GLEN IRIS ESTATE

APPENDIX 5
BUSHFIRE MANAGEMENT PLAN

Bushfire Management Plan: Structure Plan: Glen Iris Estate

Acumen Development Solutions

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A TETRA TECH COMPANY

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DOCUMENT TRACKING

Project Name	Bushfire Management Plan: Structure Plan: Glen Iris Estate
Project Number	20PER-15185
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Status	Final
Version Number	v6
Last saved on	11 October 2023

This report should be cited as 'Eco Logical Australia 2023. Bushfire Management Plan: *Structure Plan: Glen Iris Estate*. Prepared for Acumen Development Solutions.

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Acumen Development Solutions

Template 2.8.1

Version control	
Version	Purpose
v1	Draft – Submission to client
v2	Final – Submission to client
v3	Final – Revised in response to comments provided by the City of Cockburn
v4	Final – Revised in response to comments provided by the City of Cockburn
v5	Final – Revised in response to comments provided by the City of Cockburn
v6	Final – Revised in response to comments provided by the City of Cockburn

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1. Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by Acumen Development Solutions to prepare a Bushfire Management Plan (BMP) to support the Local Structure Plan for Glen Iris Estate (Lot 6 and 7 Glen Iris Drive, Lot 3 and 509 Dean Road and Lot 139 Imlah Court, hereafter referred to as the subject site, Figure 1). The Local Structure Plan will result in the subject site being developed to allow approximately 550 residential lots, 1 commercial lot, various Public Open Space (POS) and landscaping interface areas (Figure 2).

ELA have been advised that approval has been granted for the Local Structure Plan subject to a Schedule of Modifications issued by the Western Australian Planning Commission (WAPC). This report has been updated to address No 35 within this Schedule in relation to modifications required to the BMP.

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2021; Figure 3), which triggers bushfire planning requirements *under State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015) and reporting to accompany submission of the development application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.3* (the Guidelines; WAPC 2017).

The subject site is bound by:

- Residential development and rail reserve to the north;
- Residential development and private industrial development to the south;
- Rural residential blocks and remnant vegetation to the east; and
- Residential development and Kwinana Freeway to the west.

This updated assessment has been prepared by ELA Senior Bushfire Consultant Eva Cronin with quality assurance undertaken by Senior Consultant Stephen Moore.

1.2 Purpose and application of the plan

The primary purpose of this BMP is to act as a technical supporting document to inform planning assessment. This BMP is also designed to provide guidance on how to plan for and manage the bushfire risk to the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

1.3 Environmental considerations

Some bushfire prone areas also have high biodiversity values. SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values. No environmental approvals are being sought at this stage of development, however will be commenced as required to support future stages of planning.

Bushfire Management Plan:
Structure Plan: Glen Iris Estate | Acumen Development Solutions

A Landscape Strategy for the Local Structure Plan (Emerge 2023) has been developed and incorporates the following aspects:

- Pockets of retained Banksia scrub (north and south POS areas);
- Planted drainage basin;
- Streetscapes throughout the development - existing or new trees, irrigated grass, shrubs and groundcovers under 600 mm height in road reserves;
- Parks - irrigated grass, existing or new trees and low shrubs and groundcovers to any slopes and to define areas; and
- Screen planting along the edges of existing or proposed taller fences and walls to visually soften them, this is likely to comprise plantings between 2 - 3m tall and 2 - 3m wide.

The Landscape Strategy also broadly outlines the bushfire risk management landscape response within zones that provide Bushfire Attack Level (BAL) setbacks to residential lots from two retained pockets of Banksia scrub (north and south POS area). Landscaping design within this area will be required to meet Asset Protection Zone standards in the Guidelines. All other POS and Landscape interface areas will be maintained to a low threat state as per 2.2.3.2 (e) and (f) of the Guidelines (i.e. a combination of soft and hard landscaping in the form of maintained parklands, nature strips, etc).

These considerations are addressed further in sections 2.1 and 2.2 of this BMP. Any changes to revegetation and/or landscaping will be addressed in future BMPs.

Figure 1: Site Overview

Subject site
100m site assessment
150m site assessment

N

0 115 230 460
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

20PER15185-SM Date: 23/08/2023

Figure 2: Site Plan - North

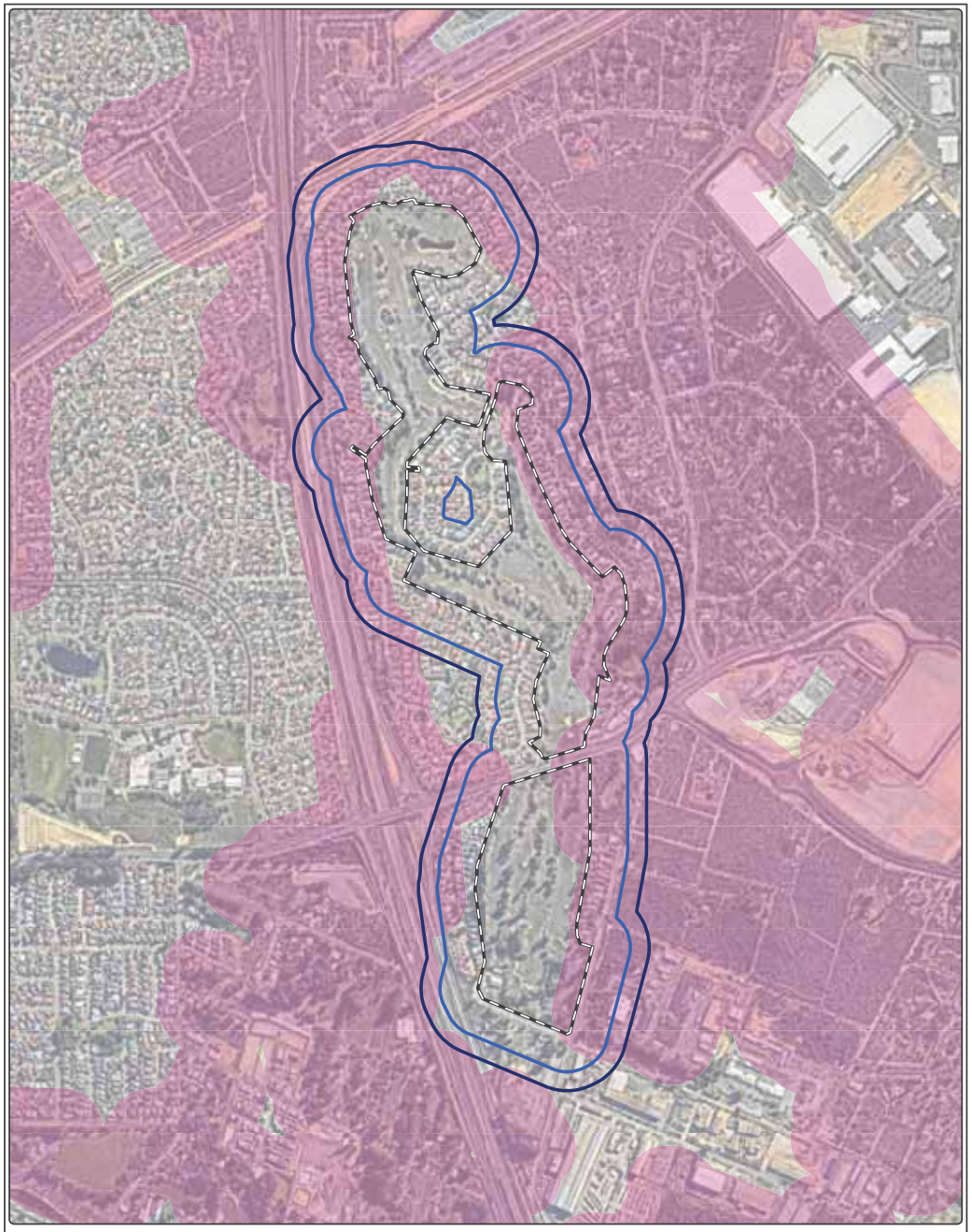

Figure 3: Bushfire Prone Areas

2. Bushfire assessment results

2.1 Bushfire assessment inputs

The following section is a consideration of spatial bushfire risk and has been used to inform the bushfire assessment in this report.

