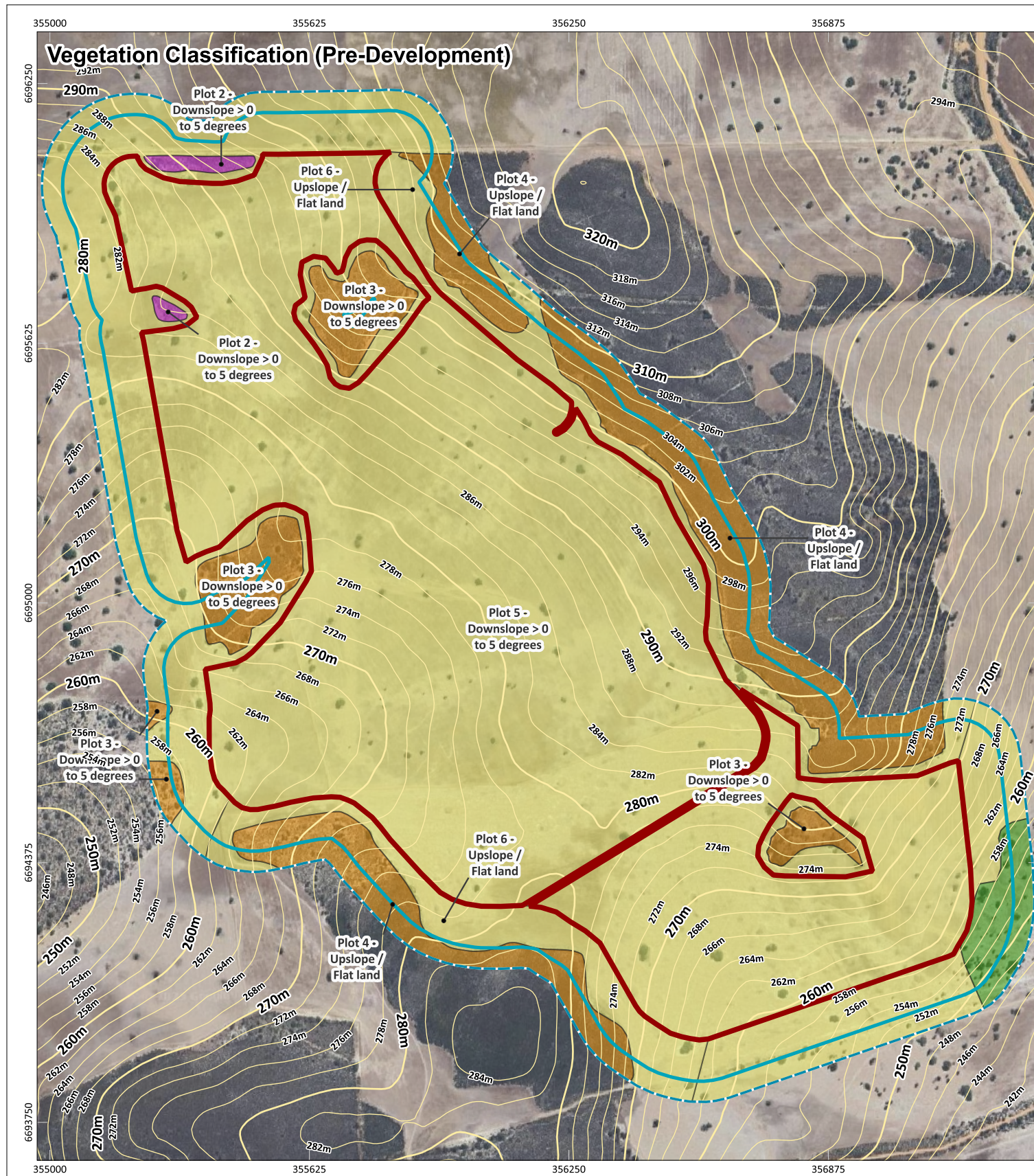
Appendix B.16: Site 16 - Wind Turbine (TS_14) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class C - Shrubland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Prowise St, West Perth WA 6005 western.com.au
	SCALE 1:1,750	SHEET SIZE A3 COLOUR						



Appendix B.17: Site 17 - Wind Turbine (TS_16) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class C - Shrubland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 WESTERN ENVIRONMENTAL Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Proville St, West Perth WA 6005 western.com.au
	SCALE 1:1,750	SHEET SIZE A3 COLOUR						

