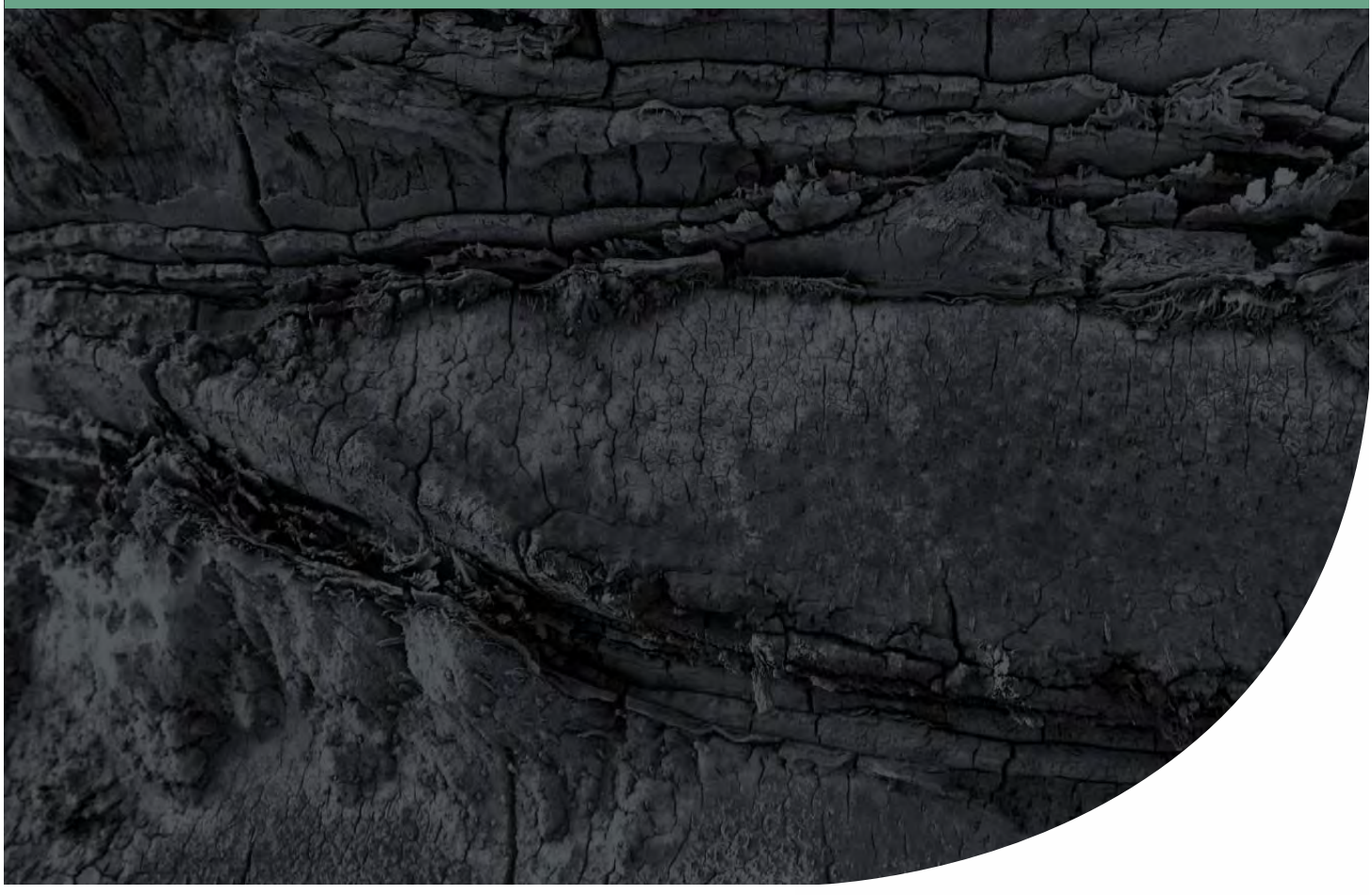
Bushfire Management Plan

Lot 101 (no. 752) Wallcliffe Road, Margaret River

Project No: EP18-128(12)

Prepared for Wallcliffe House Pty Ltd
November 2023



Document Control

Doc name:	Bushfire Management Plan Lot 101 (no. 752) Wallcliffe Road, Margaret River				
Doc no.:	**EP18-128(12)—040b LSW**				
Version	**Date**	**Author**		**Reviewer**	
1	October 2023	Louis Winer	LSW	Anthony Rowe	AJR
		Kirsten Knox	KK		
	Issued for client review.				
A	November 2023	Kirsten Knox	KK	Anthony Rowe	AJR
	Minor updates following client review.				
B	November 2023	Kirsten Knox	KK	Anthony Rowe	AJR
	Minor updates following client review.				

Disclaimer:

This document has been prepared in good faith and is derived from information sources believed to be reliable and accurate at the time of publication. Nevertheless, it is distributed on the terms and understanding that the author is not liable for any error or omission in the information sources available or provided to us, or responsible for the outcomes of any actions taken based on the recommendations contained herein. It is also expected that our recommendations will be implemented in their entirety, and we cannot be held responsible for any consequences arising from partial or incorrect implementation of the recommendations provided.

This document has been prepared primarily to consider the layout of development and/or the appropriate building construction standards applicable to development, where relevant. The measures outlined are considered to be prudent minimum standards only based on the standards prescribed by the relevant authorities. The level of bushfire risk mitigation achieved will depend upon the actions of the landowner or occupiers of the land and is not the responsibility of the author. The relevant local government and fire authority (i.e. Department of Fire and Emergency Services or local bushfire brigade) should be approached for guidance on preparing for and responding to a bushfire.

Notwithstanding the precautions recommended in this document, it should always be remembered that bushfires burn under a wide range of conditions which can be unpredictable. An element of risk, no matter how small, will always remain. The objective of the Australian Standard AS 3959:2018 is to "prescribe particular construction details for buildings to reduce the risk of ignition from a bushfire" (Standards Australia 2018). Building to the standards outlined in AS 3959 does not guarantee a building will survive a bushfire or that lives will not be threatened by the effects of bushfire attack.

© 2023 Emerge Associates All Rights Reserved. Copyright in the whole and every part of this document belongs to Emerge Associates and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person without the prior written consent of Emerge Associates.

Executive Summary

Wallcliffe House Pty Ltd (the proponent) are progressing with a development application aligned with the recent scheme amendment, to support the redevelopment of Lot 101 Wallcliffe Road, Margaret River (herein referred to as 'the site'). The site is approximately 5.2 ha in size and located in the Shire of Augusta Margaret River and 8 km southwest of the Margaret River townsite.

The site is located within a 'bushfire prone area' under the state-wide *Map of Bush Fire Prone Areas* prepared by the Office of Bushfire Risk Management (OBRM 2021). The identification of a site within an area declared as bushfire prone necessitates further assessment of the determined bushfire risk affecting the site in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas* (AS 3959), and the satisfactory compliance of the proposal with the policy measures described in *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (the Guidelines) (DPLH & WAPC 2021).

The site is bound by the Margaret River (north) and associated fringing riparian vegetation to the northwest, a nature reserve to the south and existing residential and tourism (chalet and camping land uses) to the east (which includes the Margaret River rowing club).

The proposal follows the recent scheme amendment (endorsed 6 September 2021) which had been supported by a Bushfire Management Plan. The site is zoned 'tourism' (T5) under the Shire of Augusta Margaret River Local Planning Scheme (LPS) No.1, and it provides site-specific direction to recognise the important heritage, vegetation and landscape values (including significant mature cultivated gardens and views to Margaret River and the surrounding land).

The proposed development is for a boutique hotel that will accommodate up to 25 keys (62 guests), which is less keys than permitted through the scheme (which is 40 keys). It is intended to respect and acknowledge the cultural heritage and history of the site, its location as well as the existing landscape values. The design proposes new buildings (replacement buildings) be located within the footprint of the existing fire-damaged buildings (which were irreparably damaged by the Prevelly bushfire in 2011), as well as providing new guest cottages and suites, an operations building and wastewater plant, guest and staff parking, an estate management office, a guest spa and supporting utility infrastructure. The existing mature, cultivated gardens and areas of remnant vegetation within the site are proposed to be retained. However, some modifications to this vegetation will be undertaken to support the development and management of the bushfire risk.

The purpose of this BMP is to assess the bushfire hazards, both within and near the site, and identify the 'management' strategies required to ensure the development of the land is consistent with the intent of SPP 3.7 - *to preserve life and reduce the impact of bushfire on property and infrastructure.*

This BMP has followed the requirements of SPP 3.7 to identify bushfire risk and the bushfire protection measures that will make the land suitable for its intended purpose. As part of this, a Bushfire Attack Level (BAL) assessment involving the classification of vegetation within 150 m of the site has been undertaken. The following vegetation was identified within 150 m of the site:

- Forest (Class A) vegetation, related to a revegetation area as well as the riparian vegetation associated with the Margaret River, adjacent to the western and north-western boundary of the site, as well as forest vegetation to the south of the site, south of Wallcliffe Road reserve. A small area of forest vegetation was also identified adjacent to the driveway access into the site.
- Woodland (Class B) vegetation, located to the east and southeast of the site. These areas appear to be subject to some fuel load management, however they had a higher load of leaf litter, so they have been identified as woodland.
- Scrub (Class D) vegetation, located to the south of the site within Wallcliffe Reserve and associated with areas of coastal heath on outcropping limestone. A small portion is also proposed to remain within the site, associated with the cliff area.

The proposed development is consistent with the scheme amendment process, noting the number of keys to be serviced is less than that proposed by the scheme amendment, namely 25 keys as opposed to 40 keys. This reduces the number of people potentially onsite at any one time. A number of the buildings will replace the original building positions and be located in areas subject to a BAL rating of BAL-FZ or BAL-40 due to retained vegetation within and immediate to the site that is part of the historic interpretation and landscape value. However the buildings will be constructed in accordance with AS 3959, offering greater building resilience to bushfire attack.

Compliance Assessment

Pursuant to the considerations required by SPP 3.7, the Bushfire Management Plan (BMP) examines various responses to the likely long-term bushfire risk (following development) that will make the ultimate use of the land suitable for its intended purpose. The proposed use of the site is considered a 'vulnerable land use' in accordance with the SPP 3.7 and is classed in the Guidelines as "*Other short-term accommodation – including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds)*". Accordingly, bushfire risk has been considered based on 'Element 5 (other short-term accommodation)' of the Guidelines.

The assessment of the proposal in accordance with the stand-alone bushfire protection criteria described in Element 5 of the Guidelines finds:

- **Siting and Design:** The acceptable solution requires all buildings to be surrounded by an Asset Protection Zone, established with in the site equivalent to BAL 29. Based upon protecting the site heritage, vegetation and landscape values, bushfire impact is proposed to be minimised through:
  - Providing separation between habitable buildings and bushfire hazards to achieve a BAL rating of BAL-29 or less (including Wallcliffe House) excepting the replacement locations that include Cottage 7, Cliff Wing, River Wing and Gatehouse. All other buildings are able to achieve BAL-29 or less.

- Managing the entire site, apart from the new revegetation area in the southwest (forest) and the retained 'scrub' vegetation to the south of the proposed buildings and associated with the Wallcliffe Cliffs, consistent with an Asset Protection Zone standard (Schedule 1 of the Guidelines).
- All habitable buildings will be constructed to be commensurate with the assessed BAL rating. Wallcliffe House will be constructed to a minimum BAL rating of BAL-29. The previous buildings within the site did not have this benefit when subject to bushfire attack from the 2011 bushfire, with embers impacting on the wooden roof shingles causing ignition and collapse.
- Ensuring all habitable buildings have an exit located away from the approaching bushfire front.
- Providing onsite fire-fighting capabilities, which include a static water supply (supplemented by the irrigation system) and will include building protection features such as automatic sprinkler systems (or similar).

- **Vehicular Access:** the site will have a direct connection to Wallcliffe Road, an existing public road that meets public road standards. This road connects to Prevelly to the west and Margaret River townsite (via Caves Road) to the east. This was accepted as a through-road arrangement in the scheme amendment process. Prevelly may provide a pragmatic destination for refuge if evacuation onto Caves Road is not safe. With regard to access:
  - Evacuation from the site is the preferred option if it is safe to evacuate. If it is not safe to evacuate, a shelter building is proposed at the site (Wallcliffe House replacement, which is a proposed restaurant). The design will be certified (prior to operation of the facility) by a fire engineer to be in compliance with the *Design and Construction of Community Bushfire Refuges Handbook* (ABCB 2014), to provide tenability and safety for all occupants in a bushfire event.
  - A bushfire emergency evacuation plan has been prepared for the development, outlining the measures to be implemented to manage occupants in a bushfire emergency including the evacuation or shelter response.
  - The internal private driveway is able to satisfy the requirements of the Guidelines, and in particular, achieves the minimum horizontal clearance (6 m-wide) and provides suitable turn around areas for fire appliances with an internal loop road network proposed.
- **Water**: Existing fire hydrants are available from Wallcliffe Road, directly east of the site and located within 600 m of the proposed habitable buildings (and therefore are within a 20-minute turn-around). Additional static water supply tanks located close to Wallcliffe Road will provide a reliable water capacity that is distributed at the buildings by a hydrant network within the site. These tanks will also have connections for use by fire appliances compliant with the Shire's technical requirements.

In accordance with Section 6.6 of SPP 3.7, a Bushfire Emergency Evacuation Plan (BEEP) has been completed to augment this BMP and has followed the requirements of Clause 5.5.4 of the Guidelines. It follows the infrastructure provided by the BMP, for evacuation and shelter, preparation for the bushfire seasons, the monitoring and response (evacuation, as the primary response; or shelter as a last resort) to be taken in a bushfire event and the recovery and return to operation.

The proposed development responds to the historic pattern of development on the site and the fixed positions as a legacy consistent with the recent scheme amendment together with protecting the landscape values of the site and locality. Overall, the outcomes of the BMP demonstrate that the management/mitigation measures (risk treatments) can satisfy the requirements of SPP 3.7 and the Guidelines and follow the 'legacy' established by the scheme amendment. The key ameliorating risk treatments that respond to the bushfire risk include:

- Staff will be present at all times to direct visitors/occupants in the case of an emergency.
- Permanent staff will be trained in emergency procedures.
- The site will be subject to a high level of management based on the existing landscape values (which include mature cultivated gardens that are irrigated and regularly subject to weed control and removal of dead material) and the proposed development.
- The buildings will be constructed based on their determined BAL rating in accordance with AS 3959 and the requirements of the *Building Act 2011*, increasing building resilience to bushfire attack. A minimum BAL rating construction standard of BAL-29 is proposed for Wallcliffe House.
- Egress is available via Wallcliffe Road to Caves Road (which provides destinations to the north and south) and Margaret River townsite (to the east). Whilst Prevelly Beach (to the west) has not been identified as a suitable destination, it may provide a contingency destination nominated by Emergency Services (supported in the scheme amendment and the Shire of Augusta Margaret River Local Emergency Management Arrangements 2022). Shelter as a place of last resort will be provided by the building construction and site management described in the BMP and procedures described in the Bushfire Emergency Evacuation Plan.
- Sufficient water supply and hydrants will be available to support fire-fighting requirements. This will be via the connection to the Water Corporation reticulated water supply network, as well as supplementary static tanks to provide a reliable supply.
- Suitable vehicle access will be provided within the site allowing for vehicles to pass each other on the entrance road and to turn-around as required.
- The nearest local volunteer fire brigade is located within 3 km of the site, east along Wallcliffe Road.
- Local fire emergency response planning, including risk assessment, has been completed for the Shire of Augusta Margaret River identifying key risk areas which allow for holistic management.

Table of Contents

1 Introduction 1

1.1 Background 1
1.2 Aim of this report 2
1.3 Statutory policy and framework 2
1.4 Description of the proposed development 2
1.5 Description of land characteristics 5

2 Environmental Considerations 7

2.1 Native vegetation – modification and clearing 9
2.2 Revegetation and landscape plans 9

3 Bushfire Assessment Results 10

3.1 Assessment inputs 10
3.1.1 Assumptions 10
3.1.2 Vegetation classification 11
3.2 Assessment outputs 19

4 Identification of Bushfire Hazard Issues 22

4.1 Risk identification 22
4.2 Risk evaluation 22
4.3 Risk treatments 23

5 Assessment Against the Bushfire Protection Criteria 24

5.1 Additional management strategies 34
5.1.1 Future approval considerations 34
5.1.2 Landscape management 34
5.1.2.1 Within the site 34
5.1.2.2 Surrounding the site 34
5.1.3 Shire of Augusta Margaret River Firebreak Notice 34
5.1.4 Public education and preparedness 35

6 Responsibilities for Implementation and Management of Bushfire Measures 36

7 Applicant Declaration 38

7.1 Accreditation 38
7.2 Declaration 38

8 References 39

8.1 General references 39
8.2 Online references 39

List of Tables

Table 1: Summary of potential environmental considerations that may be associated with the site (based on a search of the SLIP databases) 7
Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) 12
Table 3: AS 3959 vegetation classification and effective slope 19
Table 4: Setback distances based on vegetation classification and effective slope and Table 2.5 of AS 3959, as determined by the method 1 BAL assessment 19
Table 5: AS 3959 Method 1 BAL determination for each building 21
Table 6: Assessment against Element 5 of the bushfire protection criteria from the Guidelines 24
Table 7: Responsibilities for the implementation of this BMP 36

List of Plates

Plate 1: Summary of key buildings/features proposed as part of the development. 3
Plate 2: Shire of Augusta Margaret River Local Planning Scheme No.1 zoning and reservations, in and surrounding the site. 5
Plate 3: An example of the view of the Margaret River from within the site, with the original diary building in the foreground. 6
Plate 4: An example of the maintained gardens within the site, with planted exotic vegetation and looking towards the dairy and boatshed. 6
Plate 5: The five fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007) 11
Plate 6: Summary of the BAL ratings according to Method 1 of AS 3959 assessed for each building 21
Plate 7: Excerpt of Table 6 from The Guidelines 32
Plate 8: BAL ratings using 1200K in accordance with the Design and Construction of Community Bushfire Refuges Handbook (ABCB 2014). 33

Figures

Figure 1: Site Location and Topographic Contours
Figure 2: AS 3959 Vegetation Classifications and Effective Slope
Figure 3: Bushfire Attack Level Contour Plan
Figure 4: Spatial Representation of Bushfire Management Strategies

Appendices

Appendix A

Proposed Development Plan

Appendix B

Landscape Concept Plan

Appendix C

Bushfire Emergency Evacuation Plan – Part 1 & Part 2

Appendix D

1200K Calculations

List of Abbreviations

Table A1: Abbreviations – General terms

General terms	
AHD	Australian Height Datum
AS	Australian Standard
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BEEP	Bushfire Emergency Evacuation Plan
BMP	Bushfire Management Plan
BPAD	Bushfire Planning and Design
ESA	Environmentally Sensitive Area
FDI	Fire Danger Index
FZ	Flame Zone
LCP	Landscape concept plan
Key	Refers to the number of lodging units, which may include a lodging unit with multiple rooms as part of a single suite or similar.
TEC	Threatened ecological community

Table A2: Abbreviations – Organisations

Organisations	
ABCB	Australian Building Council Board
DBCA	Department of Biodiversity, Conservation and Attractions
DWER	Department of Water and Environmental Regulation
DFES	Department of Fire and Emergency Services
DPLH	Department of Planning, Lands and Heritage
OBRM	Office of Bushfire Risk Management
Shire	Shire of Augusta Margaret River
WAPC	Western Australian Planning Commission

Table A3: Abbreviations – Legislation and policies

Legislation	
Guidelines	*Guidelines for Planning in Bushfire Prone Areas version 1.4* (DPLH & WAPC 2021)
SPP 3.7	State Planning Policy 3.7 Planning in Bushfire Prone Areas (WAPC 2015)

Table A4: Abbreviations – Planning and building terms

Planning and building terms	
LPS	Local Planning Scheme
NCC	National Construction Code

Table A4: Abbreviations – units of measurement

Units of measurement	
cm	Centimetre
ha	Hectare
m	Metre
m^2	square metre
m^3	cubic metre
m AHD	m in relation to the Australian height datum
mm	Millimetre

1 Introduction

1.1 Background

Wallcliffe House Pty Ltd (the proponent) are progressing with a development application aligned with the recent scheme amendment, to support the redevelopment of Lot 101 Wallcliffe Road, Margaret River (herein referred to as 'the site') as a boutique hotel with a total of 25 keys (62 guests) which will include a restaurant, wellness spa and service areas for staff.