2.1.1 Fire Danger Index

A blanket Fire Danger Index (FDI) of FDI 80 is adopted for Western Australia, as outlined in Australian Standard *AS 3959: 2018 Construction of Buildings in Bushfire Prone Areas* (SA 2018) and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.2 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 in accordance with the Guidelines and *AS 3959: 2018* with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). Site assessment was undertaken on 12 April 2021.

The classified vegetation and effective slope for the subject site from each of the identified vegetation plots are identified below, Table 1 and Figure 4. Photographs relating to each area and vegetation type are included in Appendix A.

2.1.2.1 Post-development bushfire assessment

An assessment of vegetation and slope was undertaken based on the proposed development concept (Figure 2 and Appendix B). A summary of this assessment is provided below and is depicted in Figure 5:

- Majority of the subject site has been excluded to represent cleared areas for development, and low threat vegetation in the form of streetscapes, parks, planted drainage basins and screen planting;
- Two pockets of retained Banksia Class D scrub have been classified (within the northern and southern portions of the subject site);
- Asset Protection Zones (APZs) in accordance with Schedule 1 of the Guidelines will be implemented between proposed development and areas of retained Banksia Class D scrub to ensure acceptable BAL ratings of ≤BAL-29 can be achieved for future development (this will be addressed in detail in future BMPs to support subsequent planning applications);
- The retention of three isolated black cockatoo habitat trees within retained Banksia Class D scrub (within the northern portion of the site) will not change the predominant classifiable vegetation type in this area which is Class D Scrub; and
- The current extent of classified vegetation within the Western Power easement in the south of the subject site has been retained and therefore assessed as worst-case scenario. However, may be modified to low threat vegetation in future planning applications and supporting BMPs.

Dedicated irrigation sprays around retained Banksia Class D scrub (i.e. to assist with fire suppression activities) has been broadly considered within the bushfire risk management landscape response detailed in the Landscape Strategy for the site (Emerge 2023), however, the post-development bushfire assessment does not rely on this irrigation. The post-development bushfire assessment relies on the

APZs between proposed development and retained vegetation meeting the minimum requirements set out in Schedule 1 of the Guidelines (Appendix C). Considerations in relation to regular irrigation within APZs for certain areas (i.e. for perennial grasses and where wood mulch is used) is detailed in the explanatory notes of the most recent Guidelines v1.4 (WAPC 2021). These strategies are considered to be best practice and are recommended to be incorporated (where possible) within APZ zones. Asset Protection Zones detailed in future BMPs will be required to meet APZ standards in accordance with Guidelines applicable at the time of planning application.

Future detailed landscaping plans will be developed for POS areas to support future planning applications which may modify these classifications. Updated BMPs will be prepared to address any changes.

Table 1: Classified vegetation as per AS 3959: 2018

Plot	Vegetation Classification	Effective Slope	Pre-development	Post-development
1	Class B woodland	All upslopes and flat land (0 degrees)	Present	Cleared
2	Class C Shrubland	All upslopes and flat land (0 degrees)	Present	Present
3	Class D Scrub	All upslopes and flat land (0 degrees)	Present	Present
4	Class G Grassland	All upslopes and flat land (0 degrees)	Present	Present
5	Excluded under clause 2.2.3.2 (e) and (f)	N/A	N/A	N/A

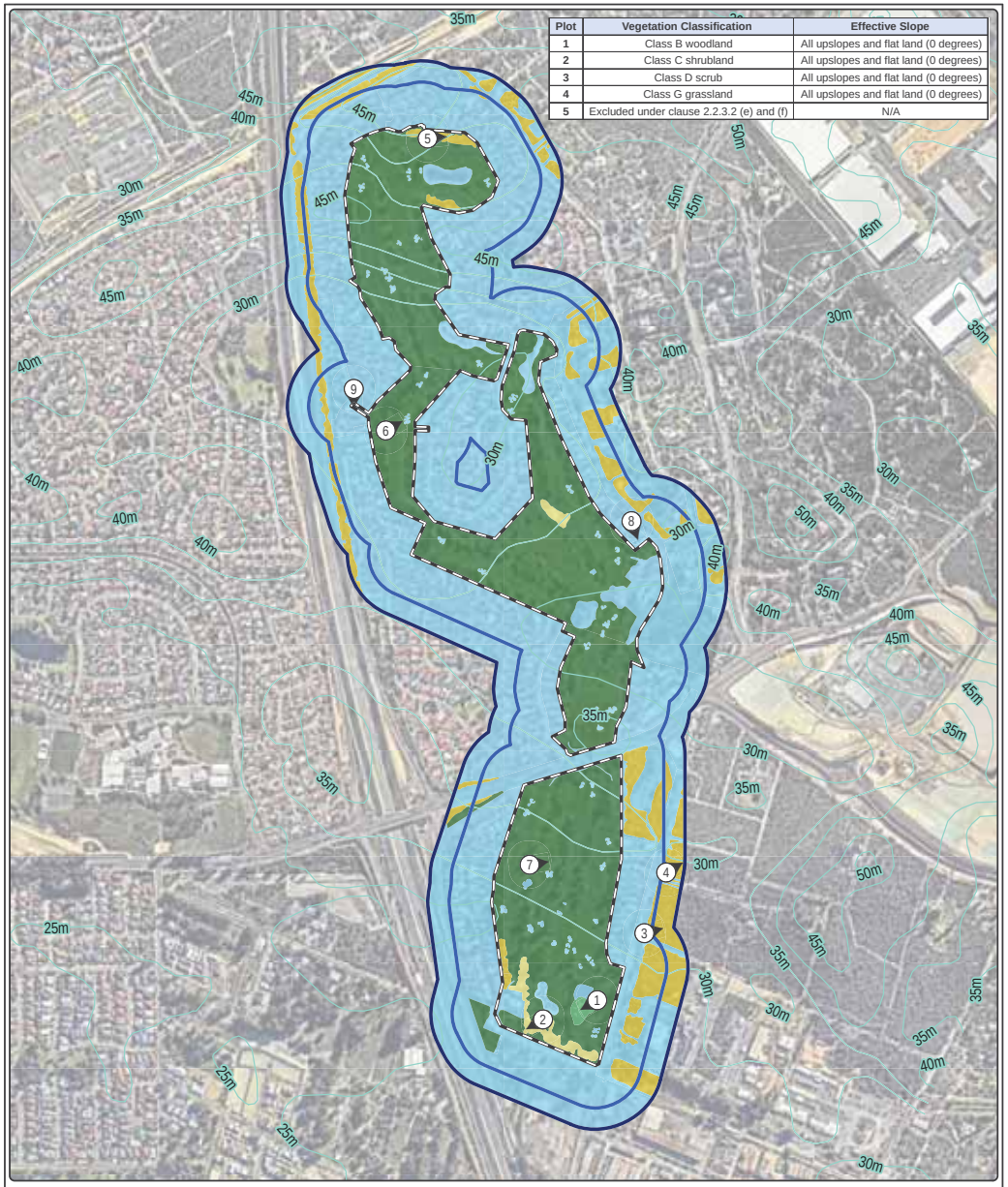

Figure 4: Vegetation Classification Pre-Development

- Subject site
- 100m site assessment
- 150m site assessment
- Photo location
- Contour (5m)