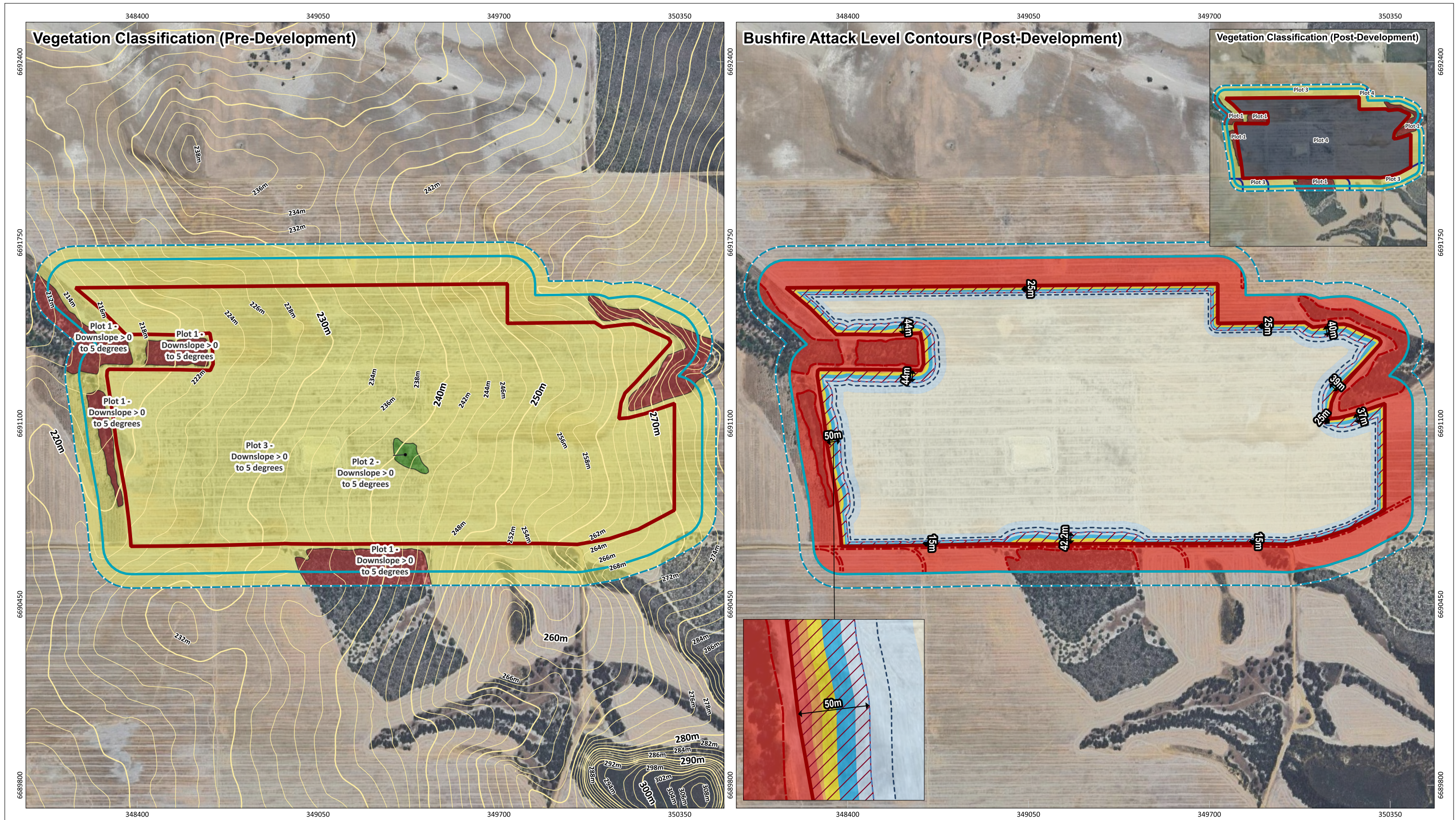


Appendix B.18: Site 18 - Mills_D (Solar Array) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME	Bushfire Management Plan Tathra Wind Farm	
	CLIENT	SynergyRED	
SCALE	SHEET SIZE	PROJECT NUMBER	VERSION
1:12,500	A3 COLOUR	A24.281	0
COORDINATE REFERENCE SYSTEM		DRAWN BY / REVIEWED BY	DATE
GDA2020 / MGA zone 50		SM/BF	30/7/2025
DATA SOURCE	Google Earth Imagery		

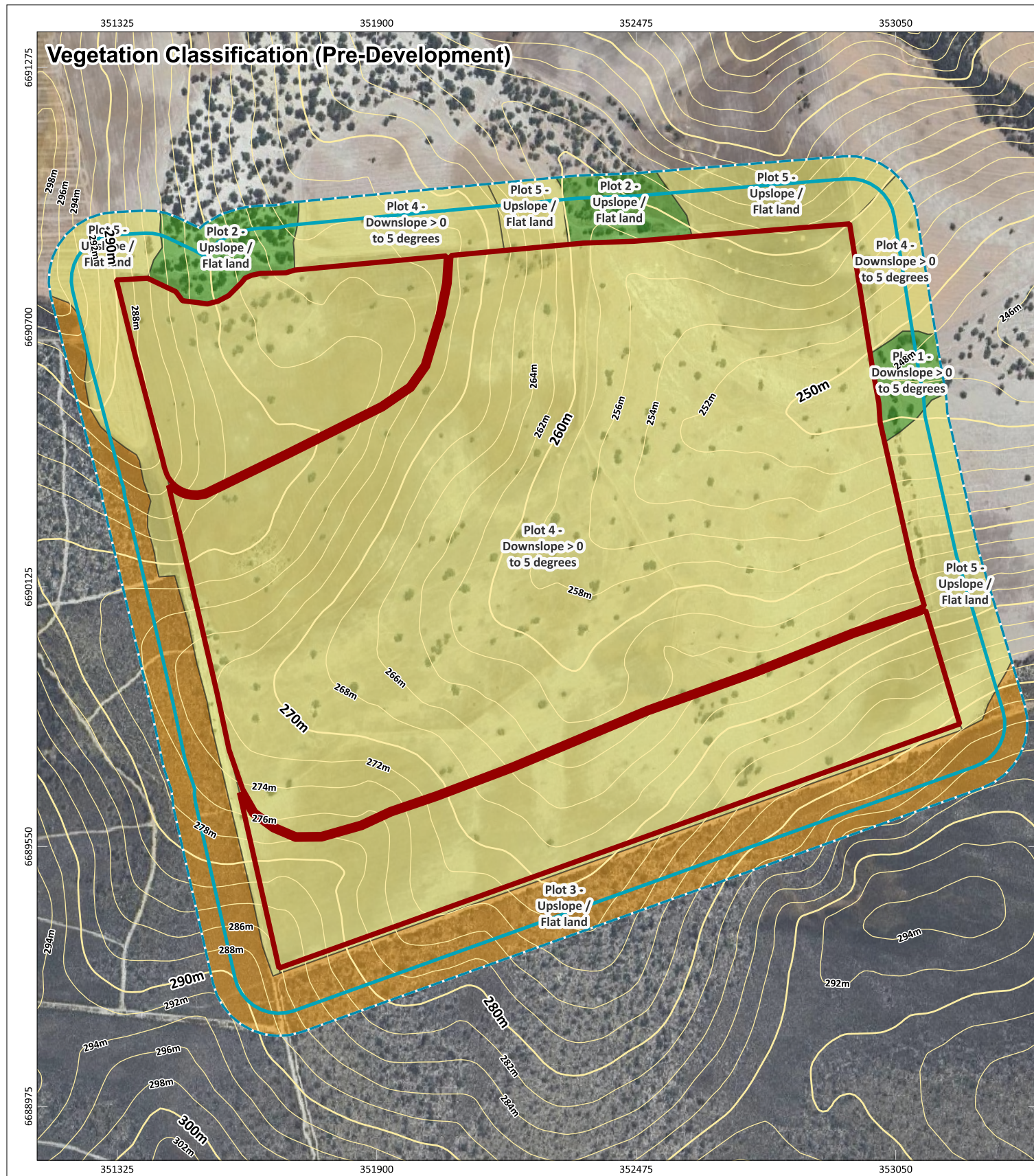
Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 10 kW/m ² (1200K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class B - Woodland Class C - Shrubland Class D - Scrub Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW
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<p>Western Environmental Pty Ltd 08 6242 2310 enquiries@western.com.au Level 3/25 Proville St, West Perth WA 6005 western.com.au</p>	<p>Designed and Automated by AC</p>