The site is located within the Shire of Augusta Margaret River and is shown in **Figure 1**. It is approximately 5.2 ha in size and is located around 8 km west-south-west of the Margaret River townsite.

The site is located within a 'bushfire prone area' under the state-wide *Map of Bush Fire Prone Areas* prepared by the Office of Bushfire Risk Management (OBRM 2021). The identification of a site within an area declared as bushfire prone necessitates a further assessment of the determined bushfire risk affecting the site in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas* (AS 3959), and the satisfactory compliance of the proposal with the policy measures described in *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (the Guidelines) (DPLH & WAPC 2021).

The site is zoned 'tourism' (T5) under the Shire of Augusta Margaret River Local Planning Scheme (LPS) No.1. The proposal follows the recently amended scheme (endorsed 6 September 2021) and the site-specific guidance described in Schedule 12, *Special Conditions Relating to Tourist Zones* at T5.

A Bushfire Management Plan accompanied the scheme amendment and demonstrated the capability of the site to accommodate development compliant with the intent of SPP 3.7 and the bushfire protection criteria, Elements 1-4, from the *Guidelines for Planning in Bushfire Prone Areas v1.*3 and having regard to the WAPC *Position Statement: Tourism land uses in bushfire prone areas November 2019.* Since the scheme amendment the *Guidelines for Planning in Bushfire Prone Areas v1.3* has been superseded by the *Guidelines for Planning in Bushfire Prone Areas v1.4 (December 2021)* which has now incorporated the WAPC *Position Statement: Tourism land uses in bushfire prone areas,* within a stand-alone Element 5. This Element has been created specifically for tourism development. It provides exemptions for the routine requirements described in Elements 1 and 2 but still utilises certain provisions from Elements 2, 3 and 4. Element 1 is not applicable to development applications for tourism development. Specifically:

> "*Elements 1 – 4 should be applied for all strategic planning proposals, subdivision or development applications, except for vulnerable tourism land uses which should refer to Element 5."* (Guidelines page 63)

The proposal is classed in Element 5 as "*Other short-term accommodation – including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds)*".

1.2 Aim of this report

The purpose of SPP 3.7 and its policy intent is to preserve life and reduce the impact of bushfires on property and infrastructure through effective risk-based land use planning.

The purpose of this BMP is to assess bushfire hazards both within the site and nearby and demonstrate that the threat posed by any identified hazards can be appropriately mitigated and managed. This BMP has been prepared to support the proposed development of the site in accordance with the local planning scheme and addresses the requirements of SPP 3.7 (WAPC 2015), the Guidelines (DPLH & WAPC 2021) and AS 3959 (Standards Australia 2018). The document includes:

- An assessment of the existing classified vegetation in the vicinity of the site (within 150 m) and consideration of bushfire hazards that will exist in the post development scenario (**Section 3**).
- Commentary on how the future development can achieve the bushfire protection criteria outlined within the Guidelines including an indication of BAL ratings likely to be applicable to habitable buildings (**Section 5**).
- An outline of the roles and responsibilities associated with implementing this BMP (see **Section 6**).

1.3 Statutory policy and framework

The following key legislation, policies and guidelines are relevant to the preparation of a bushfire management plan:

- *Bush Fires Act 1954*
- *Fire and Emergency Services Act 1998*
- *Planning and Development Act 2005* and associated regulations
- *Building Act 2011* and associated regulations
- *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015)
- *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (DPLH & WAPC 2021)
- *Australian Standard AS 3959 – 2018 Construction of buildings in bushfire prone areas* (Standards Australia 2018)

1.4 Description of the proposed development

MJA Studio has prepared a concept plan that details the proposed redevelopment of the site, which is provided in **Appendix A**, with a visual representation of the key buildings and layout provided in **Plate 1**.

The proposed development is for a boutique hotel that will accommodate up to 25 keys (62 guests) and is intended to respect and acknowledge the cultural heritage and history of the site, its location as well as existing landscape values. The principles being adopted will see new buildings be located within the footprint of the existing fire-damaged buildings (which could not be restored), as well as being constructed throughout the site including new guest cottages and suites, an operations building and wastewater plant, guest and staff parking, an estate management office, a guest spa and supporting utility infrastructure.

The uses proposed within the site can generally be summarised based on the following uses (generally outlined in **Plate 1**):

- Accommodation, associated with a number of Cottages, the Cliff wing and the River wing. The Cliff wing, River wing and Cottage 7 are legacy locations (BAL-40 – BAL-FZ > BAL-29). Cottage 1-6 are located in areas subject to BAL-29 or less.
- Guest facilities including:
  - Food and beverage, associated with Wallcliffe House and the Old Diary.
  - Day uses (for guests), associated with the Spa and Boat Shed (legacy locations).
- Operations and back-of-house, associated with the Operations barn, Estate management and the gatehouse.
- Driveway and vehicle parking.
- Landscaped grounds, including turf, manicured gardens and managed retained vegetation.

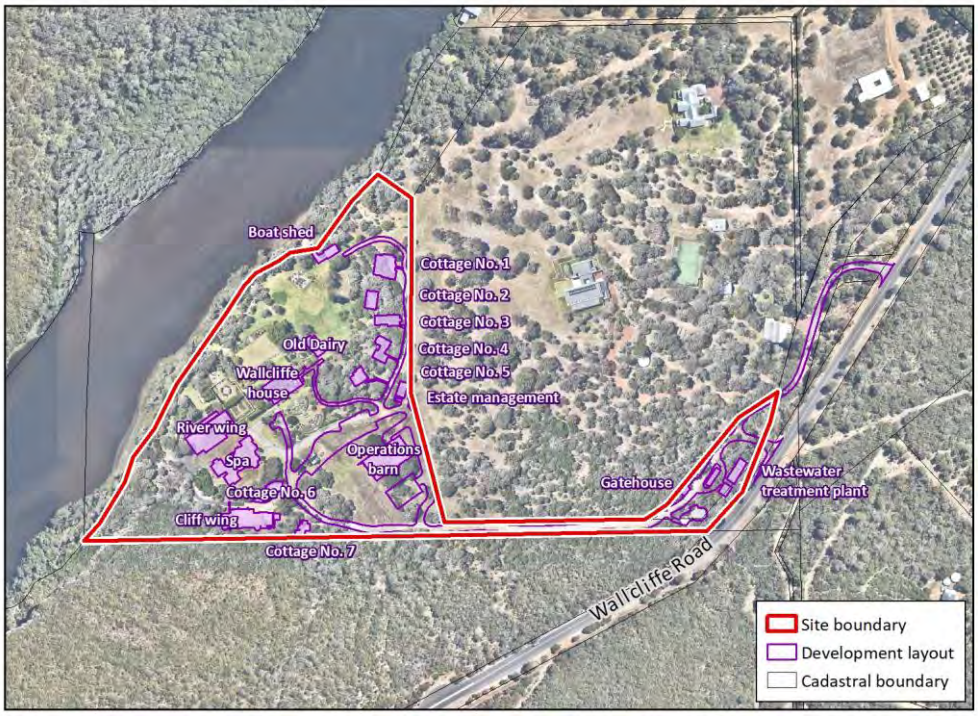


Plate 1: Summary of key buildings/features proposed as part of the development.

The proposed development has reduced the number of keys that were envisaged (and permitted) through the scheme amendment from 40 keys to 25 keys. The proposed development will also only service guests staying within the site.

As outlined, the site is zoned 'tourism' under the Shire of Augusta Margaret River Local Planning Scheme (LPS) No.1, as shown within **Plate 2**, and provided with the additional direction (site-specific) at 'T5' within *Schedule 12 Special Conditions Relating to Tourist Zones*. Relevant to the consideration of managing bushfire risk, Condition 3 of the T5 designation states:

No development shall be approved by the local government unless:

a. *It is consistent with the heritage values and integrity of the site;*
b. *It is consistent with the landscape significance and setting of the site;*
c. *It is appropriately sited and designed to ensure that fire mitigation measures do not compromise environmental and landscape values;*
d. *It is set back a minimum of 20m from the property boundary where it abuts the Margaret River (with the exception of existing development, landscape works and essential services); and*
e. *The adjacent foreshore values are appropriately enhanced, protected, and managed.*

Condition 6 of the T5 designation requires a bushfire management plan and bushfire emergency evacuation plan to be prepared to support the development application process.

As a note, pursuant to the Planning and Development (Local Planning Scheme) Regulations 2015, Schedule 2, at clause 78E(2), the application of SPP 3.7 is additional to any requirements in the scheme and therefore is to be read in conjunction with SPP 3.7, and any exceptional circumstances provided by the Scheme that apply to the discretionary decision making facilitated by Clause 2.7 in the Guidelines.

The site contains important heritage, vegetation and landscape values (including significant mature cultivated gardens and views of the Margaret River and the surrounding land) that are intrinsic to the existing state and local heritage listing of the site. The existing mature cultivated gardens and areas of remnant vegetation within the site are proposed to be retained, although some modification to this vegetation may be required as part of development, both to accommodate proposed buildings and also to support the management of bushfire risk.

These are exceptional circumstances established by the scheme that support the discretion of the decision maker and require a flexible approach to the routine requirements identified by the acceptable solutions, which are only an example of how the intent may be met.

> *"Each element has an intent outlining the overall aim. The acceptable solutions provide examples of how that intent may be met." (Guidelines page 63)*

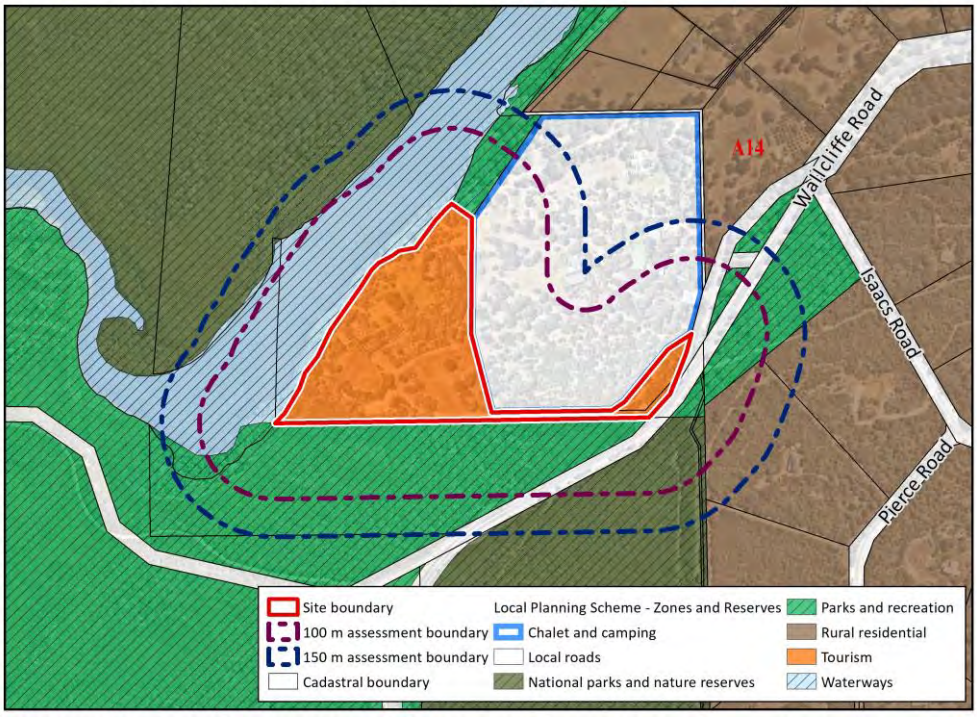


Plate 2: Shire of Augusta Margaret River Local Planning Scheme No.1 zoning and reservations, in and surrounding the site.

1.5 Description of land characteristics

The site is generally bounded by the Margaret River and associated fringing riparian vegetation to the north-west, a nature reserve to the south and existing residential and tourism (chalet and camping land uses) to the east (which includes the Margaret River rowing club).

The natural topographic contours for the area indicate the site has a north-westerly aspect, with elevation ranging from 2 m in relation to the Australian height datum (mAHD) along the western boundary adjacent to Margaret River, to 12 mAHD at its northern extent, 22 mAHD in the south west near the Wallcliffe Cliffs and 64 mAHD at the south eastern extent (i.e. closest to Wallcliffe Road) (DPIRD 1999). Topographic contours are shown in **Figure 1.**

The site contains the historic Wallcliffe House, one of the original farms and homesteads developed by the Bussell family, and dates from around 1858. The entire site is a listed state and local heritage place and is described as containing areas of varying significance with regard to Aboriginal, European, and natural values, where the original views and vista have changed little since European settlement and construction of the original Wallcliffe House and dairy in 1858. An example of the views of the Margaret River from within the site is shown in **Plate 3.** The landscape setting of the site is an important reason why the site is heritage listed, and even though the buildings within the site were irreparably damaged by the 2011 bushfire and cannot be restored, it is still an important heritage site, particularly with regard to community sense of place and the important landscape setting.

The site has not been used for residential or tourism purposes since the 2011 Margaret River bushfire, when the buildings were irreparably damaged. However, the gardens and grounds have continued to be maintained since the 2011 bushfire, and an example of the existing grounds is shown in **Plate 4**.



Plate 3: An example of the view of the Margaret River from within the site, with the original diary building in the foreground.



Plate 4: An example of the maintained gardens within the site, with planted exotic vegetation and looking towards the dairy and boatshed.

2 Environmental Considerations

In accordance with the *Bushfire Management Plan – BAL Contour* template prepared by the Department of Planning, Lands and Heritage (DPLH) (2018), this BMP has considered whether there are any environmental values that may require specific consideration through either protection, retention or revegetation. To support this, a review of publicly available databases, with particular reference to the Shared Location Information Platform (SLIP) databases, as well as site-specific investigations has been undertaken. A summary of the search results has been provided in **Table 1**.

Table 1: Summary of potential environmental considerations that may be associated with the site (based on a search of the SLIP databases)

Key environmental feature (information in brackets refers to mapping data source)	Yes / no / potentially occurring within the site	If yes / potentially, describe value that may be impacted
Conservation category wetlands and buffer	No	Not applicable. No wetlands occur within or near to the site.
RAMSAR wetlands (DBCA-010)	No	Not applicable. No RAMSAR wetlands are identified within the site or in close proximity to it.
Waterways or features (Emerge Associates 2019a; Nature Conservation 2018)	No	No surface water features have been identified within the site. The Margaret River, a major perennial waterway is located adjacent to the north-western boundary of the site. Between the waterbody and the site is an area of variable width (between 0 m to 25 m), which was generally identified to contain riparian vegetation in 'very good' condition.
Clearing regulations – Environmentally Sensitive Areas (DWER-046)	No	No environmentally sensitive areas (ESAs) are identified within the site. A number of ESA are located within the vicinity of the site, including directly to the south of the site (associated with Wallcliffe Reserve) and on the northern bank of Margaret River (associated with Leeuwin Naturaliste National Park).
Bush Forever areas	No	Not applicable. No Bush Forever sites intersect or exist nearby to the site.
Threatened and priority flora	Yes	One individual of the priority four species *Banksia sessilis* var. *cordata* was recorded in the south-eastern portion of the site adjacent to the existing driveway. No other threatened or priority species were identified within the site. *Banksia sessilis* var. *cordata* is widespread in the region, despite a relatively restricted distribution close to the coastline from Cape Naturaliste in the north around to Albany in the south (DBCA 2019), and therefore the single individual identified in the site is not considered a significant population.