Vegetation classification

- Class B Woodland *(Plot 1)*
- Class C Shrubland *(Plot 2)*
- Class D Scrub *(Plot 3)*
- Class G Grassland *(Plot 4)*
- Excluded as per clause 2.2.3.2 (e) and (f) *(Plot 5)*

0 100 200 400
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

20PER15185-SM Date: 23/08/2023

N

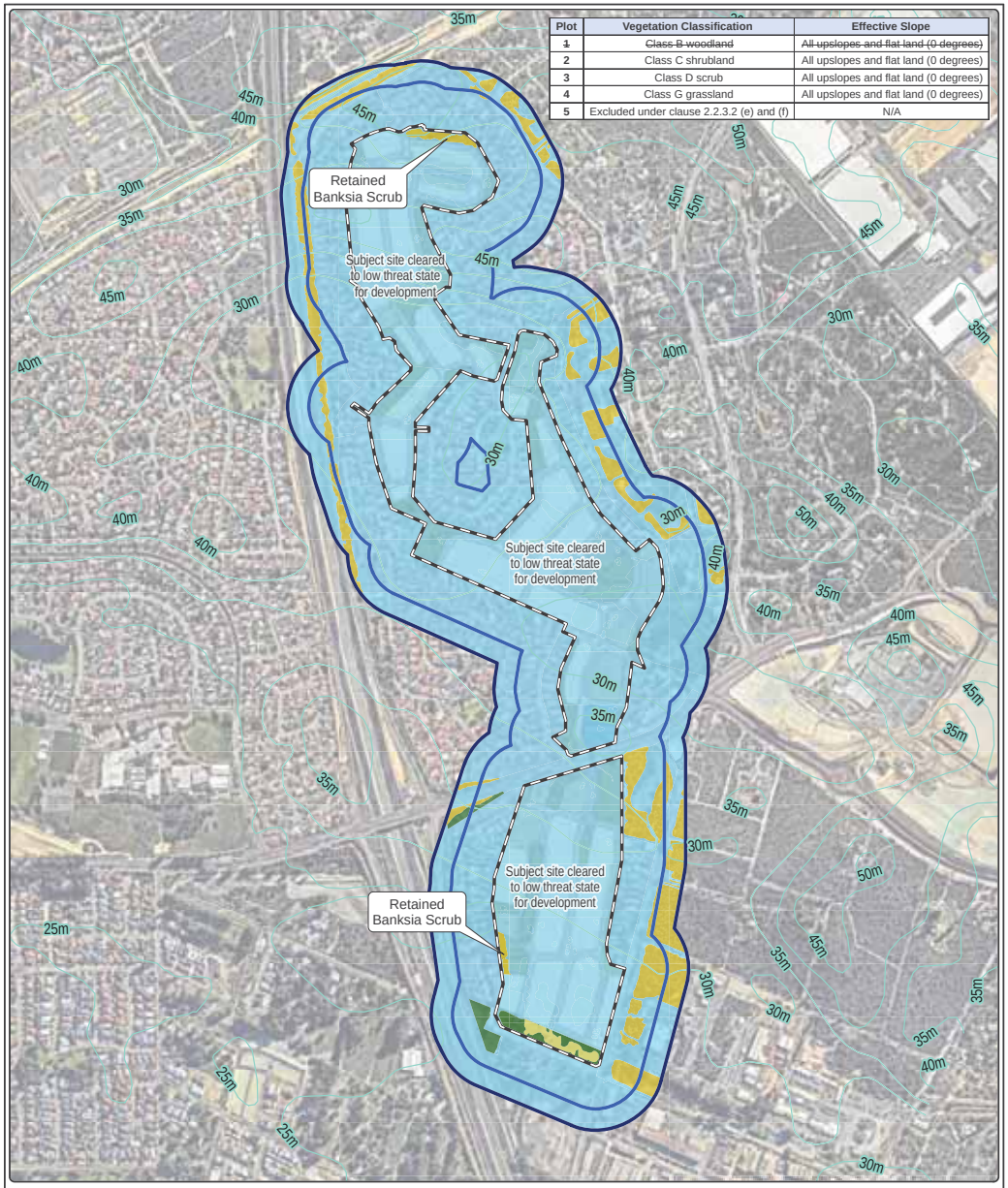

Figure 5: Vegetation Classification Post-Development

- Subject site
- 100m site assessment
- 150m site assessment
- Contour (5m)

Vegetation classification

- Class C Shrubland *(Plot 2)*
- Class D Scrub *(Plot 3)*
- Class G Grassland *(Plot 4)*
- Excluded as per clause 2.2.3.2 (e) and (f) *(Plot 5)*

0 100 200 400
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

20PER15185-SM Date: 25/08/2023

N

2.2 Bushfire assessment outputs

A Bushfire Hazard Level (BHL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines and the bushfire assessment inputs in Section 2.1.

2.2.1 BHL assessment

All land located within 100 m of the classified vegetation depicted in Figure 4 is considered bushfire prone and is subject to a BHL assessment in accordance with the Guidelines

Pre-development BHLs have been assessed for the subject site in accordance with the methodology contained within the Guidelines and incorporates the following factors:

- Vegetation class; and
- Slope under classified vegetation.

Table 2 contains a summary of the BHL assessment for each vegetation plot depicted in Figure 4. All land within 100 m of Extreme and Moderate BHLs has also been mapped as a Moderate hazard as per the Guidelines, and the final result is depicted in Figure 6. Descriptions of each vegetation classification are with each of the plates in Appendix A.

Clearing and landscaping will be undertaken within the subject site for development purposes, and consequently the pre-development BHLs are subject to change. A post development BHL assessment is provided in Table 2 and Figure 7 based on expected changes to vegetation within the subject site depicted in Figure 5.

Given an indicative lot layout is known at this stage of planning, an indicative Bushfire Attack Level (BAL) Contour map using the worst-case-scenario vegetation classification has been provided in Appendix D (Figure 10 and Figure 11).

Table 2: Bushfire Hazard Level assessment

Plot	Vegetation classification	Effective Slope	BHL Pre-development	BHL Post-development
1	Class B woodland	Upslope/ flat land	Extreme	N/A - Cleared
2	Class C shrubland	Upslope/ flat land	Moderate	Moderate
3	Class D scrub	Upslope/ flat land	Extreme	Extreme
4	Class G grassland	Upslope/ flat land	Moderate	Moderate
5	Excluded under clause 2.2.3.2 (e) and (f)	N/A	Low	Low

2.3 Identification of issues arising from the BAL assessment

The on-site vegetation extent is proposed to be cleared to enable development of a significant urban built footprint amongst areas of landscaped/managed Public Open Space (POS) and various easements. Therefore, for the purposes of strategic level planning, ELA does not consider the current on-site vegetation extent to be a bushfire hazard issue post-development, since these hazards can be managed through a staged clearing process, adequate separation of future built assets from classified vegetation (both external and internal [e.g. retained vegetation] to the subject site), and ongoing fuel management that can be undertaken in and around individual development stages.

The indicative BAL assessment (Figure 10 and Figure 11) highlights that the development will not result in a BAL rating of BAL-FZ or BAL-40, except for portions of one residential and one group housing cell adjacent to retained Banksia Class D Scrub and/or the Western Power easement. The indicative lot layout will be finalised at subdivision stage and will be designed so that all residential or group housing lots are subject to a BAL rating of ≤BAL-29. The internal road structure will be developed to allow separation from proposed residential lots and bushfire hazard interface, where appropriate.