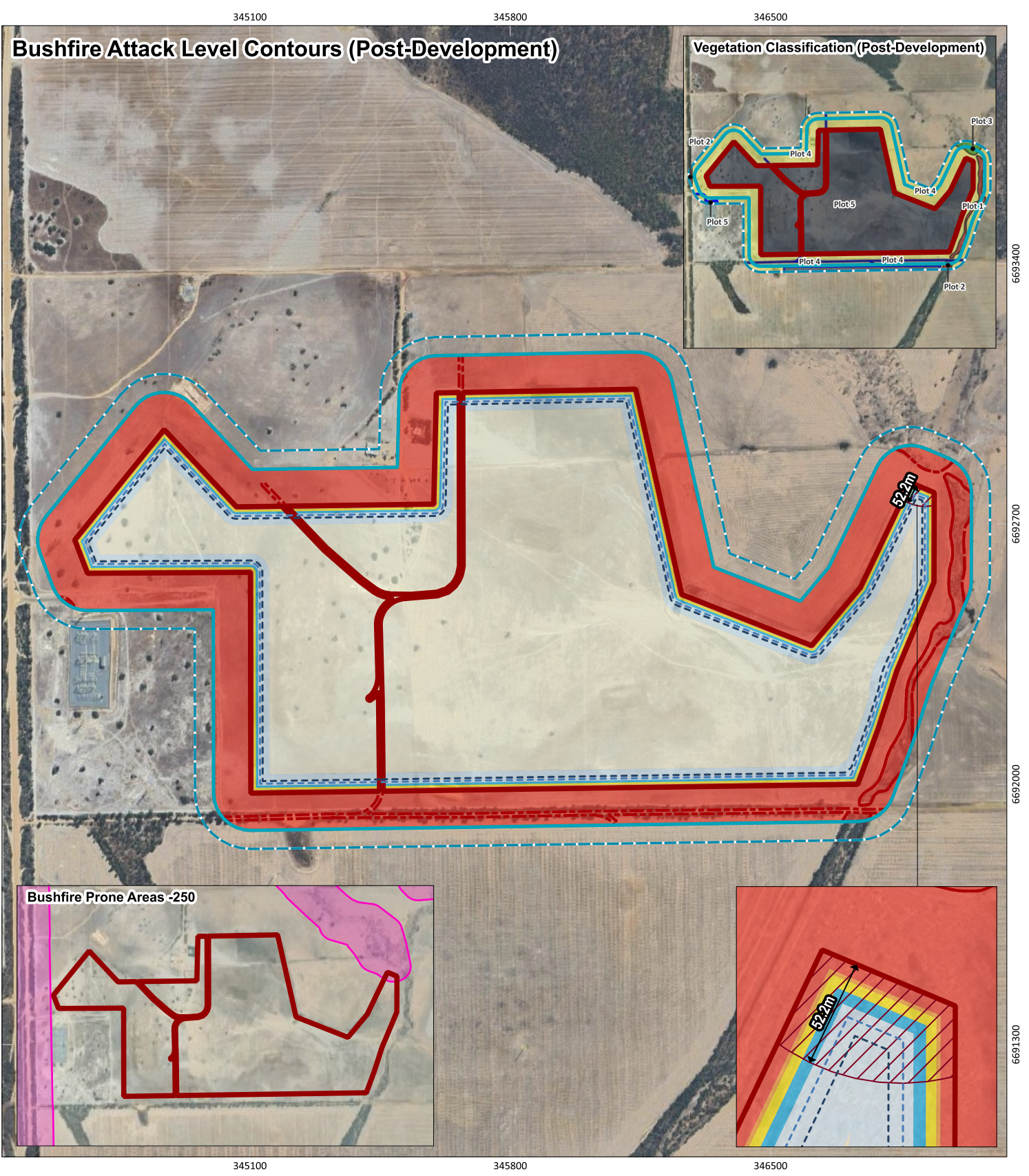
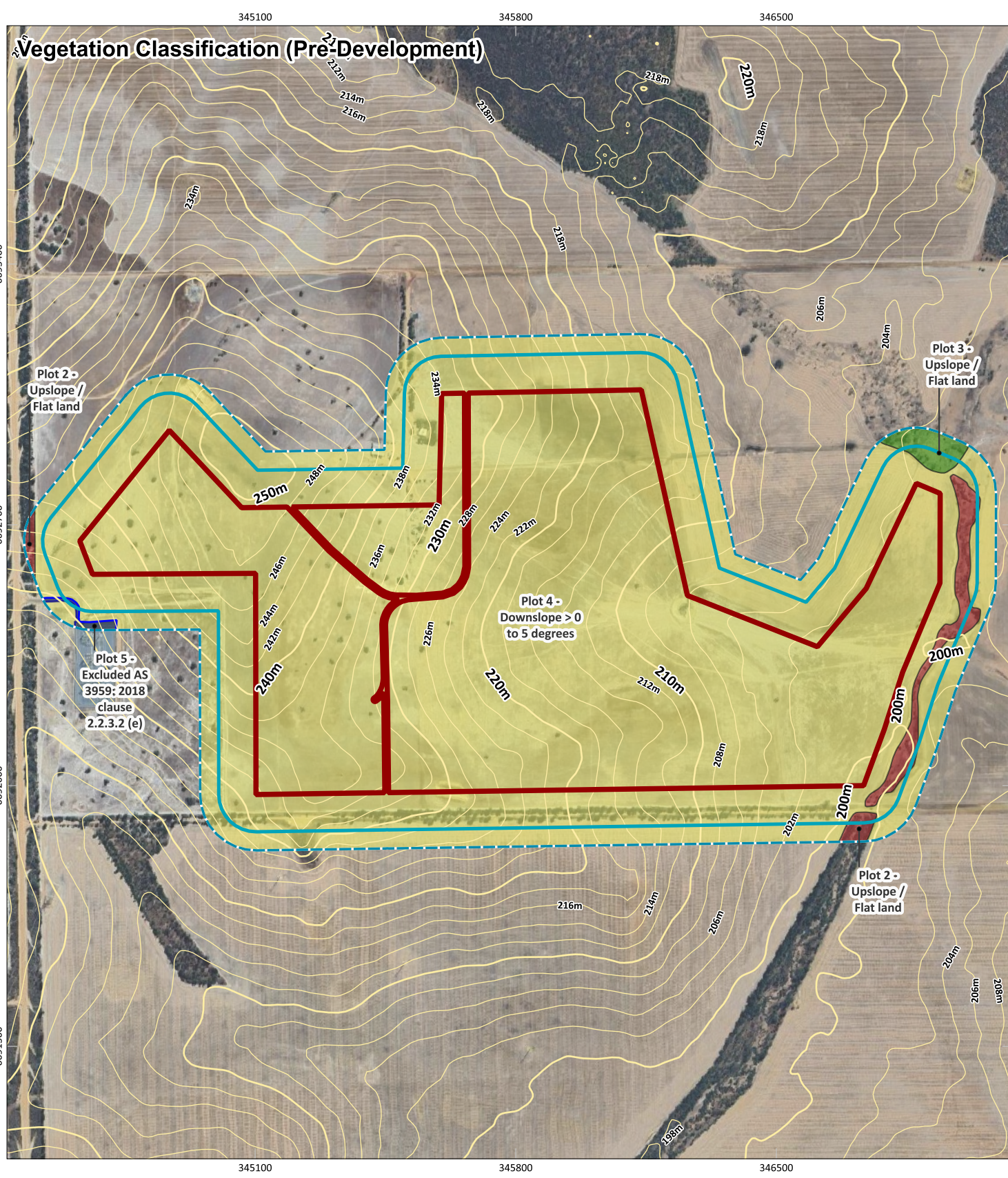
Appendix B.19: Site 19 - Judeen (Solar Array) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Asset Protection Zone (APZ) 10 kW/m ² (1090K) 10 kW/m ² (1200K) 2m Contours (DPIRD-072) 2m 10m	Vegetation Classification Class A - Forest Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 Western Environmental Pty Ltd 08 6242 2310 enquiries@western.com.au Level 3/25 Proville St, West Perth WA 6005 western.com.au
	SCALE 1:13,000	SHEET SIZE A3 COLOUR						
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		PROJECT NUMBER A24.281	VERSION 0					
DATA SOURCE Google Earth Imagery		DRAWN BY / REVIEWED BY SM/BF	DATE 30/7/2025					