Table 1: Summary of potential environmental considerations that may be associated with the site (based on a search of the SLIP databases) (continued)

Key environmental feature (information in brackets refers to mapping data source)	Yes / no / potentially occurring within the site	If yes / potentially, describe value that may be impacted
Threatened and priority fauna	Yes	The fauna survey (Harewood 2019) identified the following conservation significant fauna species occurring within the site: • Western ringtail possum. Most of the vegetation within the site (including the cultivated gardens) is likely to be considered habitat and used for refuge, foraging and/or dispersal. • Three black cockatoo species (Carnaby's, Baudin's and forest red-tailed), with foraging evidence observed in association with marri and pine trees in the site. Three potential black cockatoo breeding trees were identified within the site and surrounds (with one tree in the site). No evidence of breeding or roosting was identified. • Osprey, with a nest relocated from one of the damaged (and now demolished buildings) to a purpose-built nesting platform within the western portion of the site. The habitat values within the site were identified to contain low biodiversity value, with better quality habitat available in the reserves surrounding the site, namely Leeuwin Naturaliste National Park and Wallcliffe Reserve.
Threatened ecological communities	No	No threatened ecological communities (TECs) or priority ecological communities (PECs) were identified within the site (Emerge Associates 2019b).
DBCA controlled lands or waters (DBCA-011)	No	Areas to the west, north-west and south-east of the site (including a portion of the Margaret River) are identified as part of Leeuwin-Naturaliste National Park (R8428). Leeuwin Naturaliste National Park does not directly abut the site.
Conservation Covenants Western Australia (DPIRD-023)	No	Not applicable.
Aboriginal heritage (DAA-001)	Yes	Two registered Aboriginal heritage sites are identified within the site and include: • Site 5848-Cliffs at Wallcliffe; and • Site 4495–Margaret River. Both are identified as mythological sites, and Site 5848 is also identified as an artefacts/scatter and rock shelter site.
Non-indigenous heritage (SHO-004)	Yes	The entire site is identified as registered non-indigenous heritage site, Place No. 114 – Wallcliffe House and Landscape. It relates to the historic Wallcliffe House and dairy and the associated cultivated gardens.

2.1 Native vegetation – modification and clearing

There are no conservation significant vegetation values within the site that would prevent the modification or clearing of vegetation. However, the cultural heritage values associated with the site and its landscape mean that clearing and modification of both the remnant native vegetation and cultivated gardens should be minimised. Where possible, it is the intent of the proposed development to retain existing vegetation and trees within the site as part of the landscaped areas and that will be maintained for guest enjoyment. The maintenance of landscaped areas and management areas will be the responsibility of the proponent in perpetuity. No areas of native vegetation outside the site are proposed to be modified or cleared as part of the proposed development except that required for the driveway cross-over.

Clearing of native vegetation will be required for bushfire management purposes as part of implementing this BMP, specifically to enable the relevant siting requirements of the Guidelines. It is likely that clearing of native vegetation within the site will be exempt from requiring a clearing permit in accordance with Schedule 6 of the *Environmental Protection Act 1986* (EP Act), including those associated with addressing Section 33 of the *Bush Fires Act 1954*. Other exemptions pursuant to the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 will also apply, such as those associated with a building/other structure approval.

2.2 Revegetation and landscape plans

The proponent is proposing to revegetate the adjacent Margaret River foreshore area (with works already commenced), and this has been considered as part of this BMP.

A landscape concept plan (LCP) has been prepared by See Design and excerpts are provided in **Appendix B**. The development approval application can be referred to for the full concept package. The LCP outlines the proposed landscape approach for the site based on maintaining and enhancing the existing significant landscape features while supporting guest experiences and provides an indication of the areas that will be managed by the proponent. It provides for a mix of formal and less formal gardens, with native and non-native species, tree planting, turf, food gardens and legible pedestrian networks.

Internal roads and landscaped areas are proposed as part of future development. These areas will be designed to achieve low threat in accordance with Section 2.2.3.2 of AS 3959. Any future verges and areas of turf and garden planting will be maintained by the proponent and irrigated (as required). Ongoing management is likely to include:

- Irrigation of grass and garden beds.
- Regular removal of weeds and built-up dead material (such as fallen branches, leaf litter etc.)
- Low pruning of trees (branches below 2 m in height removed where appropriate).
- Application of ground/surface covers such as mulch or non-flammable materials as required.
- Regular mowing/slashing of grass to less than 100 mm in height.

The proponent will be responsible for managing landscaped areas within the site in perpetuity. This area will be identified as an Asset Protection Zone.

3 Bushfire Assessment Results

Bushfire risk for the site has been appropriately considered both in context to the site and potential impact upon the site using AS 3959 and the Guidelines.

The objective of AS 3959 is to reduce the risk of ignition and loss of a building to bushfire. It provides a consistent method for determining a radiant heat level (radiant heat flux) as a primary consideration of bushfire attack. AS 3959 measures the Bushfire Attack Level (BAL) as the radiant heat level (kW/m^2) over a distance of 100 m. AS 3959 also prescribes deemed-to-satisfy construction responses that can resist the determined radiant heat level at a given distance from the fire. It is based on six Bushfire Attack Level (BAL) ratings: BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

A BAL contour plan has been prepared in accordance with Appendix Three of the Guidelines and Method 1 of AS 3959 to determine the BAL ratings likely to be applicable to future buildings.

3.1 Assessment inputs

This bushfire attack level (BAL) assessment was undertaken in accordance with Method 1 of AS 3959. The site has been regularly visited since November 2018, with the most recent site visit completed in September 2023 and the consideration of vegetation classifications is based on this known history. The inputs underpinning the assessment have been detailed below.

3.1.1 Assumptions

The BAL assessment is based on the following assumptions:

- **Designated FDI**: 80
- **Flame temperature**: 1090 K
- **Effective slope beneath classified vegetation**: downslope >5-10° and flat/upslope (**Figure 2**)
- Areas of low threat vegetation outside the site will continue to be managed and/or considered to achieve low threat (in accordance with Section 2.2.3.2 of AS 3959) based on the existing maintenance regimes.
- Classified vegetation that has been identified outside of the proponent's landholdings has been assumed to remain in its current state (unless stated otherwise) and will therefore continue to be a bushfire hazard to development within the site.
- Remnant intact native vegetation within the site *consistent with the landscape significance and setting of the site* is to be evaluated as a bushfire threat.

3.1.2 Vegetation classification

Assessing bushfire hazards takes into account the vegetation classifications and exclusions within the site and surrounding area for a minimum of 100 m, in accordance with AS 3959 and the Guidelines. The assignment of vegetation classifications is based on an assessment of vegetation structure, which includes consideration of the various fuel layers of different vegetation types, as outlined in **Plate 5**. All vegetation within 150m of the site was classified in accordance with Clause 2.2.3 of AS 3959. Each distinguishable vegetation plot is described in **Table 2** and shown in **Figure 2**.

Not all vegetation is classified as a bushfire risk. Vegetation and ground surfaces that are exempt from classification as a potential hazard are identified as a low threat under Section 2.2.3.2 of AS 3959. Low threat vegetation includes the following:

a) *Vegetation of any type that is more than 100 m from the site.*
b) *Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified.*
c) *Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified.*
d) *Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified.*
e) *Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings, and rocky outcrops.*
f) *Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves, and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and wind breaks.*



Plate 5: The five fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007)

*Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**)*

Photo ID:	1	**Plot:**	3
Vegetation classification or exclusion clause and effective slope			
Forest (Class A) – Downslope >5 - <10			
Description / justification for classification			
Forest vegetation has been identified external to the western portion of the site. This is associated with riparian vegetation adjacent to Margaret River and has a multi-tiered fuel structure with an overstorey of *Melaleuca* sp. between 5-10 m in height and foliage cover greater than 30%. The understorey consists of mixed small trees, small shrubs, sedges and ground cover of accumulated leaf litter and debris. This area is being revegetated by the proponent.			



Photo ID:	2	**Plot:**	3
Vegetation classification or exclusion clause and effective slope			
Forest (Class A) – Downslope >5 - <10			
Description / justification for classification			
Forest vegetation has been identified external to the west/north-west portion of the site. This is associated with riparian vegetation adjacent to Margaret River and has a multi-tiered fuel structure with an overstorey of Melaleuca sp. between 5-10 m in height and foliage cover greater than 30%. The understorey consists of mixed small trees, small shrubs, sedges and ground cover of accumulated leaf litter and debris. This area is being revegetated by the proponent.			



Photo ID:	3	**Plot:**	3
Vegetation classification or exclusion clause and effective slope			
Forest (Class A) – Flat/upslope			
Description / justification for classification			
Forest vegetation has been identified external to the south-west portion of the site. This is associated with riparian vegetation adjacent to Margaret River and has a multi-tiered fuel structure with an overstorey of Melaleuca sp. between 5-10 m in height and foliage cover greater than 30%. The understorey consists of mixed small trees, sedges and grass.			



*Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)*

Photo ID:	4	**Plot:**	4
Vegetation classification or exclusion clause and effective slope			
Forest (Class A) – Flat/upslope			
Description / justification for classification			
Forest vegetation has been identified external to the northern portion of the site. This is associated with remnant vegetation adjacent to Margaret River and has a multi-tiered fuel structure with an overstorey of Marri between 10-15 m in height and foliage cover greater than 30%. The understorey consists of mixed small trees, small shrubs, bracken fern and ground cover of accumulated leaf litter and debris.			
Photo ID:	5	**Plot:**	5
Vegetation classification or exclusion clause and effective slope			
Forest (Class A) – Flat/upslope			
Description / justification for classification			
Forest vegetation has been identified within the southern portion of the site, adjacent to Wallcliffe Road. This vegetation is located in/around the proposed gatehouse. This vegetation has a multi-tiered fuel structure with an overstorey of *Agonis flexuosa* (peppermint) and marri between 5-15 m in height and foliage cover greater than 30%. The understorey consists of mixed small trees, small shrubs and accumulated leaf litter and debris.			
Photo ID:	6	**Plot:**	6
Vegetation classification or exclusion clause and effective slope			
Forest (Class A) – Flat/upslope			
Description / justification for classification			
Forest vegetation has been identified to the west of the site within the neighbouring landholding. This vegetation is not as managed as the remainder of the property (likely due to the slope steepness in this area) and consists of a multi-tiered fuel structure with an overstorey of *Agonis flexuosa* (peppermint) between 5-15 m in height and foliage cover greater than 30%. The understorey consists of mixed small trees, small shrubs, sedges and accumulated leaf litter and debris.			

*Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)*

Photo ID:	7	**Plot:**	6
Vegetation classification or exclusion clause and effective slope			
Forest (Class A) – Flat/upslope			
Description / justification for classification			
Forest vegetation has been identified to the west of the site within the neighbouring landholding. This vegetation is not as managed as the remainder of the property (likely due to the slope steepness in this area) and consists of a multi-tiered fuel structure with an overstorey of *Agonis flexuosa* (peppermint) between 5-15 m in height and foliage cover greater than 30%. The understorey consists of mixed small trees, small shrubs, sedges and accumulated leaf litter and debris.			
Photo ID:	8	**Plot:**	7
Vegetation classification or exclusion clause and effective slope			
Forest (Class A) – Flat/upslope			
Description / justification for classification			
Forest vegetation has been identified to the east of the site within the reserve/ national park and rural residential properties. This vegetation consists of a multi-tiered fuel structure with an overstorey of *Agonis flexuosa* (peppermint) between 5-15 m in height and foliage cover greater than 30%. The understorey consists of mixed small trees, small shrubs, long grass and accumulated leaf litter and debris.			
Photo ID:	9	**Plot:**	7
Vegetation classification or exclusion clause and effective slope			
Forest (Class A) – Flat/upslope			
Description / justification for classification			
Forest vegetation has been identified to the east/south-east of the site within the reserve/ national park. This vegetation consists of a multi-tiered fuel structure with an overstorey of *Agonis flexuosa* (peppermint) between 5-15 m in height and foliage cover greater than 30%. The understorey consists of mixed small trees, small shrubs, long grass and accumulated leaf litter and debris. The cleared area aligns with the powerline corridor.			

*Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)*

Photo ID:	10	**Plot:**	8
Vegetation classification or exclusion clause and effective slope			
Woodland (Class B) – Flat/upslope			
Description / justification for classification			
Woodland vegetation has been identified to the north east of the site, within the Wallcliffe Road reserve. This area is associated with an overstorey of larger peppermint trees over built-up leaf litter and some sporadic grass/tussocks. Trees are up to (approx..) 10-15 m in height with a foliage cover of approximately 30%. Management is evident with the recent trimming of grasses (and is under the control of the Shire of Augusta Margaret River), however the area has been conservatively assessed as woodland.			
Photo ID:	11	**Plot:**	9
Vegetation classification or exclusion clause and effective slope			
Woodland (Class B) – Flat/upslope			
Description / justification for classification			
Woodland vegetation has been identified to the east of the site, within the neighbouring landholding. This area is not subject to the same level of management as the other areas of the landholding area and is associated with larger peppermint trees over built-up leaf litter and some sporadic grass. Trees are up to (approximately) 10-15 m in height with a foliage cover of approximately 30%.			
Photo ID:	12	**Plot:**	11
Vegetation classification or exclusion clause and effective slope			
Scrub (Class C) – Flat/upslope			
Description / justification for classification			
Scrub vegetation has been identified to the south of the site. Shrub species are generally over 2 m in height and growing within areas of outcropping limestone. Some sporadic peppermint trees are present; however, these individuals are low in height (i.e. 5 m) and sprawling in form, behaving like scrub vegetation. These areas are associated with the Shire-managed Wallcliffe Reserve to the south. The pole to the left of the photo is approximately 1 m high and gives an indication of height.			

*Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)*

Photo ID:	13	**Plot:**	11
Vegetation classification or exclusion clause and effective slope			
Scrub (Class C) – Flat/upslope			
Description / justification for classification			
Scrub vegetation has been identified to the south of the site. Shrub species are generally over 2 m in height and growing within areas of outcropping limestone. Some sporadic peppermint trees are present; however, these individuals are low in height (i.e. 5 m) and sprawling in form, behaving like scrub vegetation. These areas are associated with the Shire-managed Wallcliffe Reserve to the south. The fencing in front is approximately 1.8 m high and gives an indication of height.			
Photo ID:	14	**Plot:**	11
Vegetation classification or exclusion clause and effective slope			
Scrub (Class C) – Flat/upslope			
Description / justification for classification			
Scrub vegetation has been identified to the south of the site. Shrub species are generally over 2 m in height and growing within areas of outcropping limestone. These areas, like the other scrub have a near-continuous vertical fuel structure. These areas are associated with the Shire-managed Wallcliffe Reserve to the south. The person is approximately 1.6 m high and gives an indication of height.			
Photo ID:	15	**Plot:**	12
Vegetation classification or exclusion clause and effective slope			
Clause 2.2.3.2 exclusion (e)			
Description / justification for classification			
Wallcliffe Road to the south and east of the site (and all surrounding road, mineral earth and pavement surfaces) have been excluded as non-vegetated in accordance with Clause 2.2.3.2 (e).			

*Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)*

Photo ID:	16	**Plot:**	12
Vegetation classification or exclusion clause and effective slope			
Clause 2.2.3.2 exclusion (e)			
Description / justification for classification			
Margaret River is identified to the west of the site and is a large expanse of water present year-round. The river has been excluded as non-vegetated in accordance with Clause 2.2.3.2 (e). Forest vegetation (associated with Plot 1) is visible in the background of the photograph.			
Photo ID:	17	**Plot:**	13
Vegetation classification or exclusion clause and effective slope			
Clause 2.2.3.2 exclusion (f)			
Description / justification for classification			
Large areas of the existing site contain manicured/well-managed garden and turf areas, which form part of the extensive existing mature landscaping that has been maintained for over 20 years. The landscaping will be maintained and enhanced as part of the development within the site, including ongoing irrigation. The grounds are excluded in accordance with Clause 2.2.3.2(f) of AS 3959. To the left of the photo is the riparian vegetation, classified as forest (Plot 2).			
Photo ID:	18	**Plot:**	13
Vegetation classification or exclusion clause and effective slope			
Clause 2.2.3.2 exclusion (f)			
Description / justification for classification			
Large areas of the existing site contain manicured/well-managed garden and turf areas, which form part of the extensive existing mature landscaping that has been maintained for over 20 years. The landscaping will be maintained and enhanced as part of the development within the site, , including ongoing irrigation. The grounds are excluded in accordance with Clause 2.2.3.2(f) of AS 3959. To the left of the photo is the riparian vegetation, classified as forest (Plot 2).			

*Table 2: AS 3959 Vegetation Classification (refer to **Figure 2**) (continued)*

Photo ID:	19	**Plot:**	13
Vegetation classification or exclusion clause and effective slope			
Clause 2.2.3.2 exclusion (f)			
Description / justification for classification			
To the east and north-east of the site, low threat vegetation has been identified in association with open areas that are regularly well managed (and have been over the last 5 years of observation) with regular mowing of grass and removal of built-up fuels evident. This is a requirement of the Shire's firebreak notice, for vacant/cleared land not under active grazing to have grass slashed/mowed to less than 10 cm. This area is excluded in accordance with Clause 2.2.3.2(f) of AS 3959.			
Photo ID:	20	**Plot:**	13
Vegetation classification or exclusion clause and effective slope			
Clause 2.2.3.2 exclusion (f)			
Description / justification for classification			
To the east and north-east of the site, low threat vegetation has been identified in association with open areas that are regularly well managed (and have been over the last 5 years of observation) with regular mowing of grass and removal of built-up fuels evident. This is a requirement of the Shire's firebreak notice, for vacant/cleared land not under active grazing to have grass slashed/mowed to less than 10 cm. This area is excluded in accordance with Clause 2.2.3.2(f) of AS 3959.			
Photo ID:	21	**Plot:**	13
Vegetation classification or exclusion clause and effective slope			
Clause 2.2.3.2 exclusion (f)			
Description / justification for classification			
A portion of Wallcliffe Road reserve, associated with the shared path and road edge, is well managed, with evidence of weed control/grass mowing and removal of built-up fuels. This area is excluded in accordance with Clause 2.2.3.2(f) of AS 3959. To the right of the photo is the remnant vegetation, classified as forest (Plot 7).			

3.2 Assessment outputs

The vegetation classifications determined in **Section 3.1** are summarised in **Table 3** and incorporate the known changes to vegetation post-development as well as the effective slope. The resultant BAL ratings are shown in **Figure 3**.

Table 3: AS 3959 vegetation classification and effective slope

Plot	Applied vegetation classification	Effective slope
1	Forest (Class A)	Flat/upslope
2	Forest (Class A)	Downslope >5-<10
3	Forest (Class A)	Downslope >0-<5
4	Forest (Class A)	Flat/upslope
5	Forest (Class A)	Flat/upslope
6	Forest (Class A)	Flat/upslope
7	Forest (Class A)	Flat/upslope
8	Woodland (Class B)	Flat/upslope
9	Woodland (Class B)	Flat/upslope
10	Scrub (Class D)	Flat/upslope
11	Scrub (Class D)	Flat/upslope
12	Exclusion 2.2.3.2(e)	N/A
13	Exclusion 2.2.3.2(f)	N/A

BAL ratings are based on the minimum distance outlined in Table 2.5 of AS 3959 and relevant distances are outlined in **Table 4**.