On the basis of the above information, ELA considers that the bushfire hazards within and adjacent to the subject site and the associated bushfire risk is readily manageable through standard management responses and compliance with acceptable solutions outlined in the Guidelines. These management measures will need to be factored into the development design as early as possible to ensure a suitable, compliant and effective bushfire management outcome is achieved to ensure protection of future life and property assets.

Demonstration of compliance with the relevant requirements of SPP 3.7, the Guidelines and AS 3959: 2018 at future planning stages will also depend on the developer's ability to coordinate the timing and staging of clearing and development works within the subject site with the aim of avoiding bushfire impacts from temporary, retained vegetation.

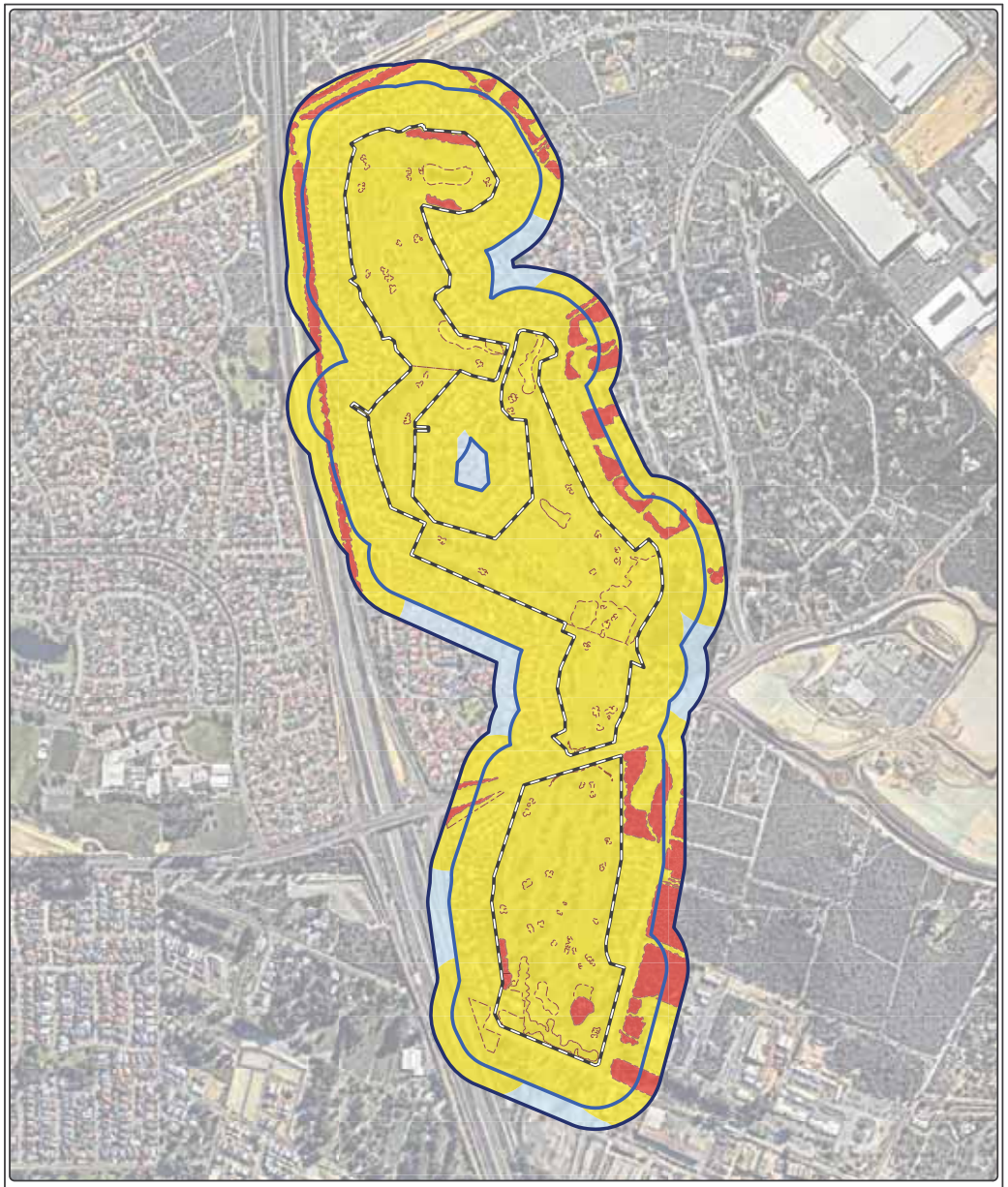

Figure 6: Bushfire Hazard Level (BHL) Assessment Pre-Development

Subject site
100m site assessment
150m site assessment
Bushfire hazard interface

Bushfire Hazard Level (BHL)
Extreme
Moderate
Low

0 100 200 400
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

20PER15185-SM Date: 24/08/2023

N

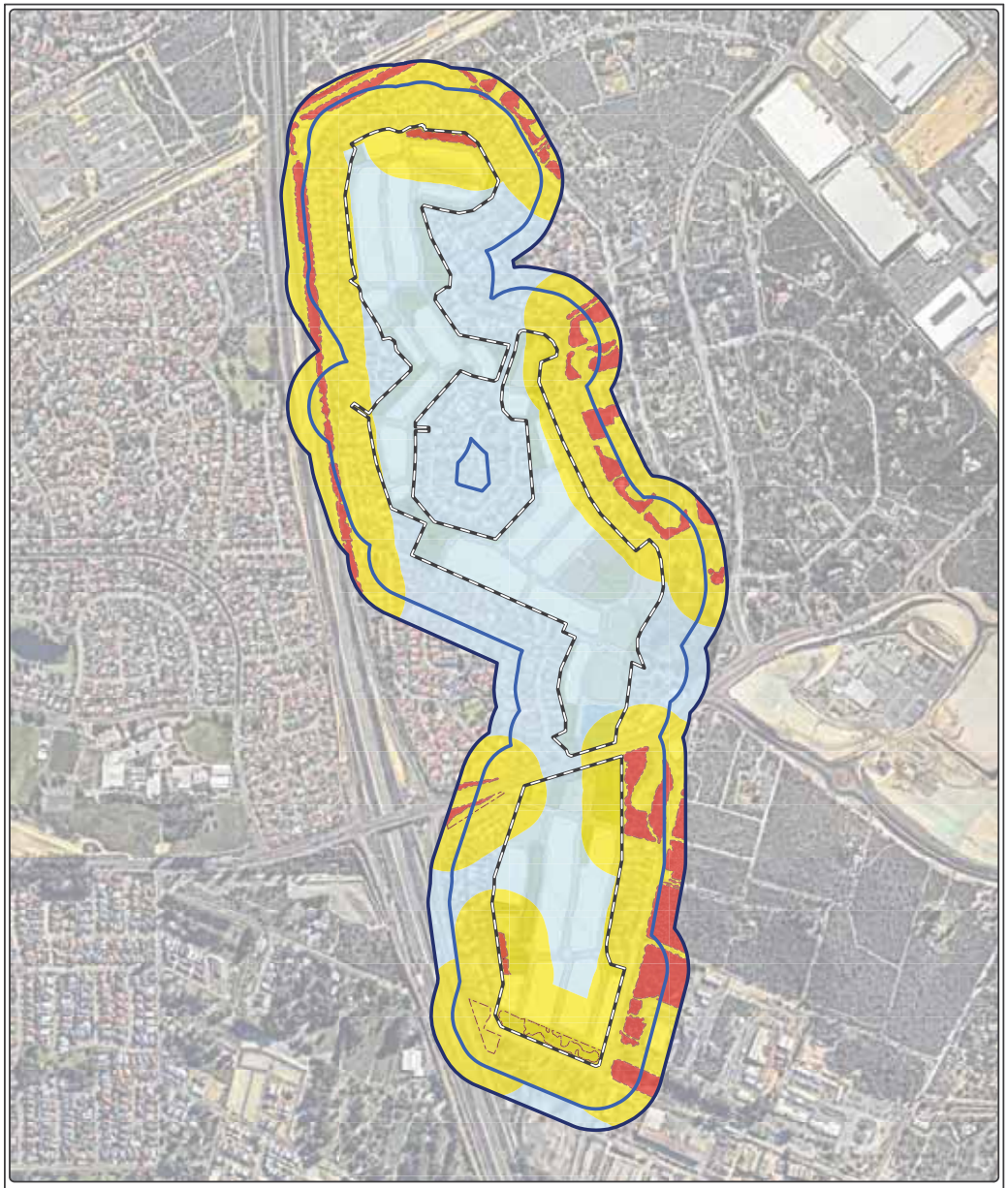

Figure 7: Bushfire Hazard Level (BHL) Assessment Post-Development

Subject site
100m site assessment
150m site assessment
Bushfire hazard interface

Bushfire Hazard Level (BHL)
Extreme
Moderate
Low

0 100 200 400
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

20PER15185-SM Date: 25/08/2023

N

3. Assessment against the Bushfire Protection Criteria

3.1 Compliance

The proposed Structure Plan is required to comply with policy measures 6.2 and 6.3 of SPP 3.7 and the Guidelines. Implementation of this BMP is expected to meet objectives 5.1 - 5.4 of SPP 3.7. Bushfire management measures have been devised for the proposed development in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

In response to the above requirements of SPP 3.7 and the Guidelines, bushfire risk management measures, as outlined, have been devised for the Local Structure Plan in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

Table 3 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summaries how the intent of each Bushfire Protection Criteria has been achieved. No Performance Solutions (PS) have been proposed for this proposal. These management measures are depicted in Figure 8 where relevant.

The Structure Plan has been conditionally approved, therefore, the required updates to this BMP do not trigger assessment of the proposed development against the Bushfire Protection Criteria in the Guidelines for Planning in Bushfire Prone v1.4 (WAPC 2021). Future BMPs to support more detailed planning applications will address relevant legislative requirements applicable at the time of application.

Table 3: Summary of solutions used to achieve bushfire protection criteria

Bushfire Protection Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location	☒	☐	☐	Post-development, all buildings within the subject site will be situated in areas subject to BHLs of Moderate or Low (refer to Figure 8). Whilst there are currently portions of one residential cell (adjacent to the Western Power easement and retained vegetation within a POS) and a portion of the Group Housing cell (adjacent to retained vegetation within a POS) that are subject to BAL-FZ and BAL-40 (Figure 11), the final lot layout in future planning applications will be amended a so that all residential lots achieve a BAL rating of BAL-29 or below. The proposed development is considered to be compliant with A1.1 as any issues can be addressed with refined design detail.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)	☐	☐	☒	As the lot layout is currently unconfirmed, APZs are unable to be prescribed at this level of planning. APZs will be defined in BMPs supporting future planning applications to ensure that all future lots will be subject to a BAL rating of BAL-29 or lower. Figure 8 demonstrates that APZs are able to be accommodated within the subject site to provide separation between future development and bushfire hazards that