Appendix B.20: Site 20 - Mills_W (Solar Array) Vegetation Classification and Bushfire Attack Level (BAL) contours

	PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend Subject Site Buffer 100m Buffer 150m Photos	Vegetation Classification Class B - Woodland Class D - Scrub Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)	Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW		 WESTERN ENVIRONMENTAL <small>Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Prosser St, West Perth WA 6005 western.com.au</small>
	SCALE 1:11,500	SHEET SIZE A3 COLOUR					
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		PROJECT NUMBER A24.281	VERSION 0				
DATA SOURCE Google Earth Imagery		DRAWN BY / REVIEWED BY SM/BF	DATE 30/7/2025				






Appendix B.21: Site 21 - Clark (Solar Array) Vegetation Classification and Bushfire Attack Level (BAL) contours


		PROJECT/REPORT NAME Bushfire Management Plan Tathra Wind Farm		Legend 		Vegetation Classification Class A - Forest Class B - Woodland Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (e)		Bushfire Attack Level (BAL) BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-LOW			
SCALE 1:14,000	SHEET SIZE A3 COLOUR	CLIENT SynergyRED	PROJECT NUMBER A24.281	VERSION 0	DATE 31/7/2025	2m Contours (DPIRD-072) 2m 10m		BAL-1090K BAL-1200K			
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		DRAWN BY / REVIEWED BY SM/BF		DATA SOURCE Google Earth Imagery		G:\GIS\Project Data\2024\A24.281\3. Projects\1_BMP\A24.281_BMP.qgz		WESTERN ENVIRONMENTAL Western Environmental Pty Ltd 08 6244 2310 enquiries@western.com.au Level 3/25 Proovse St, West Perth WA 6005 western.com.au			

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Appendix C: Classified Vegetation Photos


Site 1




<p>Plot 1</p> <p>Photo 1 This plot is dominated by trees exceeding 2 m in height. Overstorey canopy cover is less than 30% and the understorey consists of dense low shrubs and grasses. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class E Mallee</p>  <p>SE 150 S 180 SW 210 240 184°S (T) • -29.777427, 115.445093 ±3m ▲ 276m 02 Apr 2025, 1:04:19 pm</p>
<p>Plot 1</p> <p>Photo 2 This plot is dominated by trees exceeding 2 m in height. Overstorey canopy cover is less than 30% and the understorey consists of dense low shrubs and grasses. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class E Mallee</p>  <p>S 180 SW 210 W 270 220°SW (T) • -29.777256, 115.444855 ±1m ▲ 279m 02 Apr 2025, 12:48:51 pm</p>
<p>Plot 2</p> <p>Photo 3 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class G Grassland</p>  <p>SW 210 W 270 NW 300 262°W (T) • -29.776315, 115.444303 ±1m ▲ 273m 02 Apr 2025, 1:28:18 pm</p>

Plot 3	Class G Grassland
<p>Photo 4</p> <p>This plot is dominated by grasses in the understorey. No overstorey vegetation is present within this plot. The slope under this vegetation was assessed to be upslope/flat land.</p>	

Site 2

Plot 1	Class C Shrubland
<p>Photo 1</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	

Plot 1	Class C Shrubland
<p>Photo 2</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	

<p>Plot 1</p> <p>Photo 2 (Vegetation in background) This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class C Shrubland</p>  <p>02 Apr 2025, 12:18:40 pm</p>
<p>Plot 2</p> <p>Photo 3 This plot is dominated by grasses in the understorey. No overstorey vegetation is present within this plot. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class G Grassland</p>  <p>02 Apr 2025, 12:12:53 pm</p>
<p>Plot 3</p> <p>Photo 4 This plot is dominated by grasses in the understorey. No overstorey vegetation is present within this plot. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>Class G Grassland</p>  <p>02 Apr 2025, 12:09:47 pm</p>

Site 4





Plot 1	Class C Shrubland
<p>Photo 1</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. A 2 m height staff was used for reference in this photo. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>02 Apr 2025 10:39:04</p>
Plot 1	Class C Shrubland
<p>Photo 2</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>02 Apr 2025 14:01:01</p>
Plot 2	Class G Grassland
<p>Photo 3</p> <p>This plot is dominated by grasses in the understorey. No overstorey vegetation is present within this plot. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>02 Apr 2025 13:48:01</p>

Plot 3	Class G Grassland
<p>Photo 4</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies.</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p>	



Site 5



Plot 1	Class C Shrubland
<p>Photo 1</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. A 2 m height staff was used for reference in this photo.</p> <p>The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	

Plot 2	Class D Scrub
<p>Photo 2</p> <p>This plot is dominated by shrubs and trees reaching up to 6 m in height. The overstorey canopy cover exceeds 30% throughout this plot and the vegetation structure is multi-tiered.</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p>	

<p>Plot 3</p> <p>Photo 3 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class G Grassland</p>  <p>176°S (T) 29°47'3\" data-bbox="508 128 891 131"/>  </p>
<p>Plot 4</p> <p>Photo 4 This plot is dominated by grasses in the understorey. No overstorey vegetation is present within this plot. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>Class G Grassland</p>  <p>274°W (T) 29°47'5\" data-bbox="508 362 891 365"/>  </p>

Site 6

<p>Plot 1</p> <p>Photo 1 This plot is dominated by grasses in the understorey. No overstorey vegetation is present within this plot. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class G Grassland</p>  <p>353°N (T) 29°47'41\" data-bbox="508 644 891 647"/>  </p>
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<p>Plot 1</p> <p>Photo 2 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class G Grassland</p> 
<p>Plot 2</p> <p>Photo 3 This plot is dominated by grasses in the understorey. No overstorey vegetation is present within this plot. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>Class G Grassland</p> 







Site 7


No photos are available of this site given this site was added to the Project Area after WEPL had undertaken the site assessment. No Drone photography was able to be captured of the site given the large scale of the Project Area and strong winds at the time of assessment.