Table 4: Setback distances based on vegetation classification and effective slope and Table 2.5 of AS 3959, as determined by the method 1 BAL assessment

Post development plot number (see Figure 2)	Vegetation classification (see Figure 2)	Effective slope (see Figure 2)	Distance to vegetation	BAL rating (see Figure 3)
Plot 1, 5, 6, 7	Forest (Class A)	Flat/upslope	< 16 m	BAL-FZ
			16 - < 21 m	BAL-40
			21 - < 31 m	BAL-29
			31 - < 42 m	BAL-19
			42 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW

Table 4: Setback distances based on vegetation classification and effective slope and Table 2.5 of AS 3959, as determined by the method 1 BAL assessment (continued)

Post development plot number (see Figure 2)	Vegetation classification (see Figure 2)	Effective slope (see Figure 2)	Distance to vegetation	BAL rating (see Figure 3)
Plot 3	Forest (Class A)	Downslope 0-5°	< 20 m	BAL-FZ
			20 - < 27 m	BAL-40
			27 - < 37 m	BAL-29
			37 - < 50 m	BAL-19
			50 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plot 2	Forest (Class A)	Downslope 5-10°	< 26 m	BAL-FZ
			26 - < 33 m	BAL-40
			33 - < 46 m	BAL-29
			46 - < 61 m	BAL-19
			61- < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plot 8, 9	Woodland (Class B)	Flat/upslope	< 10 m	BAL-FZ
			10 - < 14 m	BAL-40
			14 - < 20 m	BAL-29
			20 - < 29 m	BAL-19
			29 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plot 10, 11	Scrub (Class D)	Flat/upslope	< 10 m	BAL-FZ
			10 - < 13 m	BAL-40
			13 - < 19 m	BAL-29
			19 - < 27 m	BAL-19
			27 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW

A summary of the BAL ratings applicable to the building is provided in **Table 5** and **Plate 6**. The BAL assessment indicates that not all the buildings will be able to achieve BAL-29 or less, with a number of buildings subject to BAL-40 or BAL-FZ. This is in direct correlation with being able to maintain the existing gardens and minimise the clearing of native vegetation.

Table 5: AS 3959 Method 1 BAL determination for each building

Habitable building (see Plate 6)	Proposed use	Bushfire Attack Level (BAL)
Cottage 1	Accommodation	BAL-29
Cottage 2	Accommodation	BAL-19
Cottage 3	Accommodation	BAL-12.5
Cottage 4	Accommodation	BAL-12.5
Cottage 5	Accommodation	BAL-12.5
Cottage 6	Accommodation	BAL-12.5
Cottage 7 (legacy location)	Accommodation	BAL-FZ
Cliff wing (legacy location)	Accommodation	BAL-FZ
River wing (legacy location)	Accommodation	BAL-FZ
Wallcliffe House	Food and beverage	BAL-12.5
Old Diary	Food and beverage	BAL-19
Spa	Experience (day uses)	BAL-19
Boat House (existing building)	Experience (day uses)	BAL-FZ
Operations barn	Operations/maintenance/staff hub	BAL-19
Estate management	Operations/maintenance/staff hub	BAL-12.5
Gatehouse	Operations/maintenance/staff hub	BAL-FZ

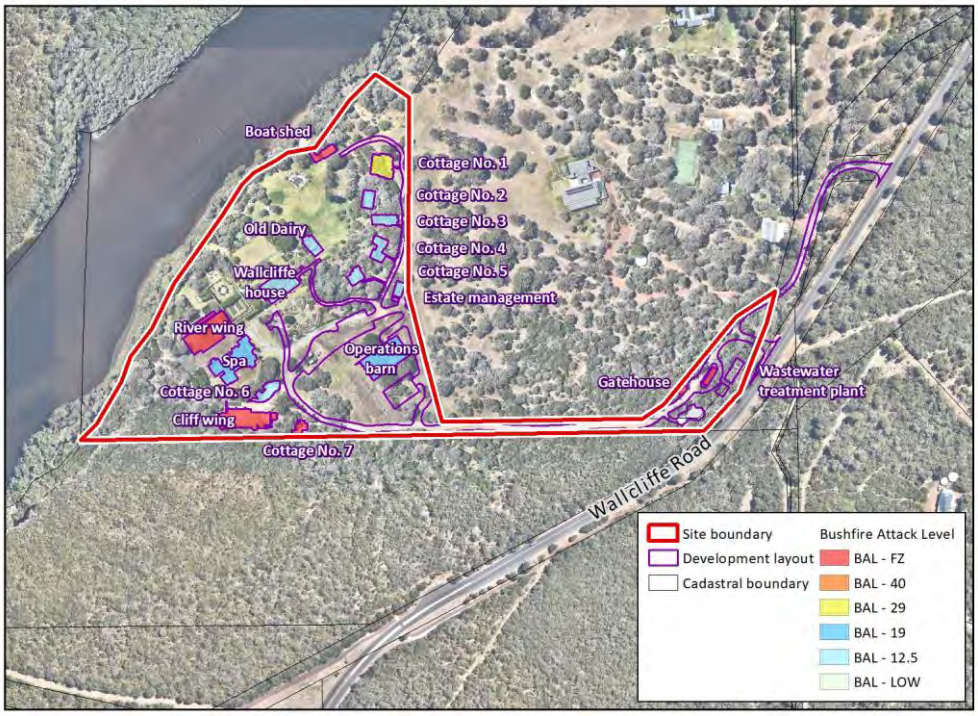


Plate 6: Summary of the BAL ratings according to Method 1 of AS 3959 assessed for each building

4 Identification of Bushfire Hazard Issues

4.1 Risk identification

The site and portions of the surrounding 150 m (particularly to the east) comprise areas of non-vegetated land and low-threat vegetation. Classified forest, woodland and scrub vegetation have been identified adjacent to the Margaret River and within reserves to the west and south respectively. Classified vegetation external to the site (or not identified as low threat within the site) is not proposed to be modified and therefore poses a risk to development.

Bushfire risk, a direct interface with the fire front, will be associated with a fire that travels towards the site from either the south-west or from across the river from the north, travelling through coastal scrub and/or forest (peppermint dominated).

The site is also within the vicinity of areas that are generators of ember attack, which can cause the ignition of flammable material preceding the arrival of the fire front, or cause ignitions independent of the fire front and able to breach low threat (APZ) areas.

The loss of the buildings within the site in the 2011 Prevelly fire was from an ember attack and ignition of timber roof shingles.

Figure 3 and **Plate 6** have identified that Cottage 7, the Cliff Wing, the River Wing and the Gatehouse are subject to BAL levels exceeding BAL 29 due to retained/restricted vegetation.

All other buildings can achieve a separation to classified vegetation equivalent to BAL 29 or less.

4.2 Risk evaluation

From a bushfire hazard management perspective, based on the requirements of SPP 3.7 and the Guidelines, the key issues that are likely to require management and/or consideration as part of ongoing operation and any future development within the site include:

- Providing for evacuation in the event of a bushfire emergency, including the provision of a nominated safer place (for shelter as a last resort) if evacuation is not safe. While the construction of all buildings should be commensurate to their BAL rating and resistance to damage from bushfire, one building with the capacity to accommodate all guests that can be effectively accessed will be nominated as the place of assembly and safer place.
- Balancing the retention and protection of the existing heritage and landscape values with bushfire risk mitigation measures, commensurate BAL construction and ongoing maintenance of the buildings and grounds, to their BAL design in order to achieve a safer place.
- Ensuring that vehicle access is able to accommodate guest and fire-fighting vehicles,
- Ensuring that water for firefighting is available and accessible to fire-fighting services.

4.3 Risk treatments

As part of managing a bushfire emergency, the following risk treatments have been identified:

- Actively monitoring bushfire conditions.
- The presence of bushfire-trained personnel during operation - to assist with evacuation, site preparation and shelter (as a last resort).
- Maintaining the site consistent with the standards for Asset Protection Zones.
- Buildings constructed based on their determined BAL rating.
- An adequate water supply is provided to suppress any structural fires, consequential to the passage of the bushfire.
- Firefighting facilities are conveniently located to provide suppression at each building.
- Suitable access is provided to each building to assist fire suppression.

5 Assessment Against the Bushfire Protection Criteria

The bushfire protection criteria in the Guidelines are divided into five elements: Element 1 location, Element 2 siting and design, Element 3 vehicular access, Element 4 water and Element 5 tourism land uses. Element 5 is a standalone set of bushfire protection criteria, and the proposed development fits the classification of:

> *Other short-term accommodation – including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds).*

Element 5 applies to the development within the site, and the intent for Element 5 is "t*o provide bushfire protection for tourism land uses relevant to the characteristics of the occupants and/or the location, to preserve life and reduce the impact of bushfires on property and infrastructure".*

The proposal has been assessed in **Table 6** below, for its compliance with all the relevant bushfire protection criteria applicable to *Other short-term accommodations* in Element 5.

Table 6: Assessment against Element 5 of the bushfire protection criteria from the Guidelines

Bushfire protection criteria	Assessment
Element 5: Vulnerable Tourism Land Uses (Other short-term accommodation)	
Intent: To provide bushfire protection for tourism land uses relevant to the characteristics of the occupants and/or the location, to preserve life and reduce the impact of bushfires on property and infrastructure.	
Other short-term accommodation – including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds)	
A5.7 Siting and design	
Performance Principle (P5vii) Habitable buildings are sited and designed to: • minimise clearing of existing vegetation; and • provide hazard separation between classified vegetation and a development site, that is managed in perpetuity, to prevent the spread of fire and direct flame contact to the building.	
A5.7a For caravan parks, the provision of an APZ to achieve BAL-29 (29kW/m2) around the campground facilities, which may include the office, manager's residence, camper's kitchen, and shower/laundry.	**Assessment for A5.7a (Clause 4.5.2.2 of the Guidelines)** Due to the heritage and landscape considerations of the site, Cottage 7, the Cliff Wing, the River Wing and the Gatehouse will be subject to BAL-40 and BAL-FZ. These buildings are unable to comply with the acceptable solution. The acceptable solution however is only one solution. In this instance, the buildings will not be able to comply with the performance principle (to prevent flame contact upon the building which is the same as the requirement to achieve BAL-29 simply expressed in another way. It is in error because it provides no alternative to the acceptable solution. This was similarly considered in WASAT Bunnings[1], which identified a flexible and discretionary approach should be provided where an exceptional circumstance can be applied to the Policy Intent.

[1] BUNNINGS GROUP LIMITED and PRESIDING MEMBER OF THE METRO NORTH WEST JOINT DEVELOPMENT ASSESSMENT PANEL [2019] WASAT 121 (26 November 2019)

Table 6: Assessment against Element 5 of the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Assessment
A5.7 Siting and design (continued)	
A5.7a (continued)	In this instance, the conundrum that presents the exceptional circumstance is the desired redevelopment of the site whilst protecting its history and landscape value. This is also a relevant legacy that follows the scheme amendment (6 September 2021), where the BAL ratings and the construction response described in the accompanying BMP was accepted. Whereas an APZ places an emphasis upon separation for promoting the resistance to bushfire attack, in circumstances where separation cannot be achieved to avoid direct flame contact with the building (as a means to avoid significant damage or loss of the building), alternatively the construction standard can be heightened to match the heightened BAL and provide a similar risk mitigation and avoid significant damage or loss of the building. This is consistent with the policy intent, to reduce the impact of bushfire on property and infrastructure. Further to Clause 4.5.2.2 of the Guidelines, 'evidence' in this instance is satisfied by the BAL determination provided in this BMP following AS 3959 and illustrated in **Figure 3**. The 'verification method' is an alternative method (under the National Construction Code (NCC) 2019) to that identified in AS 3959 as the deemed to satisfy solution (DTS). In this instance, the buildings will be constructed in compliance with the applicable BAL level construction level (DTS) prescribed in AS 3959, at each building. This includes a 'non-combustible' walling system, the elimination of gaps greater than 2 mm and the screening of vulnerable elements with non-combustible insulated materials achieving FRL[2] 60/60/60. As a note, BAL FZ is an FRL 30/30/30, but for the purpose of a secondary fire from the ignition of a nearby object, an FRL 60/60/60 is recommended. FRL 60/60/60 is not exclusive of BAL-29, the proposed constructed standard for Wallcliffe House the shelter building, but additional. It is a routine commercial construction requirement. An FRL is preferred to a 'non-combustible' construction alone because FRL also represents an insulation period preventing heat transfer and undermining tenability within a building if used as a last resort. **Figure 4** illustrates the site will be managed as consistent with the APZ standard (Schedule 1 of the Guidelines). The scheme amendment supported a proposal to manage the entire site to an APZ standard. The APZ standard is not managed land but a description of the horizontal and vertical separation of bushfire fuels, and a 3 m cleared space from the wall of the building (defendable space). **Figure 3** illustrates due to the APZ standard, that Wallcliffe House and the additional buildings will be sited at a BAL equivalent to BAL 29 or less. All buildings will be constructed in accordance with the assessed BAL rating in accordance with AS 3959, except Wallcliffe House which will be constructed to a minimum BAL-29 (it is assessed as BAL-12.5). This is on the basis it will be the shelter building, discussed more further below. BAL-29 is commensurate to a concentrated ember attack, as had been experienced with the Prevelly fire in 2011. The Wallcliffe House and additional buildings are compliant with A5.7a.

[2] Fire resistance level (FRL) addressing structural adequacy/ structural integrity/ insulation.

Table 6: Assessment against Element 5 of the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Assessment
A5.7 Siting and design (continued)	
A5.7b Where the BMP identifies accommodation structures, including, but not limited to, caravan and camping sites, eco tents and cabins, as a tolerable loss in the event of a bushfire, these accommodation structures can be sited in areas above BAL-29 (29kW/m2).	**Assessment for A5.7b** No accommodation structures have been identified as a tolerable loss. Due to the heritage and landscape considerations of the site, buildings will be subject to BAL-40 and BAL-FZ and a commensurate construction standard provided. Buildings will be constructed in accordance with their assessed BAL rating as described in AS 3959
A5.7c For all other short-term accommodation, an APZ is to be provided in accordance with Element 2: Siting and Design of Development A2.1 Asset Protection Zone.	**Assessment for A5.7c** The majority of the site, except where identified as retained remnant vegetation (classified vegetation), will be managed as an APZ (including non-curing garden beds and irrigated lawn). The extent is shown in **Figure 4**. This will include (but is not limited to) separation of garden areas from buildings, maintaining the irrigation of landscape areas throughout the bushfire season, ongoing removal of built-up dead material and weeds, mowing of grass (maintained as uncured or less than 100 mm) and low pruning of trees (2m above grass).
A5.7d A landscape management plan is to be prepared to identify on-going onsite vegetation management (where appropriate).	**Assessment for A5.7d** **Figure 4** outlines the areas that will be managed as an APZ. A landscape concept plan has been prepared for the site by See Design (attached in **Appendix B**) and identifies the landscape design intent for the development (following the APZ standard), as well as general areas of ongoing management. The design is intended to maintain and celebrate the existing heritage-listed landscape features of the site, whilst also enhancing these values.
Where an on-site shelter is proposed, to comply with A5.8.2e, it is to meet all the following requirements: A5.7e Pedestrian paths to any on-site shelter are to be provided on-site and be clearly signposted. A5.7f Where a building is to function as an on-site shelter, there is to be sufficient separation distance from the predominant bushfire prone vegetation to avoid exposure to a radiant heat flux exceeding 10kW/m2 (with an assumed flame temperature of 1200K); or where an open space area is to function as an onsite shelter, there is to be sufficient separation distance from the bushfire prone vegetation to avoid exposure to a radiant heat flux exceeding 2kW/m2 (with an assumed flame temperature of 1200K). A5.7g Buildings identified as suitable for on-site shelter be designed and constructed in accordance with National Construction Code and the ABCB Community Shelter Handbook.	See discussion for A5.8.2a.

Table 6: Assessment against Element 5 of the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Assessment
A5.8.1 Vehicular access for all proposals	
Performance Principle (P5viii) The design and capacity of vehicular access and egress allow the occupants to evacuate to a suitable destination before a bushfire arrives at the site, whilst allowing emergency service personnel to attend the site; or it is demonstrated through a risk assessment that the risk can be managed.	
A5.8.1a Internal vehicular access/private driveway is to provide emergency egress/access for all patrons and staff, in the event of a bushfire. Where possible, this is to include the provision of at least two internal access/egress points to the public road network.	**Assessment for A5.8.1a** The site lies between a parallel width between the Margaret River and Wallcliffe Road. The only road access is from Wallcliffe Road which runs in an east-west direction, between Cave Road and the coast. The site provides for access and egress from the private driveway to the public road network (Wallcliffe Road) via an internal loop road, which includes a new cross-over (two connections onto Wallcliffe Road will be possible but will be via the same driveway connection). The site is not a high-traffic generator or will attract slow vehicles, e.g. towed caravans. Occupants are expected to evacuate the site quickly, subject to the capacity of Wallcliffe Road at the time and the intersection at Caves Road. Within the site, the driveway will be maintained through open land and the carriageway will be separated from the tree line to prevent blockage and maintain access within the site throughout a bushfire event (excepting the immediate passage of the firefront if it occurs at the site). This is shown in **Figure 4** and **Appendix A**. The proposed internal road layout (private driveway) is compliant with A5.8.1a.
A5.8.1b Internal vehicular access/private driveways longer than 50 metres are to meet all the following requirements: • Requirements in Table 6, Column 4; • Passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (that is, the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and • Turn-around areas as shown in Figure 28.	**Assessment for A5.8.1b** The internal road network will be able to meet the requirements outlined in Column 4 of Table 6 in Appendix Four of the Guidelines, an excerpt of which is provided in **Plate 7**. In particular: • The alignment has been provided to avoid gradients exceeding 14.3% and maintain an average of 10%. • The internal road network provides a minimum trafficable width of 6 m (excluding parking areas), and accordingly passing bays are not required. • The internal arrangement provides emergency access to all buildings to assist with fire suppression and the distribution of hydrants within the site. • A turnaround area can be accommodated at/near the proposed buildings addressing the form/dimensions shown in Figure 28 of the Guidelines. This includes the provision of a loop road. This is shown in **Figure 4** and **Appendix A**. The proposed internal road layout (private driveway) is compliant with A5.8.1b.