Bushfire Protection Criteria	AS	PS	N/A	Comment
				will remain within the site post development (i.e. areas of retained Class D Banksia Scrub). The proposed development is considered to be compliant with A2.1.
Element 3: Vehicular access A3.1 Two access routes	☒	☐	☐	There are currently 12 proposed access points that join to the existing road network that lead to/from the subject site (Figure 8). The proposed development is considered to be compliant with A3.1.
A3.2 Public road	☒	☐	☐	The internal roads within the subject site will ensure that access and egress can be undertaken in a safe manner. These roads allow for regular passing and turn-around areas. All public roads will comply with vehicular access requirements (Appendix E). Additional details will be provided in future BMPs to support more detailed planning applications. The proposed development is considered to be compliant with A3.2.
A3.3 Cul-de-sac	☒	☐	☐	No cul-de-sacs proposed. If cul-de-sacs are required in the future, these will be confirmed at subdivision level and will be compliant with the guideline requirements. Additional details will be provided in future BMPs to support more detailed planning applications. The proposed development is considered to be compliant with A3.3.
A3.4 Battle-axe	☒	☐	☐	Design for the battle-axe lots (where proposed) will be finalised at subdivision stage. Additional details will be provided in future BMPs to support more detailed planning applications. The proposed development is considered to be compliant with A3.4
A3.5 Private Driveway longer than 50 m	☐	☐	☒	No private driveways longer than 50 m are proposed.
A3.6 Emergency Access way	☐	☐	☒	No emergency access ways are proposed or required as part of the development.
A3.7 Fire-service access routes	☐	☐	☒	No fire service access routes are required or proposed.
A3.8 Firebreak width	☐	☐	☒	No fire breaks are required or proposed as per the City of Cockburn Firebreak Notice 2023 (CoC 2023).
Element 4: Water A4.1 Reticulated areas	☒	☐	☐	The subject site will be connected to a reticulated water supply. The proposed development is considered to be compliant with A4.1.
A4.2 Non-Reticulated areas	☐	☐	☒	Reticulated water is present within the area.

Bushfire Protection Criteria	AS	PS	N/A	Comment
A4.3 Individual Lots within non-reticulated areas	☐	☐	☒	Reticulated water is present within the area.

NOTE – AS- ACCEPTABLE SOLUTION, PS- PERFORMANCE SOLUTION, N/A- NOT APPLICABLE

3.2 Additional bushfire risk considerations

The City of Cockburn has noted concerns regarding potential access limitations north of Berrigan Drive, whereby all connections head back to a very short portion of Berrigan Drive. ELA has considered this risk in preparation of the BMP, however are of the opinion that the level of risk exposure is low. The bushfire hazard affecting the subject site is associated with rural properties and small reserves in a narrow (approx. 800 m) band between the site and Jandakot airport (to the north and east). Emergency access south to Berrigan Drive, moving west towards the freeway will move evacuees away from the source of bushfire hazards. Providing an additional access route to the north was not considered appropriate as this would traverse the bushfire hazards adjacent to the subject site.