The plots at this site were ultimately determined by making a conservative estimate of the vegetation structure based on a combination of:


- Aerial imagery.
- 2 m contour data (DPIRD-072).
- Ground observation of vegetation structure in other parts of the Project Area.


Site 8

<p>Plot 1</p>	<p>Class C Shrubland</p>
<p>Photo 1</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	 <p>36°NE (T) ● 29°49'48"S, 115°27'49"E ±13ft ▲ 869ft</p> 
<p>Plot 1</p>	<p>Class C Shrubland</p>
<p>Photo 2</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	 <p>22°NE (T) ● 29°49'47"S, 115°27'52"E ±13ft ▲ 864ft</p> 
<p>Plot 2</p>	<p>Class G Grassland</p>
<p>Photo 3</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	 <p>359°N (T) ● 29°49'53"S, 115°27'47"E ±45ft ▲ 901ft</p> 


Plot 3	Class G Grassland
<p>Photo 4</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies.</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p>	 <p>2 Apr 2025 3:49:58 pm 29°49'51"S, 115°27'52"E ±13ft ▲ 894ft</p>

Site 9


Plot 1	Class C Shrubland
<p>Photo 1</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. A 1 m height staff was used in this photo for reference. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	 <p>2 Apr 2025 3:49:58 pm 29°50'4.15778"S 115°26'42.90055"E ±2.00m 168° S</p>


Plot 1	Class C Shrubland
<p>Photo 2</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	 <p>161°SE (T) • -29.834497, 115.445291 ±1m ▲ 218m</p> <p>02 Apr 2025, 3:49:31 pm</p>



Plot 2	Class C Shrubland
<p>Photo 3</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. A 1 m height staff was used in this photo for reference. The slope under this vegetation was assessed to be upslope/flat land.</p>	
Plot 3	Class G Grassland
<p>Photo 4</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	
Plot 4	Class G Grassland
<p>Photo 5</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be upslope/flat land.</p>	

Plot 5	Excluded - clause 2.2.3.2 (e)
<p>Photo 6</p>	


Site 10

Plot 1	Class C Shrubland
<p>Photo 1</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be upslope/flat land.</p>	

Plot 1	Class C Shrubland
<p>Photo 2</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be upslope/flat land.</p>	

<p>Plot 2</p> <p>Photo 3 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class G Grassland</p> <p>South West Elevation ☉ 44°NE (T) ● 29°50'11"S, 115°27'17"E ±13ft ▲ 874ft</p> 
<p>Plot 3</p> <p>Photo 4 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>Class G Grassland</p> <p>South East Elevation ☉ 294°NW (T) ● 29°50'8"S, 115°27'12"E ±13ft ▲ 917ft</p> 

Site 11

<p>Plot 1</p> <p>Photo 1 This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. A 2 m height staff was used for reference in this photo. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>Class C Shrubland</p> <p>☉ 77°NE (T) ● -29.838166, 115.470228 ±3m ▲ 226m</p>  <p>02 Apr 2025, 3:22:40 pm</p>
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Plot 1	Class C Shrubland
<p>Photo 2</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m.</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p>	
Plot 2	Class D Scrub
<p>Photo 3</p> <p>This plot is dominated by shrubs and trees reaching up to 6 m in height. The overstorey canopy cover exceeds 30% throughout this plot and the vegetation structure is multi-tiered.</p> <p>A 4 m height staff was used in this photo for reference.</p> <p>The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	
Plot 2	Class D Scrub
<p>Photo 4</p> <p>This plot is dominated by shrubs and trees reaching up to 6 m in height. The overstorey canopy cover exceeds 30% throughout this plot and the vegetation structure is multi-tiered.</p> <p>The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	

Plot 3	Class G Grassland
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Photo 5
 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies.
 The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.



Plot 4	Class G Grassland
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Photo 6
 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies.
 The slope under this vegetation was assessed to be upslope/flat land.







Site 12

Plot 1	Class A Forest
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Photo 1
 The slope under this vegetation was assessed to be downslope >10 - 15 degrees.




Plot 1	Class A Forest
<p>Photo 2</p> <p>This plot is dominated by Eucalypt trees reaching over 6 m in height at maturity. The overstorey canopy cover exceeds 30% and the understorey structure is multi-tiered.</p> <p>The slope under this vegetation was assessed to be downslope > 10 - 15 degrees.</p>	
Plot 2	Class A Forest
<p>Photo 3</p> <p>This plot is dominated by Eucalypt trees reaching over 6 m in height at maturity. The overstorey canopy cover exceeds 30% and the understorey structure is multi-tiered.</p> <p>The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	
Plot 3	Class G Grassland
<p>Photo 4</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies.</p> <p>The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	


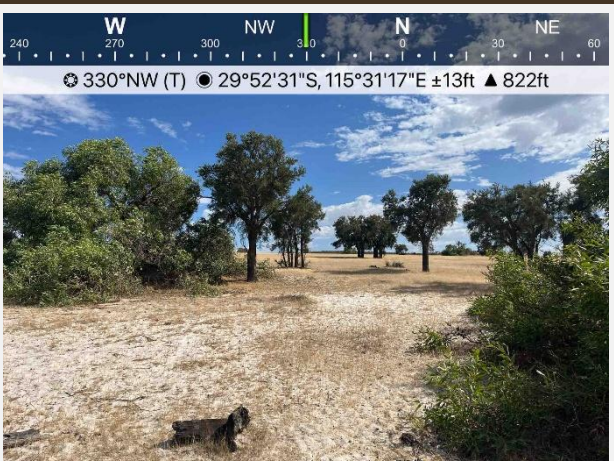

Plot 4	Class G Grassland
<p>Photo 5</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies.</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p>	



Site 13

Plot 1	Class G Grassland
<p>Photo 1</p> <p>This plot is dominated by grasses in the understorey. This plot contains to overstorey vegetation.</p> <p>The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	


Plot 2	Class G Grassland
<p>Photo 2</p> <p>This plot is dominated by grasses in the understorey. This plot contains to overstorey vegetation.</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p>	

Site 14

<p>Plot 1</p>	<p>Class B Woodland</p>
<p>Photo 1</p> <p>This plot contains trees reaching up to 30 m in height in the overstorey at approximately 30% canopy cover. The understorey structure is open with grasses dominant throughout.</p> <p>The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	
<p>Plot 1</p>	<p>Class B Woodland</p>
<p>Photo 2</p> <p>This plot contains trees reaching up to 30 m in height in the overstorey at approximately 30% canopy cover. The understorey structure is open with grasses dominant throughout.</p> <p>The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	
<p>Plot 2</p>	<p>Class B Woodland</p>
<p>Photo 3</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p>	