Table 6: Assessment against Element 5 of the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Assessment
A5.8.1 Vehicular access for all proposals (continued)	
A5.8.1c Signage to be provided within the site, advising of where each access route travels to and the distance and general information signs on what to do in the event of a bushfire.	**Assessment for A5.8.1c** Signage will be provided within the site advising of where each route travels to and general information signage indicating what to do in the event of a bushfire. Directional signage will also be provided on the emergency evacuation diagram. The proposal can comply with 5.8.1c.
A5.8.2a Public road access is to be provided in two different directions to at least two different suitable destinations.	**Assessment for A5.8.2a** The scheme amendment, when determining the suitability of the site for the proposed tourism development, considered the Wallcliffe Road arrangement and identified: *"It is acknowledged that the development only has one access point to the multiple destinations (typical of larger tourism/rural-residential lots), and further consideration to access has been undertaken in accordance with Position Statement: Tourism land uses within bushfire prone areas (WAPC 2019a). Given the proposed development will be permanently staffed, informed evacuation processes will be able to be implemented at all times as part of the proposed development, in consultation with relevant emergency agencies (i.e., DFES, DBCA or the Shire of Augusta Margaret River). Furthermore, there is sufficient space within the managed gardens that can provide a safer place (in accordance with the Design and Construction of community bushfire refuges handbook (ABCB and Fire Services Commissioner Victoria 2014)) in the case where evacuation is not possible."* An open area safer space consistent *Design and Construction of Community Bushfire Refuges Handbook* (ABCB 2014) is not available at the site (2 kWm^2 determined at 1200K). The alternative instead has been to identify a 'safer' building on site (10 kWm^2 *determined at 1200K)* that has the capacity to accommodate the occupants at the site and can provide a contingency 'as a shelter of last resort'. Evacuation from the site is however still the preference, as detailed in the Bushfire Emergency Evacuation Plan (BEEP) provided in **Appendix C**. The arrangement was accepted as part of the scheme amendment and forms the legacy that the proposal now follows. The subsequent changes to the Guidelines (V1.4 compared to V1.3) do not undermine the practical considerations accepted in the scheme amendment. Since the scheme amendment was approved, the Guidelines have been amended to describe a 'suitable destination', which is defined in the Guidelines as: *"Suitable destination: An area that is not classified as bushfire prone on the Map of Bush Fire Prone Areas, or is greater than 100 metres from classified vegetation as per AS 3959 and can provide shelter during a bushfire event."* Continued below.

Table 6: Assessment against Element 5 of the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Assessment
A5.8.1 Vehicular access for all proposals (continued)	
A5.8.2a (continued)	A suitable destination is simply a quantitatively measured space, it does not require any formal endorsement and can be on public or private land. The suitable space dimension can be accommodated within the Prevelly residential area and at the beach at the mouth of the Margaret River. In the event of a bushfire emergency, pragmatic measures will be taken including preparations following the *Western Australia Community Evacuation in Emergencies Guideline: State Emergency Management, A Strategic Framework for Emergency Management in Western Australia* (SEMC 2022), which identifies the beach (page 51) as a refuge in the planning for an emergency event. The Shire of Augusta Margaret River, in their *Local Emergency Management Arrangements* (November 2022) has also identified the beach at Gnarabup as an evacuation point. Emergency refuge locations, including for the community of Gnarabup and Prevelly are a responsibility of the Shire if evacuation from Wallcliffe Road onto Caves Road is not available. The site is within close proximity to the Prevelly township and it would be expected to be reasonably available to the occupants at the site, as it would be available to visitors and the community at Gnarabup and Prevelly, at the time of a bushfire event. <u>Nominated Safer Building</u> The restaurant building (Wallcliffe House) is the nominated safer place. It is centrally located and within BAL-19 (predominantly BAL-12.5) at 1200 K (shown in **Plate 8** with calculations provided in **Appendix D**), and BAL-12.5 at 1090K (see **Figure 3**). 1200K is used at the assessment temperature when considering shelter. The southern entry to Wallcliffe House is within 10kWm^2 at 1200K, as shown in **Plate 8**, and accesses onto the driveway, hydrants, and a declining radiant heat. The building has a footprint of 479 m^2 and a gross floor area of 1042 m^2 and will be able to accommodate the projected maximum 130 people (62 guests, and up to 67 staff including permanent and ad-hoc, noting staff will operate in shifts and may not all be present on site at the same time) at 1.2 m^2 per person. The restaurant building is not a class 9 building (or meets the description for certain class 9 buildings in NCC 2022). The *Design and Construction of Community Bushfire Refuges Handbook (ABCB 2014)* will be applicable. Key features from the handbook's acceptance criteria that will form part of the detailed design include: • Exposed construction compliant with an FRL 60/60/60; • Minimum volume 1.2 m^3 per person; • Minimum floor area 0.7 m^2 per person (recommended floor area 1.2 m^2 per person); • Tenability, maintaining internal temperatures not exceeding 35^{0}C; • Specified air toxicity standards; • Firefighting equipment (internal and external to extinguish building surface fires); and • Sanitary facilities/amenities The building design is required to be endorsed by a Fire Engineer and certified by a Fire Engineer prior to operation/acceptance of guests.

Table 6: Assessment against Element 5 of the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Assessment
A5.8.1 Vehicular access for all proposals (continued)	
A5.8.2b Al public roads to be through roads. No-through roads are not recommended but if unavoidable, or they are existing, the following requirements apply: • No more than 200 metres in length, where adjoining classified vegetation, excluding the road reserve, has an extreme BHL; or • No more than 500 metres in length, where the adjoining classified vegetation, excluding the road reserve, has a moderate BHL; or • No limitation, where the adjoining classified vegetation, excluding the road reserve, has a low BHL or is not identified as bushfire prone.	**Assessment for A5.8.2b** Addressed in A58.2a above.
A5.8.2c Where it is demonstrated that A5.8.2a and 5.8.2b cannot be achieved, an emergency access way can be considered as an acceptable solution. An emergency access way is to meet all of the following requirements: • Requirements in Table 6, Column 2; • Provide a through connection to a public road; • Be no more than 600 metres in length; and • Must be signposted and if gates, gates must remain unlocked.	**Assessment for A5.8.2c** The site is located within an area of land within a parallel to the Margaret River and Wallcliffe Road. If an emergency accessway was provided, it would also connect to Wallcliffe Road and offer no advantage to the site access compared to what is proposed, if it is maintained to provide a serviceable condition in a bushfire event.
A5.8.2d A public road is to meet the requirements in Table 6, Column 1.	**Assessment for A5.8.2d** The site is accessed from Wallcliffe Road (public road). No public roads are proposed within the site. Wallcliffe Road is an existing public road that provides access to the broader road network including Caves Road and Margaret River townsite to the east and Prevelly to the west and south. Wallcliffe Road is a sealed road compliant with the minimum standards outlined in Table 6 column 1 of the Guidelines (see excerpt in **Plate 7**) and the Institute of Public Works Engineering Australasia (IPWEA) rural road guidelines, which require 5.6 m pavement and 1.2 m shoulders.
A5.8.2e Where A5.8.2a, A5.8.2b and A5.8.2c (if required), cannot be achieved, and the proposed development has a capacity of up to a maximum of 100 guests and staff at any one time, an on-site shelter is to be provided in accordance with A5.7e, A5.7f and A5.7g Siting and Design.	**Assessment A5.8.2e** The site is projected to have up to 130 people present (62 guests, and up to 67 staff including permanent and ad-hoc, noting staff will operate in shifts and may not all be present on site at the same time) at any one time and a building (Wallcliffe House) has been identified as a shelter (contingency) in accordance with the *Design and Construction of Community Bushfire Refuges Handbook* (ABCB 2014). The building will have a capacity of 1.2 m^2 per person (it has a building footprint of 479 m^2 and a gross floor area of 1042 m^2), with the tenability to be maintained (temperature, humidity, and free of toxins and smoke) in accordance with the handbook. The design is to be certified by a fire engineer prior to occupation. The building is identified in **Figure 4** and is considered as part of the bushfire emergency evacuation response outlined within the BEEP (see **Appendix C**).

Table 6: Assessment against Element 5 of the bushfire protection criteria from the Guidelines (continued)

Bushfire protection criteria	Assessment
A5.9 Provision of water	
Performance principle (P5xii) Where drinking water is provided on-site and the intention is to actively defend the site in the event of a bushfire, a permanent water supply is to be provided that is: – sufficient and available for firefighting purposes; – constructed from non-combustible materials (e.g. steel), or able to maintain its integrity throughout a bushfire; and – accessible, with legal access for maintenance and re-filling by tankers and emergency service vehicles.	
A5.9a The development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority; or	**Assessment for A5.9a** The site is connected to a reticulated water supply that runs along the eastern side of the Wallcliffe Road reserve. Existing hydrants are currently located on Wallcliffe Road, directly east of the site and within 600 m from the proposed habitable buildings (and therefore are within a 20-minute turn-around of the site). In addition to the existing hydrants on Wallcliffe Road, water will be stored on-site, with the specific volume still being finalised (subject to structural firefighting requirements and irrigation), however will be similar to or exceed the current tank volume (which include 2 tanks of 120 000 L and 180 000 L). These tanks will be located near the site entry, as shown in **Figure 4**. These tanks will gravity feed an internal hydrant network, which while existing, will be redesigned and installed in accordance with contemporary requirements. The tanks are alongside the driveway, have a hardened ground surface and will be of a non-combustible construction. Each tank will be provided with a coupling consistent with the Shire's technical requirements and/or a separate hydrant connection for fire appliance access. This provides a contingency if there is a power outage, or the public water reticulation network is overdrawn. The onsite storage will exceed the volume required for tankage of 10,000 L per habitable building. As outlined, the total tankage required on site will be determined by structural fire requirements and the NCC including the distribution of hydrants. All habitable buildings, apart from siting and construction that provides a passive resistance to bushfire attack, are accessible to emergency services, and the convenient location of resources to undertake effective fire suppression. The site is located within an Emergency Services Levy (ESL) Category 5 area, which indicates that bushfire events are responded to by the state-wide emergency services (SES) network and bushfire brigade. The Wallcliffe Volunteer Fire Brigade is located 1.8 km east of the site on Wallcliffe Road.
A5.9b Provision of a water tank(s) in accordance with the requirements of Element 4, Schedule 2, 2.2 Technical requirements.	**Assessment for A5.9b** Addressed at A5.9a above.

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way[1]	3 Fire service access route[1]	4 Battle-axe and private driveways[2]
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road[3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road[3]		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

Notes:

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% -7.1 degree) entry and exit angle.

Plate 7: Excerpt of Table 6 from The Guidelines

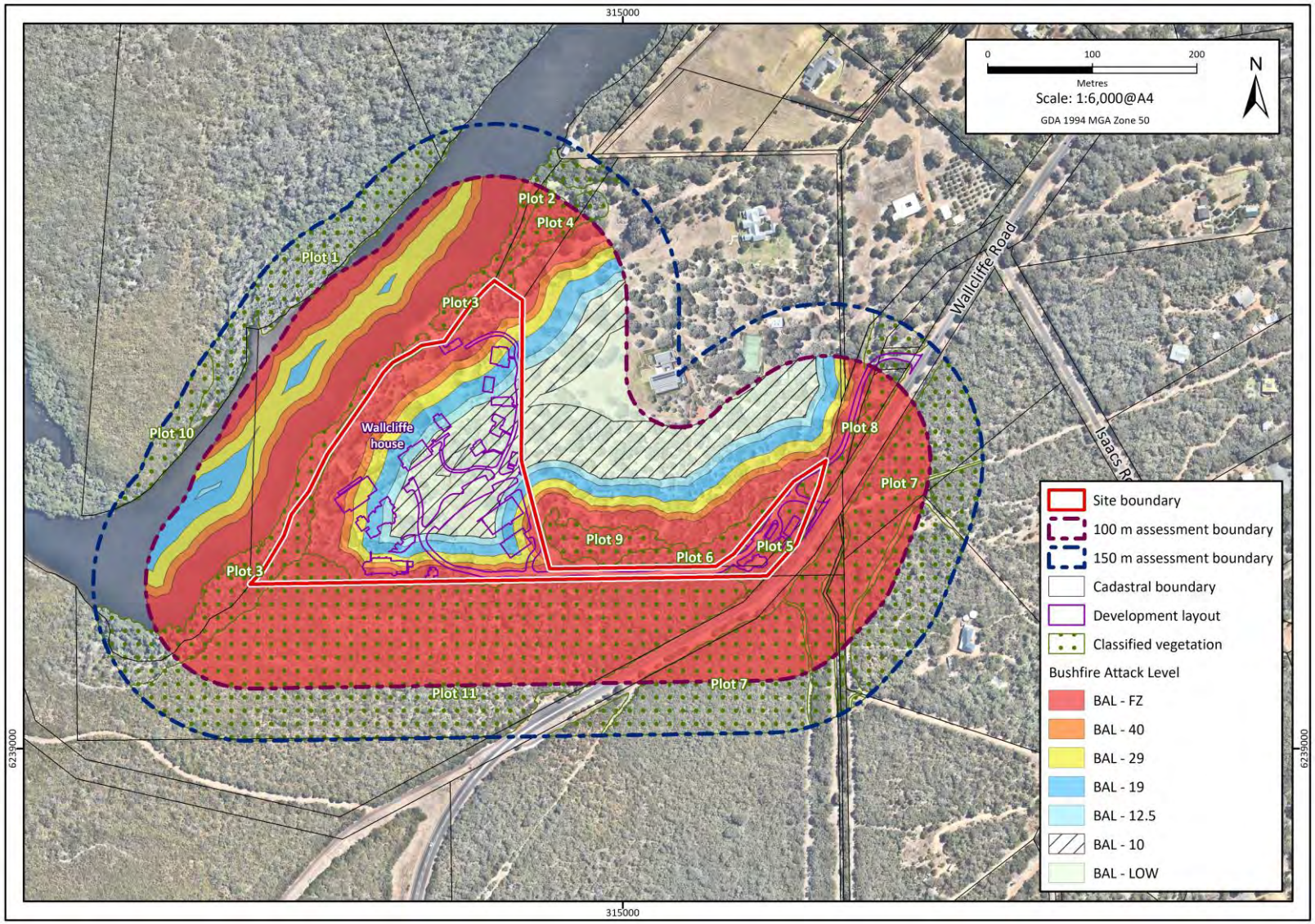


Plate 8: BAL ratings using 1200K in accordance with the Design and Construction of Community Bushfire Refuges Handbook (ABCB 2014).

5.1 Additional management strategies

5.1.1 Future approval considerations

The BAL assessment is a conservative and cautious assessment of the potential bushfire risk posed to future habitable buildings within the site based on the proposed management of vegetation and assumptions outlined in **Section 3**.

The development will be subject to a building license application as part of construction. Class 1, 2, 3 and 10a buildings in an area designated bushfire prone and subject to a BAL rating of BAL-12.5 or higher will need to satisfy construction standards in accordance with the National Construction Code (NCC) (e.g., AS 3959 or the National Association for Steel-framed Housing (NASH) (Standard). The BAL assessment outcomes documented in this BMP for each building (see **Table 5**) can be used to support building licence provided the APZ is implemented as outlined in **Figure 4**.

5.1.2 Landscape management

5.1.2.1 Within the site

The proponent will be responsible for managing and maintaining all areas identified as an APZ in **Figure 4** consistent with *Schedule 1: Standards for Asset Protection Zones* within the Guidelines.

5.1.2.2 Surrounding the site

Vegetation has been assumed to be subject to no ongoing fuel load management. This is particularly relevant for areas under a management order that is the responsibility of the Shire of Augusta Margaret River or the Department of Biodiversity, Conservation and Attractions (DBCA) and includes the Margaret River foreshore.

The public road reserves will continue to be managed in accordance with existing maintenance regimes.

5.1.3 Shire of Augusta Margaret River Firebreak Notice

The Shire of August Margaret River releases a Firebreak Notice on an annual basis to provide a framework for bushfire management within the Shire. Shire of Carnarvon are able to enforce this notice in accordance with Section 33 of the *Bush Fires Act 1954*. In addition, Section 33 1(b) also provides the Shire with additional power to direct landowners to undertake works to remedy conditions conducive to the outbreak or spread of bushfire.

The proponent will be required to comply with the Firebreak Notice (or as agreed with the Shire of Augusta Margaret River) as published and this BMP.

5.1.4 Public education and preparedness

Community bushfire safety is a shared responsibility between individuals, the community, government and fire agencies. DFES has an extensive Community Bushfire Education Program including a range of publications, a website and Bushfire Ready Groups. The DFES website (https://www.dfes.wa.gov.au/bushfire/prepare/) provides a range of materials to help the community prepare for and survive the bushfire season.

The Shire of Augusta Margaret River provides bushfire information to residents available from their website https://www.amrshire.wa.gov.au/residents-community/fire-and-emergency-management/bushfire-mitigation. Professional, qualified consultants also offer bushfire safety advice and relevant services to residents and businesses in high-risk areas in addition that that provided in this BMP.

In the case of a bushfire in the area, advice would be provided to guests/visitors/staff by the Department of Fire and Emergency Services (DFES), Department of Biodiversity Conservation and Attractions (DBCA) and/or the Shire of Augusta Margaret River with regard to responding to the bushfire, including evacuation if required.

6 Responsibilities for Implementation and Management of Bushfire Measures

Table 7 outlines the future and/or ongoing responsibilities of the proponent, the Shire of Augusta Margaret River and the Water Corporation associated with implementing this BMP.

The proponent is responsible for maintaining a reduced level of risk from bushfire within their land (or land under their responsibility), and will be responsible for undertaking, complying with and implementing measures to protect their own assets (and people under their care) from the threat of bushfire. The time/stage of development that particular actions will be required is also detailed.