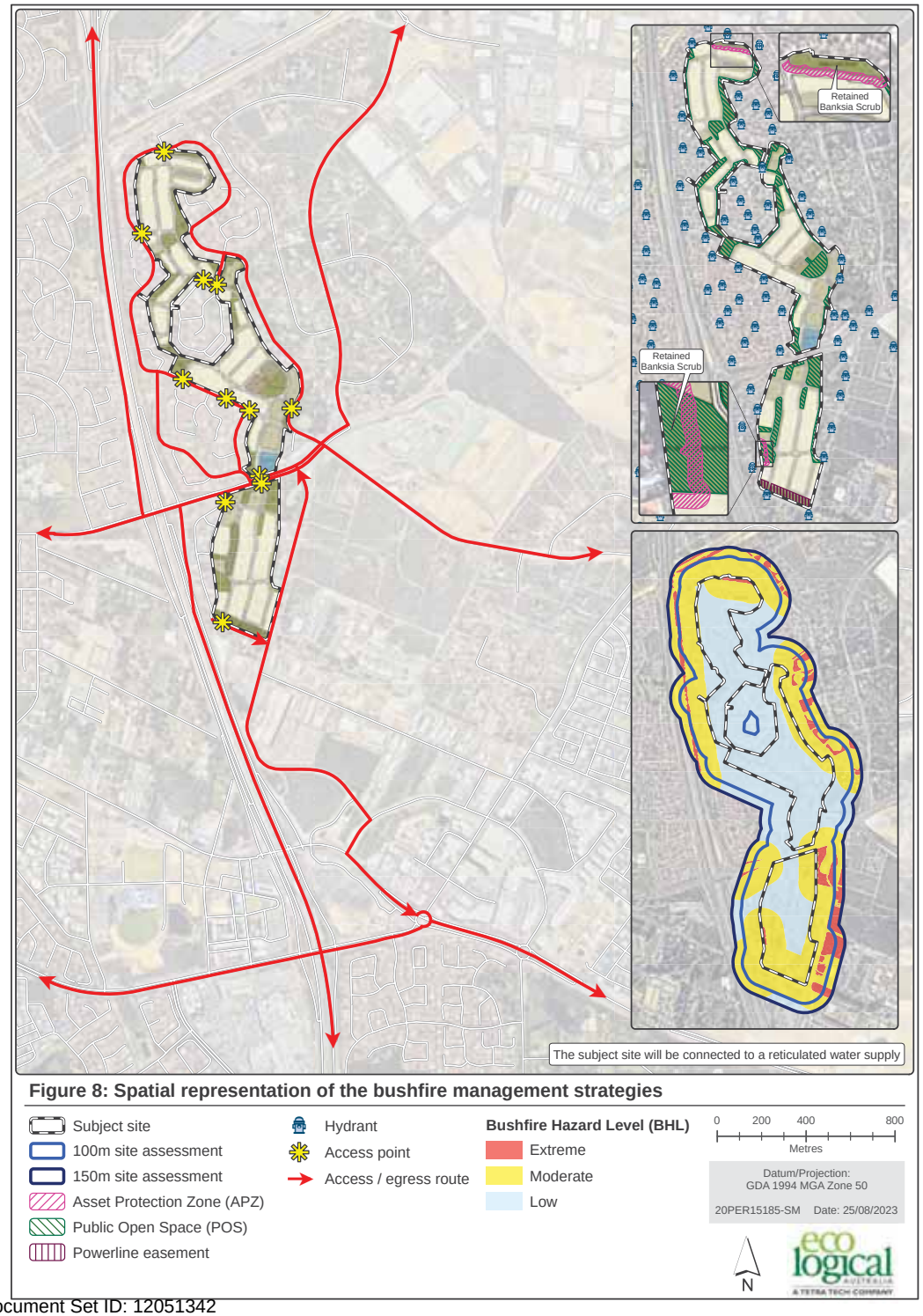

Figure 8: Spatial representation of the bushfire management strategies

4. Implementation and enforcement

Implementation of the BMP applies to Acumen Development Solutions, the City of Cockburn, and future landowners to ensure bushfire management measures are adopted and implemented on an ongoing basis. This BMP has been prepared as a strategic guide to demonstrate how development compliance will be delivered at future planning stages in accordance with the Guidelines. In this respect, management measures documented in Section 3, where applicable, will be incorporated into development design as early as possible and confirmed through subdivision design. Therefore, aside from the revision of this BMP or preparation of a BMP addendum to accompany future subdivision applications, there are no further items to implement, enforce or review at this stage of the planning process.

The revised BMPs or addendums to this BMP are required to meet the relevant commitments outlined in this strategic level BMP, address the relevant requirements of SPP 3.7 (i.e. Policy Measure 6.4) and demonstrate in detail how the proposed development will incorporate the relevant acceptable solutions to meet the performance requirements of the Guidelines. At a high-level, future BMPs (or addendums) are to include the following detailed information (where applicable):

- Proposed lot layout, including any public open space (POS), drainage areas and retained vegetation;
- Landscaping design/plans in regard to POS, drainage areas, retained vegetation and the Western power easement, consistent with the provisions of this BMP;
- Post-development classified vegetation extent and effective slope;
- A BAL contour map demonstrating that future dwellings can achieve BAL ratings of ≤BAL–29;
- Location and width of compliant APZs/setbacks where required;
- Details regarding how bushfire management will be addressed during development staging (i.e. staging buffers, vehicular access, etc);
- Vehicular access provisions, including demonstration that a minimum of two access routes will be achieved for each stage of development in accordance with Acceptable Solution A3.1;
- Water supply provisions with regards to reticulated water;
- Provisions for notification on Title for any future lots with BAL ratings ≥BAL–12.5 as a condition of subdivision;
- Compliance requirements with the current City's annual firebreak notice;
- Assessment and compliance with acceptable solutions and/or performance principles of the bushfire protection criteria in the Guidelines;
- Proposed implementation and audit program outlining all measures requiring implementation and the appropriate timing and responsibilities for implementation; and
- Requirements for construction of Class 1, 2, 3 or associated 10a buildings as well as Class 9b buildings (where applicable) in accordance with AS 3959 to the assessed BAL rating at the building/construction stage.

5. Conclusion

In the author's professional opinion, the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed development. As such, the proposed development is consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.

6. References

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Appendix A – Classified Vegetation Photos

Plot 1	Classification or Exclusion Clause	Class B Woodland

Photo Point 1

Classified vegetation within this plot is comprised of trees between 10 to 30 m tall with approximately 20 to 30% foliage cover. There is limited surface litter. Some grass and shrubs are present at the base of the trees.

Slope under the vegetation has been assessed as upslope/ flat land.

Plot 2	Classification or Exclusion Clause	Class C Shrubland

Photo Point 2

Classified vegetation within this plot is predominantly less than 2 m in height with a foliage cover greater than 30%. The understorey is widespread characterised by dense low shrubs. Some grasses are present.

Slope under the vegetation has been assessed as upslope/ flat land.

Plot 3	Classification or Exclusion Clause	Class D Scrub

Photo Point 3

This vegetation is representative of Class D scrub due to the vegetation height, composition and the canopy cover.

The predominant vegetation is *Banksia attenuata* and *Banksia menziesii* which grow to heights of 10 m and 7 m respectively (WA Herbarium, 1998-). The Banksia individuals in this plot are already mature and are approximately 6 m in height and therefore unlikely to grow any taller due to the environmental conditions of this remnant vegetation.

There are some emergent trees <10m in height and grasses present. However, the sparse distribution of these trees does not affect the predominant vegetation structure and the foliage cover is between 10 and 30%.

Slope under the vegetation has been assessed as upslope/ flat land.

Plot 3	Classification or Exclusion Clause	Class D Scrub

Photo Point 4

This vegetation is representative of Class D scrub due to the vegetation height, composition and the canopy cover.

The predominant vegetation is *Banksia attenuata* and *Banksia menziesii* which grow to heights of 10 m and 7 m respectively (WA Herbarium, 1998-). The Banksia individuals in this plot are already mature and are approximately 6 m in height and therefore unlikely to grow any taller due to the environmental conditions of this remnant vegetation.

There are some emergent trees <10m in height and grasses present. However, the sparse distribution of these trees does not affect the predominant vegetation structure and the foliage cover is between 10 and 30%.

Slope under the vegetation has been assessed as upslope/ flat land.

Plot 3	Classification or Exclusion Clause	Class D Scrub

Photo Point 5

This vegetation is representative of Class D scrub due to the vegetation height, composition and the canopy cover.

The predominant vegetation is *Banksia attenuata* and *Banksia menziesii* which grow to heights of 10 m and 7 m respectively (WA Herbarium, 1998-). The Banksia individuals in this plot are already mature and are approximately 6 m in height and therefore unlikely to grow any taller due to the environmental conditions of this remnant vegetation.