<p>Plot 3</p> <p>Photo 4 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class G Grassland</p> <p>South Elevation ☉ 343°N (T) ☉ 29°52'33"S, 115°31'14"E ±13ft ▲ 834ft</p> 
<p>Plot 4</p> <p>Photo 5 This plot is dominated by grasses in the understorey. This plot contains to overstorey vegetation. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>Class G Grassland</p> <p>SW W NW N 210 240 270 300 330 0 ☉ 281°W (T) ☉ 29°52'29"S, 115°31'14"E ±13ft ▲ 860ft</p> 

Site 15

<p>Plot 1</p> <p>Photo 1 This plot is dominated by shrubs and trees reaching up to 6 m in height. The overstorey canopy cover exceeds 30% throughout this plot and the vegetation structure is multi-tiered. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>Class D Scrub</p> <p>3 Apr 2025 10:09:52 am 29°52'40.40406"S 115°30'47.35758"E ±2.50m 339° N</p> 
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Plot 2	Class G Grassland
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Photo 2
 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies.
 The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.



Plot 3	Class G Grassland
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Photo 3
 This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies.
 The slope under this vegetation was assessed to be upslope/flat land.



Site 16




Plot 1	Class C Shrubland
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Photo 1
 This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m.
 The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.



<p>Plot 1</p> <p>Photo 2</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. A 2 m height staff was used for reference in this photo. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class C Shrubland</p> 
<p>Plot 2</p> <p>Photo 3</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	<p>Class G Grassland</p> 
<p>Plot 3</p> <p>Photo 4</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>Class G Grassland</p> 

Site 17

<p>Plot 1</p>	<p>Class C Shrubland</p>
<p>Photo 1</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. A 2 m height staff was used for reference in this photo. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	 <p>3 Apr 2025 8:42:36 am 29°51'33.81435"S 115°25'37.67549"E ±2.00m 270° W</p>
<p>Plot 1</p>	<p>Class C Shrubland</p>
<p>Photo 2</p> <p>This plot is dominated by shrubs in the understorey with canopy cover exceeding 30% throughout. The average height of shrubs within this plot does not exceed 2 m. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	 <p>3 Apr 2025 8:48:44 am 29°51'33.13859"S 115°25'37.384"E ±2.50m 11° N</p>
<p>Plot 2</p>	<p>Class G Grassland</p>
<p>Photo 3</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies. The slope under this vegetation was assessed to be downslope > 0 - 5 degrees.</p>	 <p>3 Apr 2025 8:52:18 am 29°51'27.09532"S 115°25'38.11936"E ±2.00m 313° NW</p>

Plot 3	Class G Grassland
<p>Photo 4</p> <p>This plot is dominated by grasses in the understorey. The overstorey canopy cover does not exceed 10% and any trees have isolated canopies.</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p>	

Sites 18-21

No photos are available of this site given this site was added to the Project Area after WEPL had undertaken the site assessment. No drone photography was able to be captured of the site given the large scale of the Project Area and strong winds at the time of assessment.

The plots at this site were ultimately determined by making a conservative estimate of the vegetation structure based on a combination of:

- Aerial imagery.
- 2 m contour data (DPIRD-072).
- Ground observation of vegetation structure in other parts of the Project Area.

Appendix D: Method 2 BAL Calculations



NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 27/05/2025

Assessment Date: 9/05/2025

Site Street Address: Tathra Wind Farm,

Assessor: Daniel Panickar; Western Environmental

Local Government Area: WA

Alpine Area: No

Equations Used

Transmissivity: Fuss and Hammins, 2002

Flame Length: RFS PBP, 2001/Vesta/Catchpole

Rate of Fire Spread: Noble et al., 1980

Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005

Peak Elevation of Receiver: Tan et al., 2005

Peak Flame Angle: Tan et al., 2005

Run Description: Forest 15 Downslope

Vegetation Information

Vegetation Type: Forest

Vegetation Group: Forest and Woodland

Vegetation Slope: 15 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 25

Overall Fuel Load(t/ha): 35

Vegetation Height(m): 2

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 88

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 80

Program Outputs

Level of Construction: BAL 12.5

Peak Elevation of Receiver(m): 21.8

Radiant Heat(kW/m2): 9.81

Flame Angle (degrees): 65

Flame Length(m): 48.12

Maximum View Factor: 0.175

Rate Of Spread (km/h): 6.76

Inner Protection Area(m): 64

Transmissivity: 0.738

Outer Protection Area(m): 24

Fire Intensity(kW/m): 122176

BAL Thresholds

BAL-40: BAL-29: BAL-19: BAL-12.5: 10 kw/m2: Elevation of Receiver:

Asset Protection Zone(m): 34 43 57 74 105 6

Run Description: Forest 5 Downslope

Vegetation Information

Vegetation Type: Forest
Vegetation Group: Forest and Woodland
Vegetation Slope: 5 Degrees
Vegetation Slope Type: Downslope
Surface Fuel Load(t/ha): 25
Overall Fuel Load(t/ha): 35
Vegetation Height(m): 2
Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees
Site Slope Type: Downslope
Elevation of Receiver(m): Default
APZ/Separation(m): 60

Fire Inputs

Veg./Flame Width(m): 100
Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95
Relative Humidity(%): 25
Heat of Combustion(kJ/kg) 18600
Ambient Temp(K): 308
Moisture Factor: 5
FDI: 80

Program Outputs

Level of Construction: BAL 12.5
Peak Elevation of Receiver(m): 12.47
Radiant Heat(kW/m2): 9.78
Flame Angle (degrees): 72
Flame Length(m): 26.23
Maximum View Factor: 0.169
Rate Of Spread (km/h): 3.39
Inner Protection Area(m): 43
Transmissivity: 0.76
Outer Protection Area(m): 17
Fire Intensity(kW/m): 61280

BAL Thresholds

BAL-40: BAL-29: BAL-19: BAL-12.5: 10 kw/m2: Elevation of Receiver:
Asset Protection Zone(m): 21 27 38 51 75 6

Run Description: Grassland 5 Downslope

Vegetation Information

Vegetation Type: Grassland
Vegetation Group: Grassland
Vegetation Slope: 5 Degrees
Vegetation Slope Type: Downslope
Surface Fuel Load(t/ha): 4.5
Overall Fuel Load(t/ha): 4.5
Vegetation Height(m): 0
Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees
Site Slope Type: Downslope
Elevation of Receiver(m): 3
APZ/Separation(m): 25

Fire Inputs

Veg./Flame Width(m): 100
Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95
Relative Humidity(%): 25
Heat of Combustion(kJ/kg) 18600
Ambient Temp(K): 308
Moisture Factor: 5
FDI: 110