Table 7: Responsibilities for the implementation of this BMP

Proponent/Operator		Timing
No.	**Implementation action**	
1	Adoption of the Bushfire Emergency Evacuation Plan (Emerge Associates 2023), provided as **Appendix C.**	As part of the development and reviewed annually
2	All habitable buildings are to be constructed commensurate to the construction requirements for the assessed BAL level as prescribed in AS 3959. Wallcliffe House, will be constructed to a minimum standard of BAL-29 (or higher) where the assessed BAL rating is lower.	As part of development and ongoing as required.
3	Design, implement and maintain all areas identified as an APZ in **Figure 4** to achieve the APZ requirements outlined within the Guidelines (Schedule 1: Standards for Asset Protection Zones). Ongoing management is likely to include (but is not limited to): • Clearing/modification of existing vegetation (where required) • Irrigation of grass and garden beds (where required). • Regular removal of weeds and built-up dead material (such as fallen branches, leaf litter etc.). • Low pruning of trees (i.e. removal of branches less than 2 m in height). • Application of ground/surface covers such as mulch or non-flammable materials as required. • Regular mowing/slashing of grass to less than 100mm in height.	Prior to occupation and ongoing as required.
5	The restaurant building (Wallcliffe House) is to be constructed in compliance with the *Design and Construction of Community Bushfire Refuges Handbook* (ABCB 2014). Key features are: • Exposed construction compliant with an FRL 60/60/60 (this is additional to the BAL-29 construction in **Item 2**); • Minimum volume 1.2 m^3 per person; • Minimum floor area 0.7 m^2 per person (recommended floor area 1.2 m^2 per person); • Tenability, and maintaining internal temperatures not exceeding 35°C; • Compliance with specified air toxicity standards; • Firefighting equipment (internal and external to extinguish building surface fires); and • Sanitary facilities/amenity. The building design is required to be endorsed by a Fire Engineer and certified by a Fire Engineer prior to operation/acceptance of guests.	As part of development and certified to be compliant by a Fire Engineer annually.
6	Install internal vehicle access (where longer than 50 m) in compliance with requirements in Table 6, Column 4 of the Guidelines.	As part of the development and maintained ongoing as required.

Table 7: Responsibilities for the implementation of this BMP (continued)

Proponent/Operator		Timing
No.	**Implementation action**	
7	Internal vehicle accessways are to be provided with directional signage and, directional signage is to be provided at the exit from the site consistent with the Bushfire Emergency Evacuation Plan.	As part of the development and maintained ongoing as required
8	The water tanks (near the site entrance) are to be provided with coupling in accordance with the Shire of Augusta Margaret River technical requirements, and the tanks are conspicuously signposted for use by emergency services.	As part of the development and maintained ongoing as required
9	Update the bushfire emergency evacuation plan with operation detail, or include bushfire considerations within an emergency response plan, incorporating bushfire and other considerations prior to occupancy. This should be provided to the Shire of Augusta Margaret River.	Prior to occupancy.
10	Ensuring fire hydrants remain accessible at all times.	Ongoing, where applicable.
11	Implement (and as required update) the bushfire emergency evacuation plan or emergency response plan in accordance with the triggers and procedures outlined within the plan.	Annually and ongoing, as required.
Shire of Augusta Margaret River		**Timing**
No.	**Implementation action**	
1	Maintaining the fuel loads in existing public road reserves (under their management) to existing/appropriate standards.	Ongoing, as required.
2	Monitoring vegetation fuel loads in private landholdings against the requirements of the Shire's Firebreak Notice and other relevant approvals and liaising with relevant stakeholders to maintain fuel loads at minimal/appropriate fuel levels, in accordance with the Shire's responsibilities under the *Bush Fires Act 1954*.	Ongoing, as required.
Water Corporation		**Timing**
No.	**Management action**	
1	The Water Corporation is responsible for the ongoing maintenance and repair of water hydrants.	Ongoing, as required.

7 Applicant Declaration

7.1 Accreditation

This assessment report has been prepared by Emerge Associates who have a number of team members who have undertaken Bushfire Planning and Design (BPAD) Level 1 and Level 2 training and are Fire Protection Association of Australia (FPAA) accredited practitioners. Emerge Associates has been providing bushfire risk management advice for more than 10 years, undertaking detailed bushfire assessments (and associated approvals) to support the land use development industry.

Anthony Rowe is a Fire Protection Association of Australia (FPAA) Level 3 Bushfire Planning and Design (BPAD) accredited practitioner (BPAD no. 36690) in accordance with clause 6.12 of the Guidelines.

7.2 Declaration

I declare that the information provided is true and correct to the best of my knowledge.

Signature:



Name: Anthony Rowe

Company: Envision Bushfire Protection/Emerge Associates

Date: 9/11/ 2023

BPAD Accreditation: Level 3 BPAD No. 36690

8 References

8.1 General references

The references listed below have been considered as part of preparing this document.

Australain Building Codes Board (ABCB) 2014, *Design and Construction of Community Bushfire Refuges Handbook*, Canberra

Department of Planning, Lands and Heritage, and Western Australian Planning Commission, (DPLH & WAPC) 2021, *Guidelines for Planning in Bushfire Prone Areas Version 1.4*, Perth, Western Australia.

Gould, J., McCaw, W., Cheney, N., Ellis, P. and Matthews, S. 2007, *Field Guide: Fuel Assessment and Fire Behaviour Prediction in Dry Eucalypt Forest*, CSIRO and Department of Environment and Conservation, Perth, Western Australia.

Office of Bushfire Risk Management (OBRM) 2021, *Map of Bush Fire Prone Areas*,

Landgate, https://maps.slip.wa.gov.au/landgate/bushfireprone/.

SEMC 2022, *Western Australia Community Evacuation in Emergencies Guideline: State Emergency Management, A Strategic Framework for Emergency Management in Western Australia,* Perth.

Shire of Augusta Margaret River 2022, *Local Emergency Management Arrangements*, Margaret River.

Standards Australia 2018, *AS 3959:2018 Construction of buildings in bushfire-prone areas*, Sydney.

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Perth.

8.2 Online references

The online resources that have been utilised in the preparation of this report are referenced in **Section 8.1**, with access date information provided in **Table R-1**.

Table R 1 Access dates for online references

Reference	Date accessed	Website or dataset name
(OBRM 2021)	September 2023	Map of Bush Fire Prone Areas
Landgate (2023)	September 2023	Mapviewer Plus

This page has been left blank intentionally.

Figures

Figure 1: Site Location and Topographic Contours

Figure 2: AS 3959 Vegetation Classifications and Effective Slope

Figure 3: Bushfire Attack Level Contour Plan

Figure 4: Spatial Representation of Bushfire Management Strategies

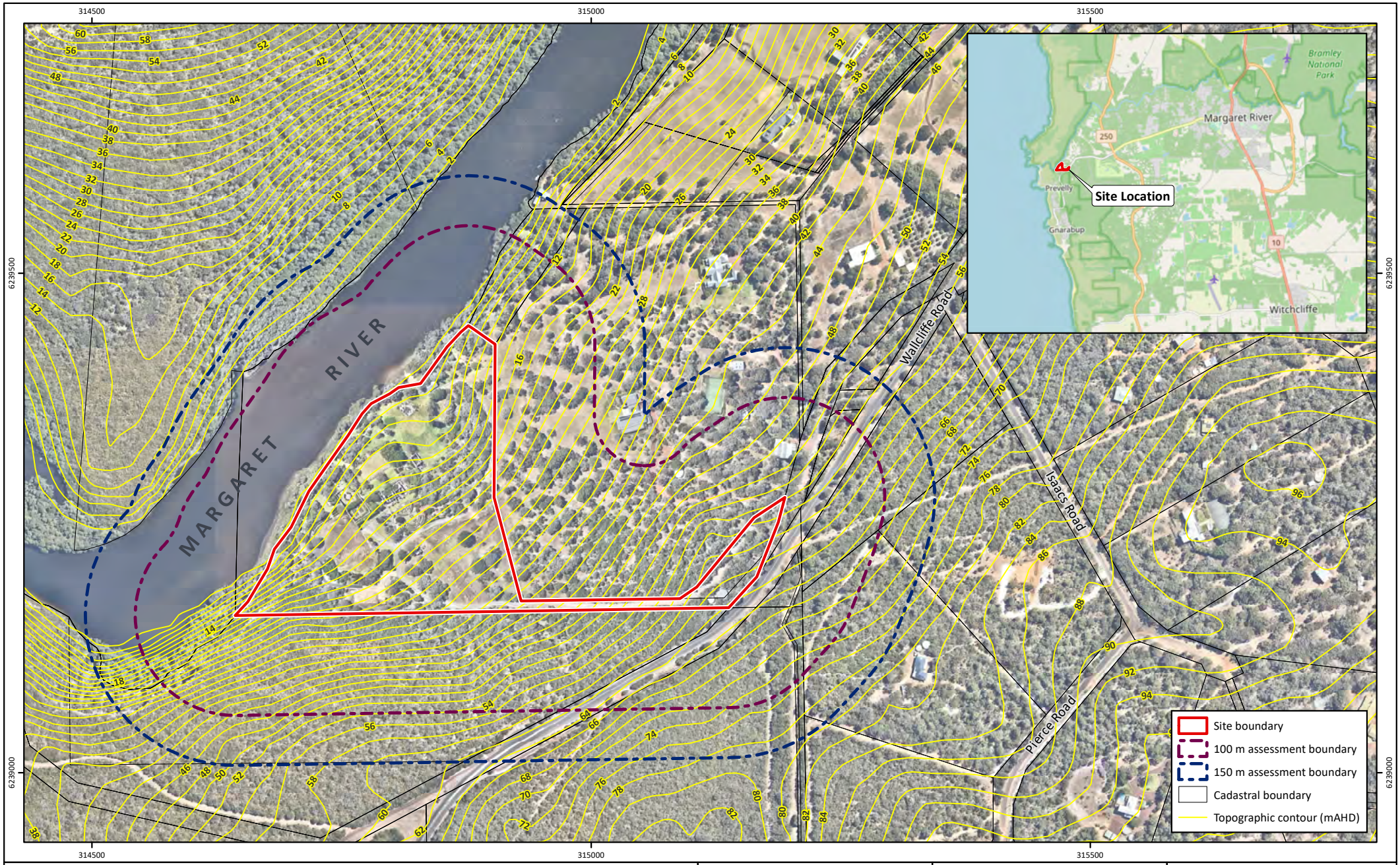


Figure 1: Location Plan and Topographic Contours

Project: Bushfire Management Plan
Lot 101 (no. 752) Wallcliffe Road, Margaret River
Client: Wallcliffe House Pty Ltd

Plan Number:
EP18-128(12)--F60

Drawn:	GAR
Date:	18/10/2023
Checked:	KK
Approved:	AJR
Date:	26/10/2023

N

0 100 200
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

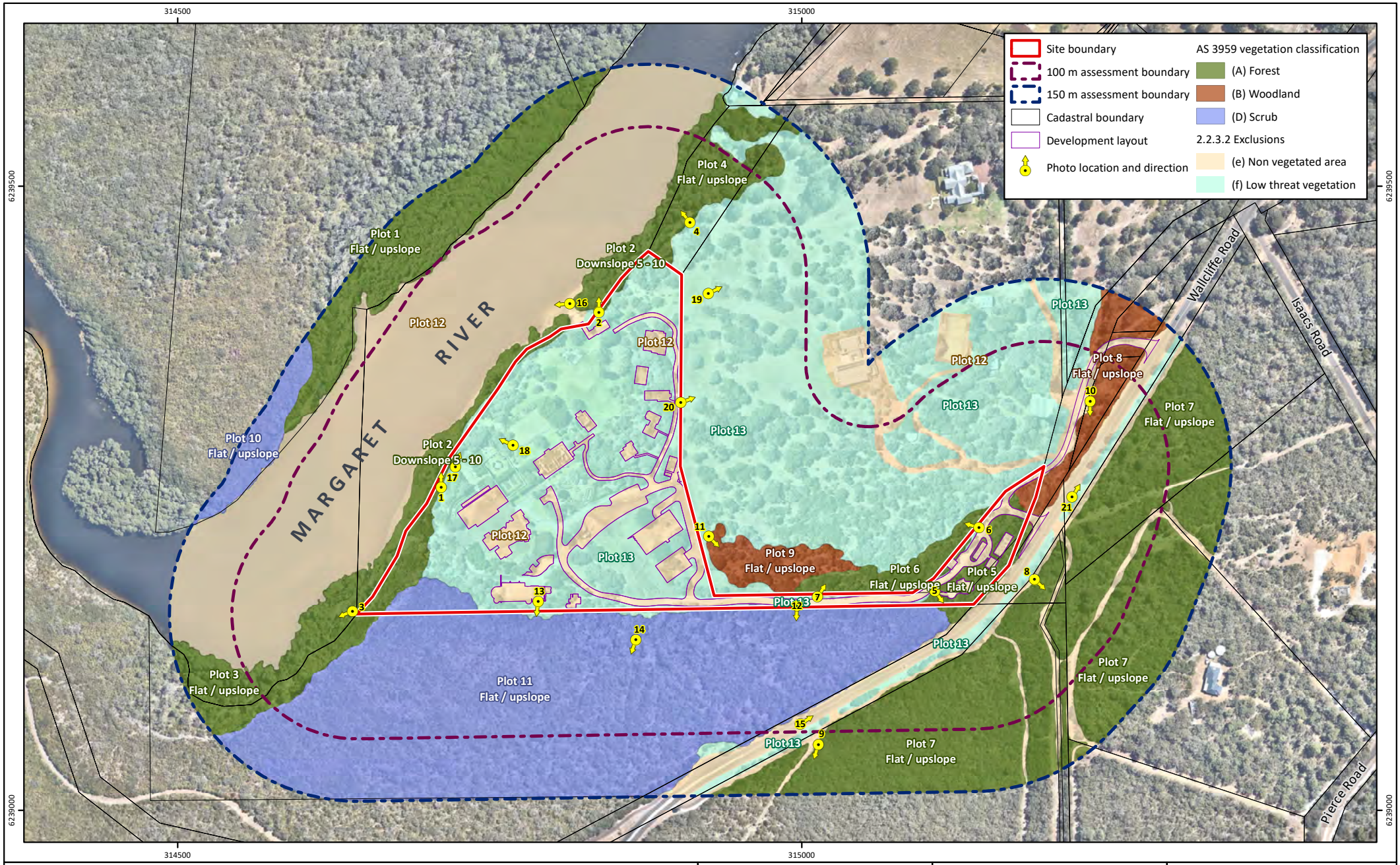


Figure 2: **AS 3959 Vegetation Classifications and Effective Slope**

Project: Bushfire Management Plan
Lot 101 (no. 752) Wallcliffe Road, Margaret River

Client: Wallcliffe House Pty Ltd

Plan Number:
EP18-128(12)--F61

Drawn:	GAR
Date:	18/10/2023
Checked:	KK
Approved:	AJR
Date:	26/10/2023

N

0 80 160
Metres

Scale: 1:4,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

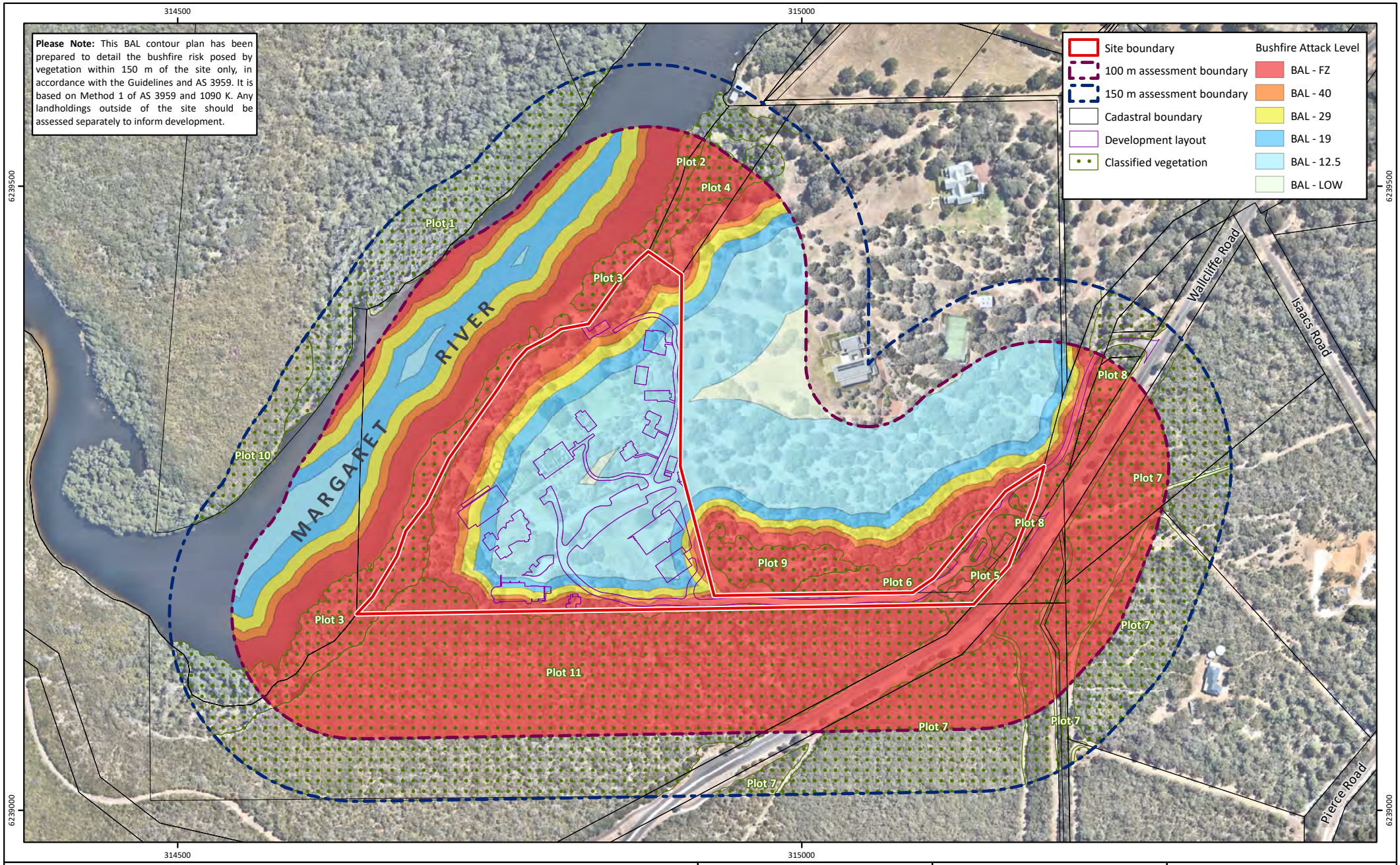


Figure 3: Bushfire Attack Level Contour Plan

Project: Bushfire Management Plan
Lot 101 (no. 752) Wallcliffe Road, Margaret River
Client: Wallcliffe House Pty Ltd