There are some emergent trees <10m in height and grasses present. However, the sparse distribution of these trees does not affect the predominant vegetation structure and the foliage cover is between 10 and 30%.

Slope under the vegetation has been assessed as upslope/ flat land.

Plot 4	Classification or Exclusion Clause	Class G Grassland

Photo Point 6

Classified vegetation within this plot is predominantly grassland with foliage cover from the over storey less than 10%. This plot represents the previously managed fairways within the Glen Iris Golf Course.

Slope under the vegetation has been assessed as upslope/ flat land.

Plot 4	Classification or Exclusion Clause	Class G Grassland

Photo Point 7

Classified vegetation within this plot is predominantly grassland with foliage cover from the over storey less than 10%. This plot represents the previously managed fairways within the Glen Iris Golf Course.

Slope under the vegetation has been assessed as upslope/ flat land.

Plot 5	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e) and (f)

Photo Point 8

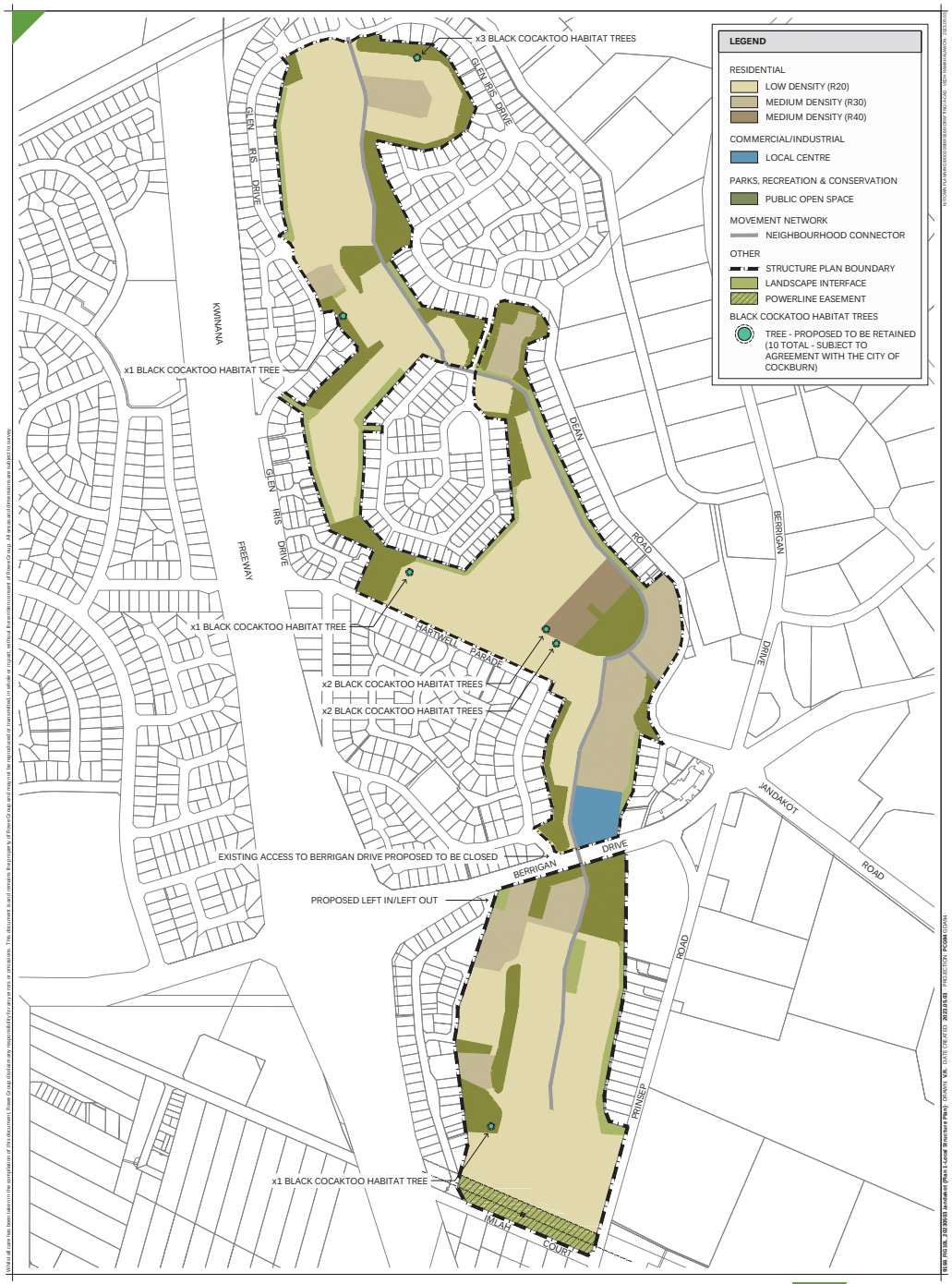
This plot has been excluded under Clause 2.2.3.2 (e) and (f) of AS 3959: 2018. This is an area of maintained front verges and road within a residential area.

Plot 4	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e) and (f)

Photo Point 9

This plot has been excluded under Clause 2.2.3.2 (e) and (f) of AS 3959: 2018. This is an area of maintained front verges and road within a residential area.

Appendix B - Local Structure Plan



PLAN 1 - LOCAL STRUCTURE PLAN
GLEN IRIS DRIVE
JANDAKOT

9166-FIG-10-L

ROWE GROUP DESIGN

Appendix C – Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas v 1.3* (WAPC 2017).

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: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m² (BAL-29) in all circumstances.

b. Location: the APZ should be contained solely within the boundaries of the lot on which a building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).

c. Management: the APZ is managed in accordance with the requirements of '*Standards for Asset Protection Zones*' (below):

- Fences: within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used
- Objects: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors
- Fine Fuel load: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare
- Trees (> 5 metres in height): trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy (Error! Reference source not found.).

Figure 9: Illustrated tree canopy cover projection (WAPC 2017)

- Shrubs (0.5 metres to 5 metres in height): should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m^2 in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees
- Ground covers (<0.5 metres in height): can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs
- Grass: should be managed to maintain a height of 100 millimetres or less.

Additional notes

The Asset Protection Zone (APZ) is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level. Hazard separation in the form of using subdivision design elements or excluded and low threat vegetation adjacent to the lot may be used to reduce the dimensions of the APZ within the lot.

The APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity. The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