Program Outputs

Level of Construction: BAL 12.5
Peak Elevation of Receiver(m): 4.02
Radiant Heat(kW/m2): 9.76
Flame Angle (degrees): 79
Flame Length(m): 8.17
Maximum View Factor: 0.157
Rate Of Spread (km/h): 20.19
Inner Protection Area(m): 25
Transmissivity: 0.819
Outer Protection Area(m): 0
Fire Intensity(kW/m): 46945

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	7	10	14	21	34	3

Run Description: Grassland Flat

Vegetation Information

Vegetation Type: Grassland

Vegetation Group: Grassland

Vegetation Slope: 0 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 4.5

Overall Fuel Load(t/ha): 4.5

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): 3

APZ/Separation(m): 22

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 110

Program Outputs

Level of Construction: BAL 12.5

Peak Elevation of Receiver(m): 3.38

Radiant Heat(kW/m2): 9.55

Flame Angle (degrees): 80

Flame Length(m): 6.87

Maximum View Factor: 0.152

Rate Of Spread (km/h): 14.3

Inner Protection Area(m): 22

Transmissivity: 0.827

Outer Protection Area(m): 0

Fire Intensity(kW/m): 33248

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	6	8	12	18	30	3

Run Description: Mallee 5 Downslope

Vegetation Information

Vegetation Type: Mallee/Mulga
Vegetation Group: Shrub & Heath

Vegetation Slope: 5 Degrees
Vegetation Slope Type: Downslope
Surface Fuel Load(t/ha): 8
Overall Fuel Load(t/ha): 8
Vegetation Height(m): 3
Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees
Site Slope Type: Downslope
Elevation of Receiver(m): 3
APZ/Separation(m): 25

Fire Inputs

Veg./Flame Width(m): 100
Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95
Relative Humidity(%): 25
Heat of Combustion(kJ/kg) 18600
Ambient Temp(K): 308
Moisture Factor: 5
FDI: 80

Program Outputs

Level of Construction: BAL 12.5
Peak Elevation of Receiver(m): 3.97
Radiant Heat(kW/m2): 9.64
Flame Angle (degrees): 80
Flame Length(m): 8.07
Maximum View Factor: 0.155
Rate Of Spread (km/h): 5.88
Inner Protection Area(m): 25
Transmissivity: 0.819
Outer Protection Area(m): 0
Fire Intensity(kW/m): 24316

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	7	10	14	20	34	3

Run Description: Scrub Flat

Vegetation Information

Vegetation Type: Scrub/Tall Heath
Vegetation Group: Shrub & Heath
Vegetation Slope: 0 Degrees
Vegetation Slope Type: Downslope
Surface Fuel Load(t/ha): 25
Overall Fuel Load(t/ha): 25
Vegetation Height(m): 3
Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees
Site Slope Type: Downslope
Elevation of Receiver(m): 3
APZ/Separation(m): 33

Fire Inputs

Veg./Flame Width(m): 100
Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95
Relative Humidity(%): 25
Heat of Combustion(kJ/kg) 18600
Ambient Temp(K): 308
Moisture Factor: 5
FDI: 80

Program Outputs

Level of Construction: BAL 12.5
Peak Elevation of Receiver(m): 5.69
Radiant Heat(kW/m2): 9.83
Flame Angle (degrees): 78
Flame Length(m): 11.63
Maximum View Factor: 0.161
Rate Of Spread (km/h): 4.17
Inner Protection Area(m): 33
Transmissivity: 0.801
Outer Protection Area(m): 0
Fire Intensity(kW/m): 53816

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	10	13	19	28	44	3

Run Description: Shrubland 5 Downslope

Vegetation Information

Vegetation Type: Shrubland/Short Heath

Vegetation Group: Shrub & Heath

Vegetation Slope: 5 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 15

Overall Fuel Load(t/ha): 15

Vegetation Height(m): 1.5

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): 3

APZ/Separation(m): 27

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 80

Program Outputs

Level of Construction: BAL 12.5

Peak Elevation of Receiver(m): 4.45

Radiant Heat(kW/m2): 9.88

Flame Angle (degrees): 79

Flame Length(m): 9.07

Maximum View Factor: 0.16

Rate Of Spread (km/h): 4.05

Inner Protection Area(m): 27

Transmissivity: 0.814

Outer Protection Area(m): 0

Fire Intensity(kW/m): 31357

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	8	11	16	22	37	3

Run Description: Shrubland Flat

Vegetation Information

Vegetation Type: Shrubland/Short Heath

Vegetation Group: Shrub & Heath

Vegetation Slope: 0 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 15

Overall Fuel Load(t/ha): 15

Vegetation Height(m): 1.5

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): 3

APZ/Separation(m): 24

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 80

Program Outputs

Level of Construction: BAL 12.5

Peak Elevation of Receiver(m): 3.81

Radiant Heat(kW/m2): 9.71

Flame Angle (degrees): 80

Flame Length(m): 7.74

Maximum View Factor: 0.155

Rate Of Spread (km/h): 2.87

Inner Protection Area(m): 24

Transmissivity: 0.822

Outer Protection Area(m): 0

Fire Intensity(kW/m): 22208

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	7	9	14	20	33	3

Run Description: Srub 5 Downslope

Vegetation Information

Vegetation Type: Scrub/Tall Heath

Vegetation Group: Shrub & Heath

Vegetation Slope: 5 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 25

Overall Fuel Load(t/ha): 25

Vegetation Height(m): 3

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): 3

APZ/Separation(m): 38

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 80

Program Outputs

Level of Construction: BAL 12.5

Peak Elevation of Receiver(m): 6.64

Radiant Heat(kW/m2): 9.56

Flame Angle (degrees): 77

Flame Length(m): 13.63

Maximum View Factor: 0.159

Rate Of Spread (km/h): 5.88

Inner Protection Area(m): 38

Transmissivity: 0.791

Outer Protection Area(m): 0

Fire Intensity(kW/m): 75988

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	11	15	22	31	49	3

Run Description: Woodland 5 Downslope

Vegetation Information

Vegetation Type: Woodland

Vegetation Group: Forest and Woodland

Vegetation Slope: 5 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 15

Overall Fuel Load(t/ha): 25

Vegetation Height(m): 2

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 43

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 80

Program Outputs

Level of Construction: BAL 12.5

Peak Elevation of Receiver(m): 7.87

Radiant Heat(kW/m2): 9.78

Flame Angle (degrees): 76

Flame Length(m): 16.22

Maximum View Factor: 0.164

Rate Of Spread (km/h): 2.03

Inner Protection Area(m): 34

Transmissivity: 0.782

Outer Protection Area(m): 9

Fire Intensity(kW/m): 26263

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	14	18	26	36	56	6

Run Description: Woodland Flat

Vegetation Information

Vegetation Type: Woodland
Vegetation Group: Forest and Woodland
Vegetation Slope: 0 Degrees
Vegetation Slope Type: Downslope
Surface Fuel Load(t/ha): 15
Overall Fuel Load(t/ha): 25
Vegetation Height(m): 2
Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees
Site Slope Type: Downslope
Elevation of Receiver(m): Default
APZ/Separation(m): 35