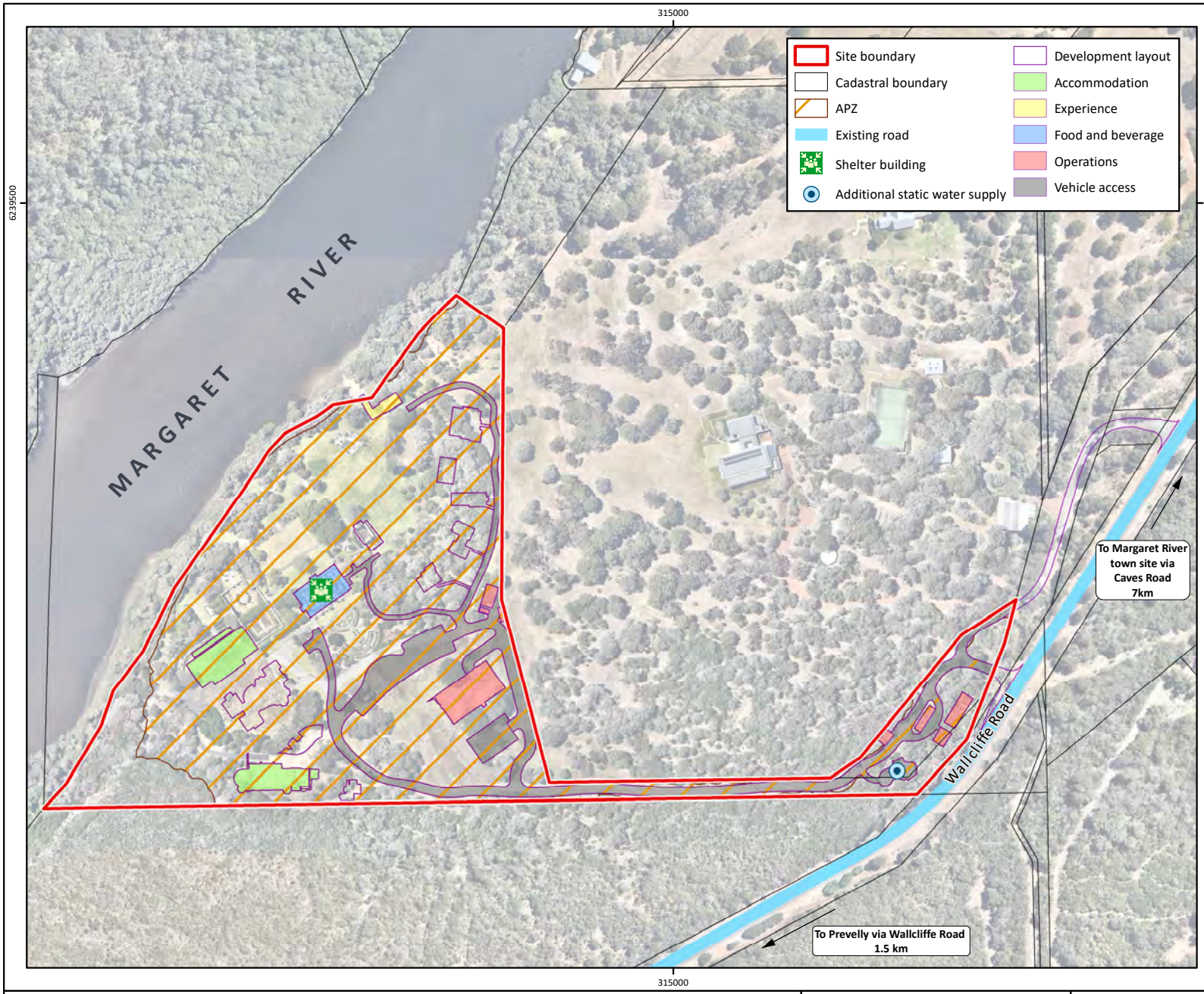
Plan Number:
EP18-128(12)--F62
Drawn: GAR
Date: 18/10/2023
Checked: KK
Approved: AJR
Date: 26/10/2023

N

0 80 160
Metres
Scale: 1:4,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used



Habitable buildings

Where designated bushfire prone, habitable buildings (Class 1, 2, 3 and related 10a structures) within the site must be constructed in accordance with the BAL ratings determined in accordance with AS 3959.

Asset Protection Zone (APZ)

Where indicated, the site is required to be managed as an APZ that achieves a low threat standard in accordance with AS 3959 and the principles of Schedule 1 of the Guidelines.

Vehicle Access

- The internal road network is to meet the requirements outlined in Column 4 of Table 6 in Appendix Four of the Guidelines (see also Section 5 of this BMP). This includes:
  - Passing bays every 200 m with a minimum length of 20 m and minimum additional trafficable width of 2 m (for a total trafficable width of 6 m). Where trafficable width is 6 m-wide, passing bays are not required.
  - Turn around areas within proximity to the buildings, as per Figure 28 (of the Guidelines).
- Signage will be provided within the site advising of where each vehicle route travels to and general information indicating what to do in the event of a bushfire.

Water Supply

The site is located within an area serviced by reticulated water and an associated hydrant network. Additional static water supply will be installed in the indicated location. Hydrants will be provided within the site. It is the responsibility of the proponent to ensure that water supply for fire-fighting within the site remains accessible at all times.

Figure 4: Spatial Representation Plan of Bushfire Management Measures

Project: Bushfire Management Plan
Lot 101 (no. 752) Wallcliffe Road, Margaret River
Client: Wallcliffe House Pty Ltd

Plan Number:
EP18-128(12)--F63
Drawn: GAR
Date: 18/10/2023
Checked: KK
Approved: AJR
Date: 26/10/2023

N

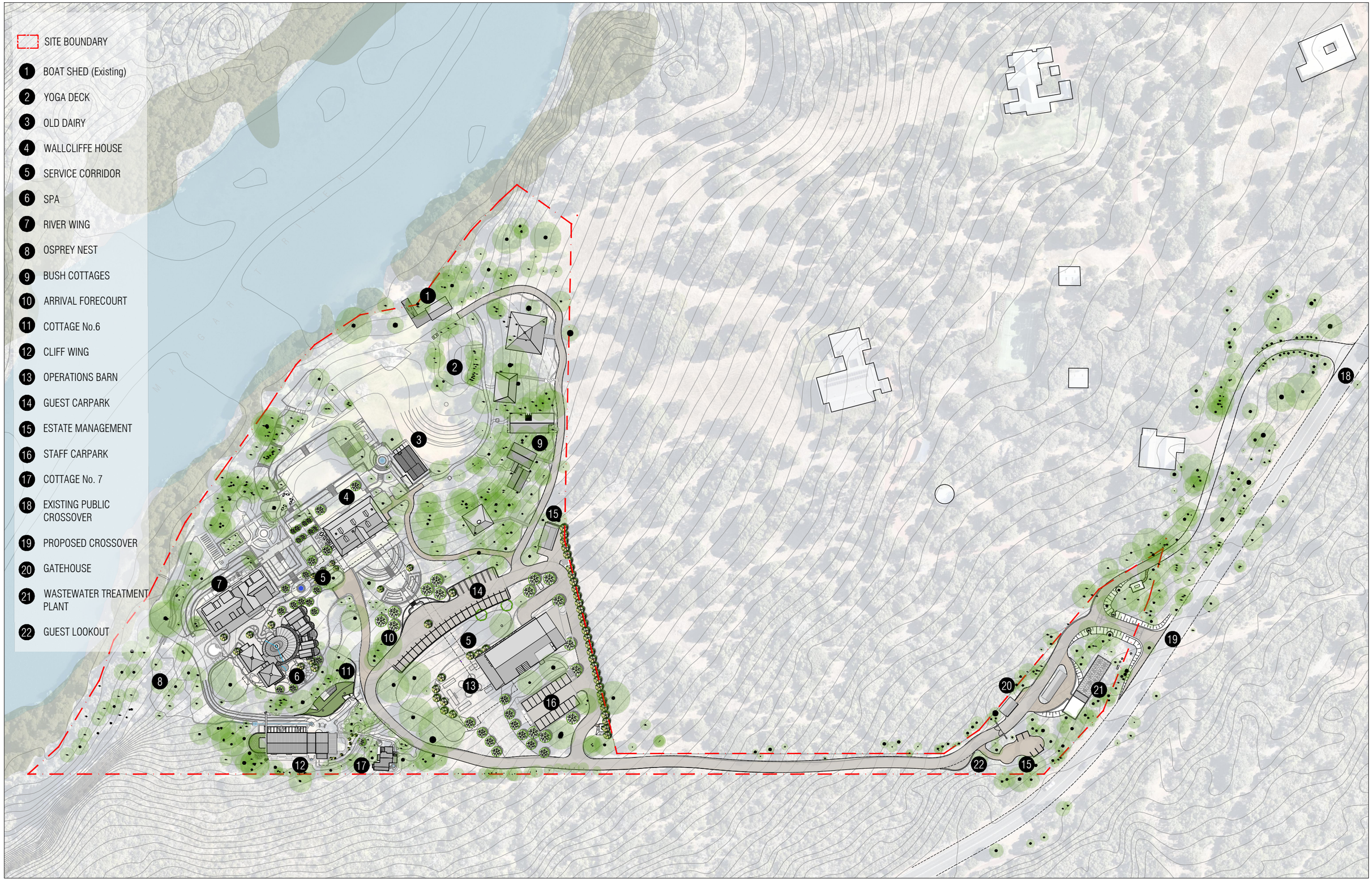
0 40 80 120
Metres
Scale: 1:3,250@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

Appendix A

Proposed Development Plan



MJASTUDIO

T +61 8 9388 0333 | www.mjastudio.net

Copyright to this drawing is reserved by MJA_Studio and must not be retained or reproduced without their written permission. This is a CAD drawing, do not amend manually.

REV.	DATE	AMENDMENT
A	18.08.23	INTERIM CONSULTANT ISSUE
B	15.09.23	INTERIM CONSULTANT ISSUE
C	24.10.23	ISSUE FOR INFORMATION
D	02.11.23	ISSUE FOR DA

PROJECT MANAGER:	THE LANDSMITH COLLECTION
TOWN PLANNING:	TAYLOR BURRELL BARNETT
LANDSCAPE:	PAUL BANGAY / SEEDESIGN
HERITAGE:	HOCKING HERITAGE
ENVIRONMENTAL:	EMERGE ASSOCIATES
CIVIL:	THE CIVIL GROUP
TRAFFIC:	TRANSCORE
WASTE:	ENCYCLE
SUSTAINABILITY:	CUNDALL
CULTURAL:	BRAD GOODE & ASSOCIATES

CLIENT

THE LANDSMITH COLLECTION

PROJECT

WALLCLIFFE HOUSE

PROJECT ADDRESS

752 WALLCLIFFE ROAD (LOT 101)
MARGARET RIVER, WA

PROJECT STATUS

DEVELOPMENT APPLICATION

PROJECT NUMBER

18126

NORTH

SCALE

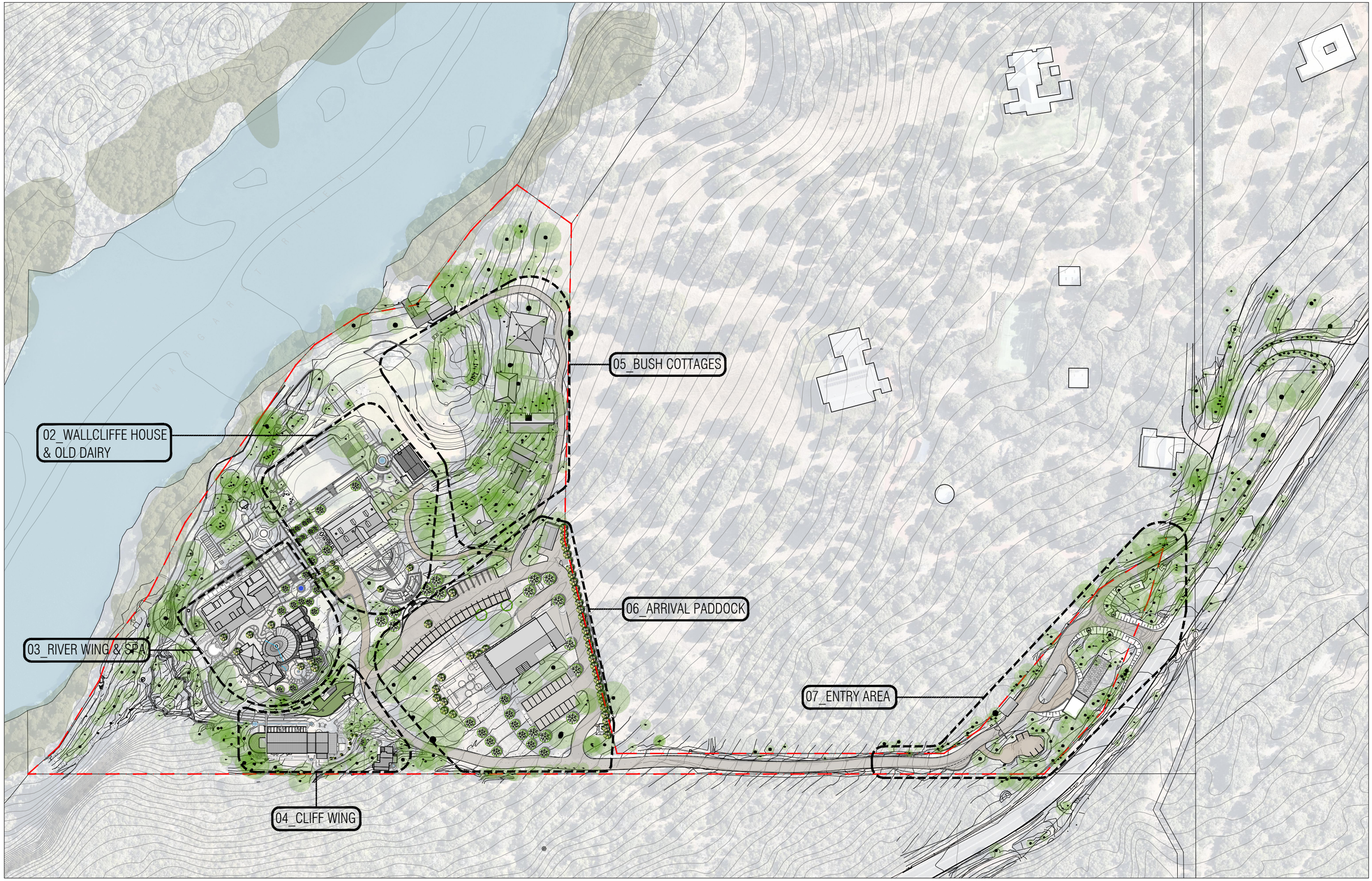
0 7.5 15 34.5

1:1500 @ A3

DRAWING

PROPOSED MASTER PLAN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.04	HBW	MM	D



MJA STUDIO

T +61 8 9388 0333 | www.mjastudio.net

Copyright to this drawing is reserved by MJA_Studio and must not be retained or reproduced without their written permission. This is a CAD drawing, do not amend manually.

REV.	DATE	AMENDMENT
A	18.08.23	INTERIM CONSULTANT ISSUE
B	15.09.23	INTERIM CONSULTANT ISSUE
C	24.10.23	ISSUE FOR INFORMATION
D	02.11.23	ISSUE FOR DA

PROJECT MANAGER:	THE LANDSMITH COLLECTION
TOWN PLANNING:	TAYLOR BURRELL BARNETT
LANDSCAPE:	PAUL BANGAY / SEEDESIGN
HERITAGE:	HOCKING HERITAGE
ENVIRONMENTAL:	EMERGE ASSOCIATES
CIVIL:	THE CIVIL GROUP
TRAFFIC:	TRANSCORE
WASTE:	ENCYCLE
SUSTAINABILITY:	CUNDALL
CULTURAL:	BRAD GOODE & ASSOCIATES

CLIENT

THE LANDSMITH COLLECTION

PROJECT

WALLCLIFFE HOUSE

PROJECT ADDRESS

752 WALLCLIFFE ROAD (LOT 101)
MARGARET RIVER, WA

PROJECT STATUS

DEVELOPMENT APPLICATION

PROJECT NUMBER

18126

NORTH

SCALE

0 7.5 15 34.5

1:1500 @ A3

DRAWING

MASTER PLAN
SITE ZONES

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.05	HBW	MM	D

Appendix B

Landscape Concept Plan

Landscape Planting Narrative

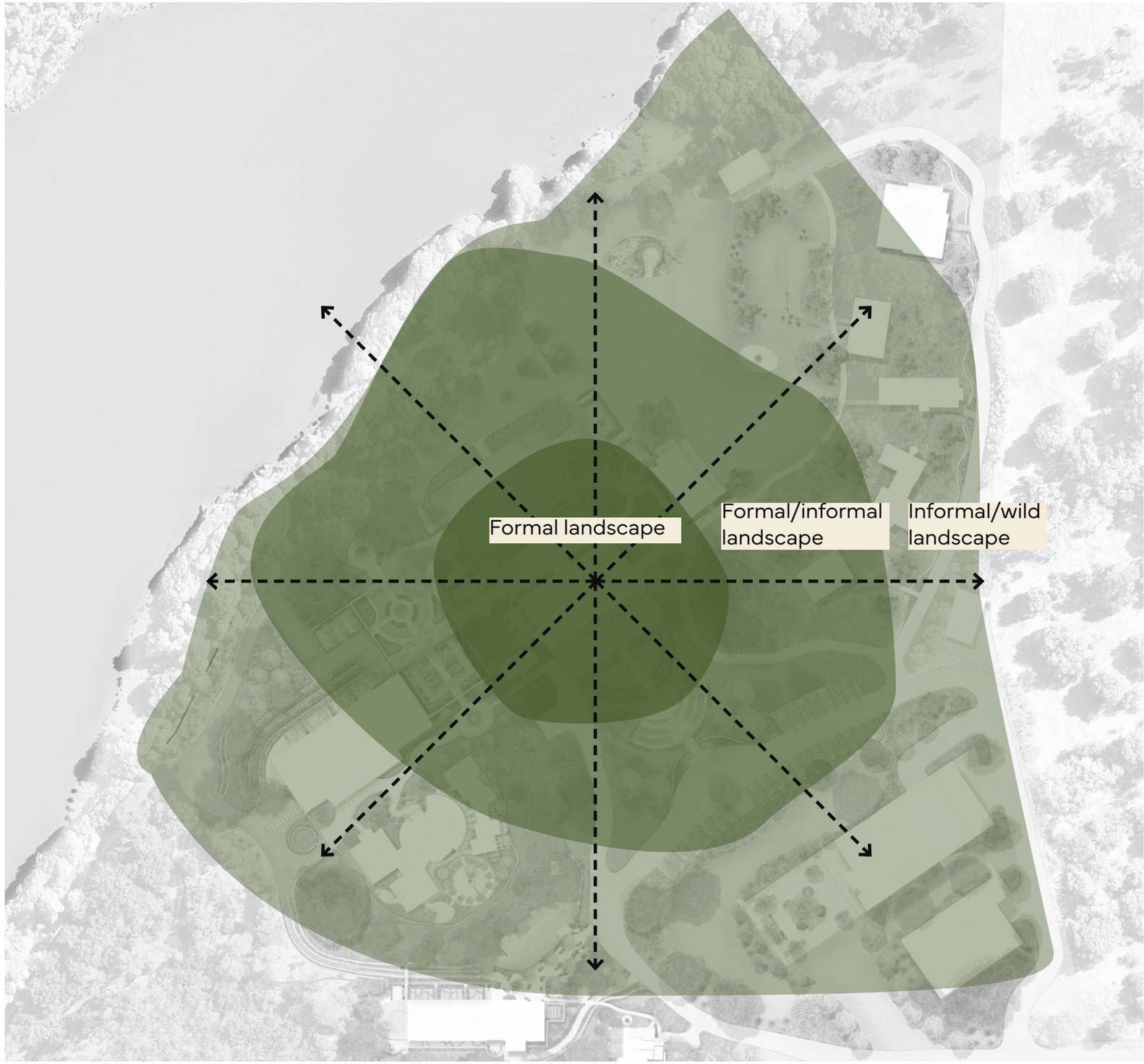
Notes

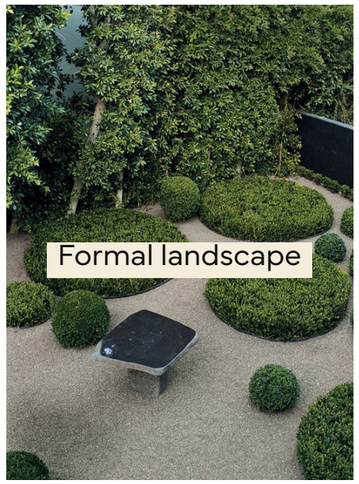
This diagram outlines the approach to planting styles that will be re-established across the property.