Appendix D – Indicative Bushfire Attack Level (BAL) Contour

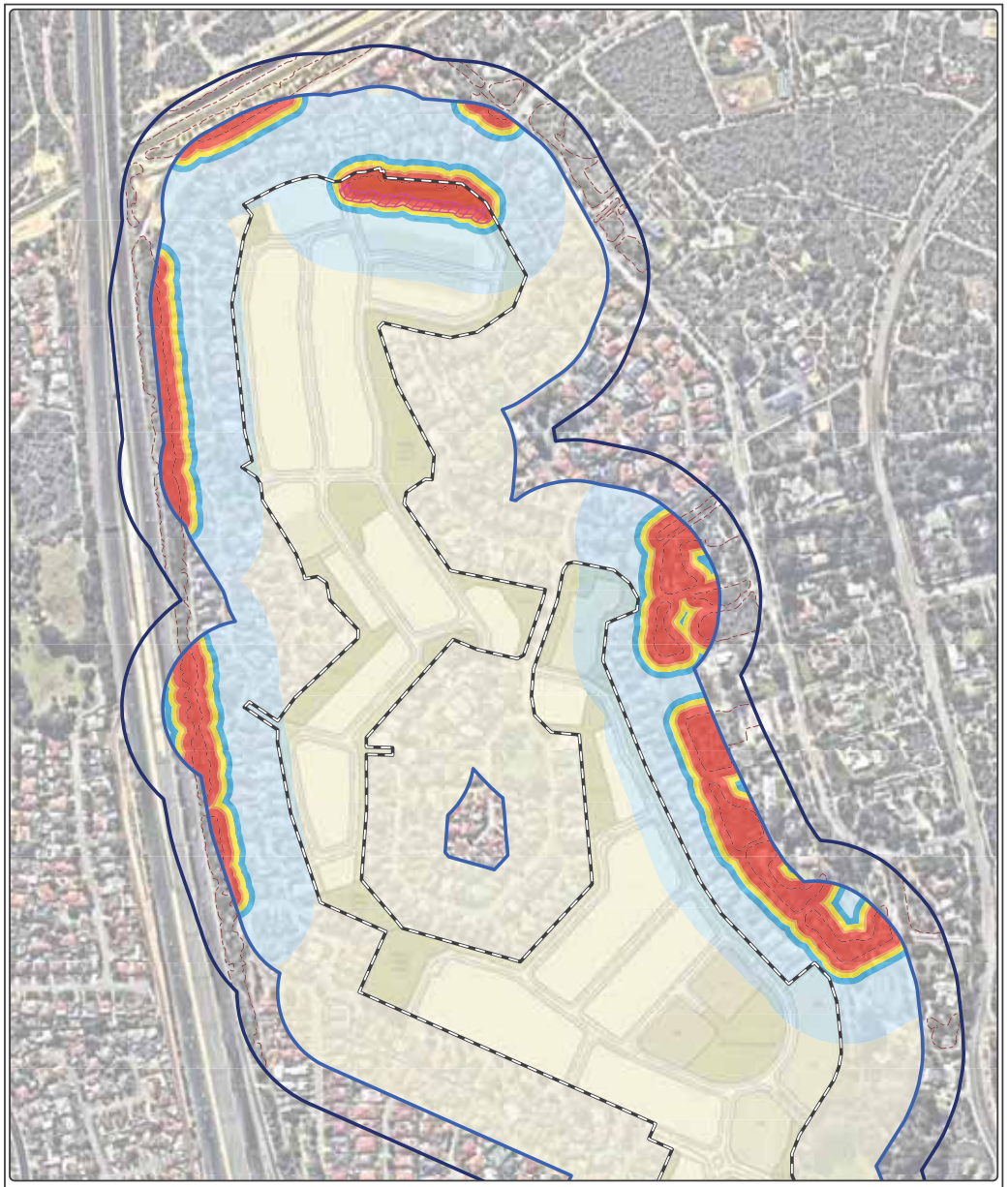


Figure 10: Indicative Bushfire Attack Level (BAL) Contours - North

- Subject site
- 100m site assessment
- 150m site assessment
- Bushfire hazard interface
- Asset Protection Zone (APZ)

Bushfire Attack Level (BAL)

- BAL - FZ
- BAL - 40
- BAL - 29
- BAL - 19
- BAL - 12.5
- BAL - LOW

0 50 100 200
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

20PER15185-SM Date: 25/08/2023

N

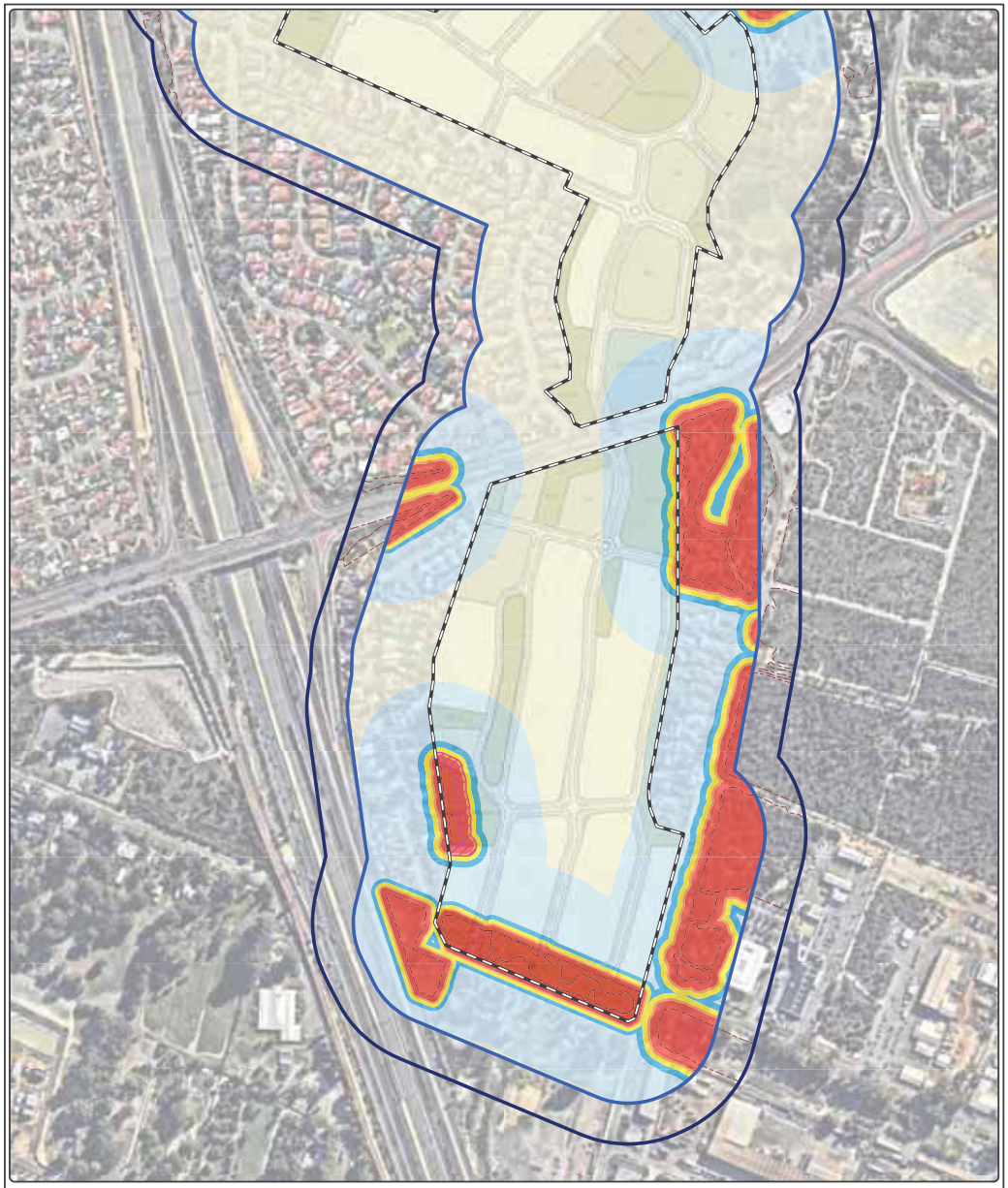


Figure 11: Indicative Bushfire Attack Level (BAL) Contours - South

- Subject site
- 100m site assessment
- 150m site assessment
- Bushfire hazard interface
- Asset Protection Zone (APZ)

Bushfire Attack Level (BAL)

- BAL - FZ
- BAL - 40
- BAL - 29
- BAL - 19
- BAL - 12.5
- BAL - LOW

0 50 100 200
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

20PER15185-SM Date: 25/08/2023

N

Appendix E Vehicular access technical requirements (WAPC 2017)

Technical requirements	Public road	Cul-de-sac	Private driveway	Emergency access way	Fire service access route
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal distance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 m	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius	8.5	8.5	8.5	8.5	8.5
* Refer to E3.2 Public roads: Trafficable surface					

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