Fire Inputs

Veg./Flame Width(m): 100
Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95
Relative Humidity(%): 25
Heat of Combustion(kJ/kg) 18600
Ambient Temp(K): 308
Moisture Factor: 5
FDI: 80

Program Outputs

Level of Construction: BAL 12.5
Peak Elevation of Receiver(m): 6.04
Radiant Heat(kW/m2): 9.8
Flame Angle (degrees): 78
Flame Length(m): 12.36
Maximum View Factor: 0.162
Rate Of Spread (km/h): 1.44
Inner Protection Area(m): 27
Transmissivity: 0.797
Outer Protection Area(m): 8
Fire Intensity(kW/m): 18600

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	11	14	21	29	47	6

Appendix E: Standards for Asset Protection Zones (WAPC, 2024b)

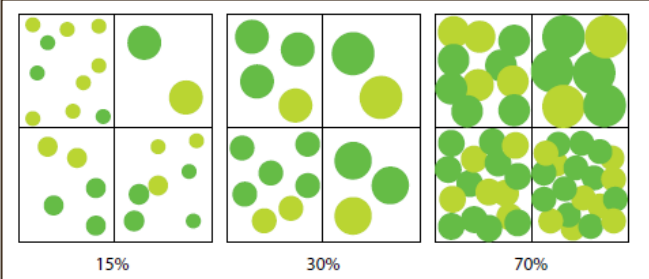
The following standards have been extracted from the Planning for Bushfire Guidelines (WAPC, 2024b).

Every habitable building is to be surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

- a. Width: the APZ is measured from the development site, and of sufficient size to ensure the radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances.
- b. Location: the APZ should be contained solely within the boundaries of the lot, except in instances where:
 - the vegetation on the adjoining lot(s) is, and will continue to be, low threat as per Clause 2.2.3.2 of AS 3959 or the APZ technical requirements, or an alternative standard on a local planning scheme, on an ongoing basis in perpetuity; or
 - the adjoining land is and will remain in perpetuity, non-vegetated.
- c. Management: the APZ is managed in accordance with the APZ technical requirements (below), or an alternative standard in a gazetted local planning scheme.

APZ Technical Requirements

Object	Requirement
Fences within the APZ	Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter less than 6 mm in thickness)	<ul style="list-style-type: none"> • Should be managed and removed on a regular basis to be maintained as a low threat vegetation. • Should be maintained at less than two tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel, shells, rock or crushed mineral earth or wood mulch more than five millimetres in thickness.
Trees* (more than 6 m in height)	<ul style="list-style-type: none"> • Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be less than 15 per cent of the total APZ area. • Tree canopies at maturity should be at least 5 m apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided the total canopy cover within the APZ does not exceed 15 per cent and is not connected to the tree canopy outside the APZ.

Object	Requirement
	 <ul style="list-style-type: none"> • Tree canopy cover – ranging from 15 to 70 per cent at maturity
<p>Shrub* and scrub* (0.5 m to 6 m in height). Shrub and scrub more than 6 m in height are to be treated as trees.</p>	<ul style="list-style-type: none"> • Should not be located under trees or within three metres of buildings. • Should not be planted in clumps more than five square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
<p>Ground cover*(less than 0.5 m in height. Ground cover more than 0.5 m in height is to be treated as shrub)</p>	<ul style="list-style-type: none"> • Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above • Can be located within two metres of a structure but three metres from windows or doors if more than 100 mm in height.
<p>Grass</p>	<ul style="list-style-type: none"> • Grass should be maintained at a height of 100 mm or less, at all times • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
<p>Defendable space</p>	<ul style="list-style-type: none"> • Within three metres of each wall or supporting post of a habitable building; the area is kept free from vegetation but can include ground cover, grass and non-combustible mulches as prescribed above.
<p>Liquid petroleum gas cylinders</p>	<ul style="list-style-type: none"> • Should be located on the side of a building farthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.
<p>* Plant flammability, landscaping design and maintenance should be considered - refer to explanatory notes in the Guidelines.</p>	

ADDITIONAL NOTES

An Asset Protection Zone (APZ) is a low fuel area, maintained around a building to increase the likelihood a building will survive a bushfire, by reducing the potential for direct flame contact, radiant heat exposure and ember attack. The APZ allows emergency services access and provides an area for firefighters and homeowners to defend their property.

An APZ should be contained within the boundaries of the lot on which the building is situated, except in instances where it is demonstrated the vegetation on the adjoining land is, and will continue to be, low threat as per cl. 2.2.3.2 of AS 3959, or the vegetation on the adjoining lot is, and will remain in perpetuity, non-vegetated. However, it should be noted there is no requirement for a neighbouring landowner or land

manager (public or private) to be party to a legal agreement to undertake ongoing management of vegetation as low threat, in perpetuity.

Appendix F: Vehicular Access Technical Requirements (WAPC, 2024b)

Technical requirements	Perimeter Roads		Public Roads		Emergency Access Way ³		Fire Service Access Route ³		Battle-Axe and Private Driveways ¹	
	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1
Map of Bush Fire Prone Areas Designation	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1
Minimum horizontal clearance (m)	12	8	See note 5		10	6	10	6	6	
Minimum vertical clearance (m)	4.5									
Minimum weight capacity (t)	15									
Maximum grade unsealed road ²	See note 5		See note 5		1:10 (10% or 6 degrees)					
Maximum grade sealed road ^{2, 4}					1:7 (14.3% or 8 degrees)					
Maximum average grade sealed road					1:10 (10% or 6 degrees)					
Minimum inner radius of road curves (m)					8.5					

NOTES

1. Driveways and battle-axe legs to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision where not required to comply with the widths in this Appendix or the Guidelines.
2. Dips must have no more than a 1 in 8 (12.5% - 7.1 degrees) entry and exit angle.
3. To have crossfalls between 3 per cent and 6 per cent.
4. For sealed roads only the maximum grade of no more than 1 in 5 (20 per cent) (11.3 degrees) for no more than 50 metres is permissible, except for short constrictions to 3.5 metres for no more than 30 metres in length where an obstruction cannot be reasonably avoided or removed.
5. As outlined in the Institute of Public Works Engineering Australasia (IPWEA) subdivision guidelines, Liveable Neighbourhoods, Austroads Standards Main Roads standard, supplement, policy or guideline and/or any applicable or relevant local government standard or policy.