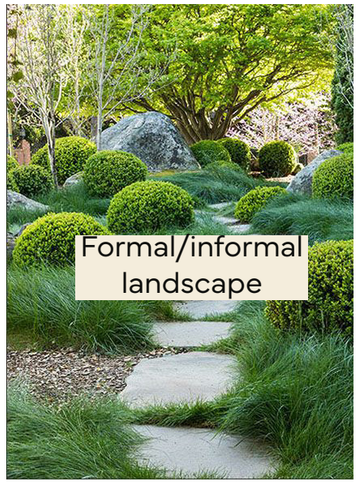
The intent is to have a formal ‘heart’ to the planting beds, which is respectful to the European settlement era of formal English gardens.

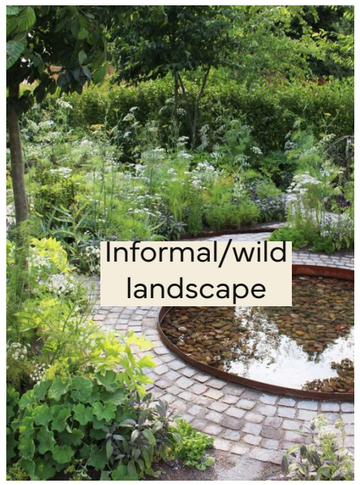
As the planting moves toward the property edges, the intent is to have more informal and wild planting beds, thus blending in with the natural environment.

Holistically, there will be a general shift to more informal and native planting palettes compared to the more European focus prior to the 2011 fires.









Landscape Masterplan with Gatehouse



N

Landscape Character Zones



Appendix C

Bushfire Emergency Evacuation Plan – Part 1 & Part 2

Bushfire Emergency Evacuation Plan

Lot 101 (no. 752) Wallcliffe Road, Margaret River

Project No: EP18-128(12)

Prepared for Wallcliffe House Pty Ltd
November 2023



Document Control

Doc name:	Bushfire Emergency Evacuation Plan Lot 101 (no. 752) Wallcliffe Road, Margaret River				
Doc no.:	**EP18-128(12)—043a KK**				
Version	**Date**	**Author**		**Reviewer**	
1	October 2023	Kirsten Knox	KK	Anthony Rowe	AJR
	Issued for client review and comment				
A	November 2023	Kirsten Knox	KK	Anthony Rowe	AJR
	Minor updates following client review.				

Accreditation

This Bushfire Emergency Evacuation Plan has been reviewed by Anthony Rowe, an accredited Level 3 Bushfire Planning and Design (BPAD) practitioner (accreditation number: BPAD 36690) under the Fire Protection Association of Australia's (FPAA) Western Australian accreditation scheme.

© 2023 Emerge Associates All Rights Reserved. Copyright in the whole and every part of this document belongs to Emerge Associates and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person without the prior written consent of Emerge Associates.

Emergency Plan Summary

This document has been prepared in two parts:

Part 1 (main report) provides the explanatory document that details the emergency context and procedures for the facility. This document should be ready in full and understood by all personnel.

Part 2 is appended to Part 1 and provides a summary of Part 1 with key points to be referenced during a bushfire emergency, preparation prior to bushfire season, and post-emergency. Part 2 is intended to be a Quick Reference Guide.
Part 2 is a draft that must be filled in and finalised prior to occupation of the site.

Both documents are to be reviewed annually and updated accordingly.

Daily registers of occupants can be attached to Part 2 in the event of an emergency.

Key Definitions

Key terminology used throughout the Bushfire Emergency Evacuation Plan (BEEP) have been compiled below in **Table A1**.

Table A1: Summary of definitions

Term	Definition
Emergency Planning Committee (EPC)	Responsible for the emergency preparedness arrangements, to ensure resources are available to effectively implement the emergency plan.
Chief Warden	The Chief Warden is responsible for the management of on-site and off-site emergencies and critical incidents.
Emergency Control Organisation	The Emergency Control Organisation (ECO) is appointed by EPC to direct and control the implementation of the emergency response. The team will include the following: • Chief Warden (White) • Deputy Chief Warden (White) • Communications Warden (White) • Transport Warden (White) • First Aid Wardens (Green hat) • Area Wardens (Yellow hat) • Wardens/Staff (Red hat) **The safety of occupants is prioritised above the protection of any asset.**
Evacuation	The orderly movement of people from a place of danger.
Preparedness	The measures taken to eliminate the incidence of emergencies. These include the regulatory and physical measures to ensure that emergencies are prevented.
Prevention	The arrangements made to ensure that should an emergency occur all those resources and services that are needed to cope with the effects can be mobilised and deployed.
Recovery	Measures which support emergency or critical incident – affected individuals and communities in the reconstruction of the physical infrastructure and restoration of emotional, economic, environmental and physical well-being.
Response	Actions taken immediately prior to, during and immediately after an emergency or critical incident to ensure that its effects are minimised.

Part 1: Explanatory Document

1 Introduction 1

2 Outline of the Bushfire Emergency Evacuation Plan 3

2.1 Purpose of the Bushfire Emergency Evacuation Plan 3
2.2 Policies, guidelines and standards informing the Bushfire Emergency Evacuation Plan 4
2.3 Distribution of the Bushfire Emergency Evacuation Plan 4

3 Emergency Features Relevant to the Bushfire Emergency Evacuation Plan 5

3.1 Firefighting equipment 5
3.2 Vehicular access 5
3.3 Condition of grounds and buildings 6

4 Roles and Responsibilities 7

4.1 Emergency Planning Committee (EPC) 7
4.2 Emergency Control Organisation (ECO) 7
4.3 Roles of Evacuation Managers 8

5 Preparation and Actions 10

5.1 Training requirements 10
5.2 Exercise drills 10
5.3 Maintenance of equipment 10
5.4 Evacuation plan review 10

6 Primary and Secondary Emergency Actions 11

6.1 Objective of the Bushfire Emergency Evacuation Plan 11
6.2 Monitoring for bushfires 11
6.3 Emergency assembly point 12
6.4 Communication 12
6.5 Primary action - evacuation 13
6.6 Secondary action - shelter in place as a last resort 15
6.7 Communications 16
6.8 Recovery 17

7 References 18

Part 2: Bushfire Emergency Evacuation Plan

1 Introduction

Wallcliffe House Pty Ltd is lodging an application to develop a low-key but luxury boutique hotel at Lot 101 Wallcliffe Road in Margaret River (the site). The site is 5.2 ha in area and is located approximately 8 km southwest of the Margaret River townsite in an area zoned for tourism purposes. It is generally bounded by the Margaret River and associated riparian vegetation to the northwest, a nature reserve to the south and existing residential and tourism land uses, including chalet and camping, to the east which also includes the Margaret River rowing club. The site has access from Wallcliffe Road to the south and east.

The uses proposed within the site can generally be summarised based on the following broad categories, generally outlined in **Plate 1**:

- Accommodation, associated with a number of Cottages, the Cliff wing and River wing.
- Food and beverages, associated with Wallcliffe House and the Old Diary
- Experiences (guest day uses), associated with the Spa and Boat Shed.
- Operations and back-of-house, associated with the Operations barn, Estate management and gatehouse.
- Driveway and vehicle parking, including a new cross-over with Wallcliffe Road.
- Landscaped grounds, including turf, manicured gardens and managed retained vegetation.

A total of 25 keys (62 guests) will be supported by the hotel.

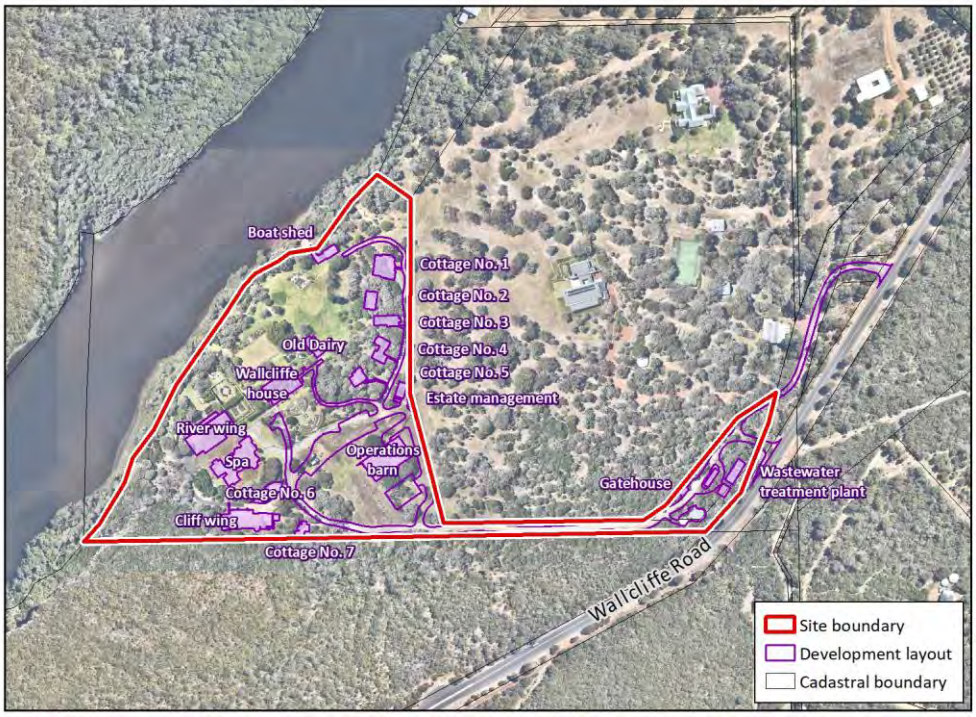


Plate 1: Summary of key buildings/features proposed as part of the development.

The hotel is considered to be a vulnerable use due to the nature of the occupants who are unlikely to be familiar with the area and would require assistance or direction in the event of a bushfire emergency. An effective and comprehensive plan for evacuation would benefit the proposed use of the site.

This document seeks to mitigate and manage the risk associated with a bushfire emergency threatening the development. It has been prepared to satisfy the requirements of the *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and has been prepared in accordance with the *Australian Standard 3745:2010 Planning for Emergencies in Facilities* (AS 3745). This standard outlines the "*minimum requirements for the establishment, validation and implementation of an emergency plan for a facility to provide for the safety of occupants of that facility and its visitors leading up to, and during an evacuation*".

AS 3745 identifies a range of hazards applicable to the operation of accommodation, including but not limited to, fire (internal), explosion, smoke, bomb threats, armed threat/robbery, missing persons, earthquakes, flood / severe storm / cyclone, motor vehicle accident, hazardous material spill, civil disorder, and bushfire etc. This document only addresses bushfire.

It details the components, personnel functions and implementations of evacuation procedures.

2 Outline of the Bushfire Emergency Evacuation Plan

2.1 Purpose of the Bushfire Emergency Evacuation Plan

The purpose of this Bushfire Emergency Evacuation Plan (BEEP) is to provide guidance and direction to all staff and visitors by providing:

- Information, advice and means to prepare for a bushfire emergency; and
- Actions to be taken in the event of a bushfire emergency.

To address the requirements of SPP 3.7 (WAPC 2015), a separate BEEP (this document) has been prepared to manage a bushfire event at the facility in the context of the risk and treatments identified within the Bushfire Management Plan (Emerge Associates 2023). The BEEP has been prepared in accordance with the Department of Planning Lands and Heritage *Guide to Developing a Bushfire Emergency Evacuation Plan* (DPLH 2019) but utilises the applicable standards from AS 4745.

This BEEP describes the process to be followed in the event of an emergency situation caused by an imminent threat from bushfire only, with other emergency procedures to be established as part of the facility's operations. It should be regarded as a 'living document' with guidelines that can be adapted to changing circumstances.

The BEEP is intended to be used by the facility to:

- Outline key emergency features relevant to a bushfire event, see **Section 3**.
- Define the functions, roles and responsibilities of staff in a bushfire emergency, see **Section 4**.
- Establish ongoing education and training as part of the overall strategy, see **Section 5**.
- Provide procedures to evacuate staff and guests in the event of a bushfire, see **Section 6**.

Critical to safe shelter-in-place and effective evacuation is appropriate planning. This includes identifying staff functions, resources needed, arrangements and documentation. Importantly an established plan needs to be practised.

Control and coordination are critical for the effective evacuation of the facility safely or sheltering-in-place depending upon the safest option. This is especially the case where fire impact is imminent and there may not be time for emergency agencies to assist in an evacuation. In this context, the choice to take shelter or implement a safe evacuation needs to be understood by management and the roles of staff for either option must be clearly understood, the responsibilities assigned and appropriate training undertaken.

Other roles and responsibilities, such as traffic management and visitor control need to be assigned and understood by management and staff.

The BEEP specifically addresses the personal safety and survival of people present at the time of a bushfire emergency and is not concerned with the protection of property.

2.2 Policies, guidelines and standards informing the Bushfire Emergency Evacuation Plan

This BEEP is based on guidance provided in the following:

- *Bushfire Management Plan Lot 101 Wallcliffe Road, Margaret River (Emerge Associates 2023)*
- *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (DPLH & WAPC 2021)
- *Australian Standard 3745:2010, Planning for Emergencies in Facilities* (Standards Australia 2010).

2.3 Distribution of the Bushfire Emergency Evacuation Plan

The BEEP is an internal document, to be used by facility staff to guide evacuation procedures, with an up-to-date copy of the document to be maintained within the Operations barn and to be provided to all staff.

All permanent staff at the facility will be briefed on the emergency response protocols and procedures, with an up-to-date copy of the Bushfire Emergency Evacuation Plan (provided in **Part 2**), which is to be displayed at appropriate locations across the facility.

3 Emergency Features Relevant to the Bushfire Emergency Evacuation Plan

3.1 Firefighting equipment

The facility will have onsite firefighting equipment that will be available for emergency personnel, including:

- Fire extinguishers.
- Fire hose reels.
- Fire booster.

Additional equipment that may be required in the case of a bushfire emergency may include:

- Evacuation maps and diagrams.
- Goggles.
- Walkie-talkies/handheld radios (VHF).
- Satellite phones.
- Plastic buckets (1 per two people) and a bath towel for each person.

All equipment should be maintained annually (as a minimum) in accordance with equipment specifications and the relevant standards, including (but not limited to) *Australian Standard 1851 – 2005 Maintenance of Fire Protection Equipment* (Standards Australia 2012). Any large-scale bushfire events should be reported to emergency services who will coordinate the overall response, while facility personnel coordinate the safe internal response (i.e. evacuation) as needed.

3.2 Vehicular access

The facility will be accessible via Wallcliffe Road to the immediate east and south-east of the site. Wallcliffe Road provides a connection to Prevelly to the southwest and Margaret River townsite (via Caves Road) to the east. Prevelly may provide a pragmatic destination for refuge if evacuation onto Caves Road is not safe.

Transport to and from the facility will primarily be via private vehicle. There is expected to be limited pedestrian and cycle access to the site.

Car parking for the facility is at ground level or underground within the Operations barn. There are enough parking bays for the number of guests and staff. Access within the site will be via pedestrian means or electric golf carts (or similar).

3.3 Condition of grounds and buildings

The facility shall be maintained in a low-threat state (AS3959-2018, clause 2.2.3.2(e) and 2.2.3.2(f)) and flammable objects should not be placed in proximity to any facility buildings that may increase their risk of ignition.

The facility buildings and grounds should be inspected prior to the commencement of the bushfire season (by 1 October each year). A seasonal works checklist is included in **Part 2**.

The event management should be prepared prior to the commencement of the bushfire season (by 1 October each year). A seasonal management checklist is included in **Part 2**.

In addition to the seasonal assessment, on the mornings of predicted Extreme or Catastrophic Fire Danger Rating (FDR) days, the facility grounds should be inspected, to ensure there are no flammable materials against or in proximity to the buildings.

4 Roles and Responsibilities

4.1 Emergency Planning Committee (EPC)

An **Emergency Planning Committee** ('the Committee'), is required to be established by the hotel and include the Emergency Control Organisation.

The Committee is responsible for:

- Overseeing the preparation of the facility buildings and grounds for the approaching bushfire season, including attendance to any maintenance required to minimise the risk of damage from bushfire attack (**Part 2**).
- Assigning Emergency Control Organisation (the Emergency response team)
- Reviewing the BEEP and broader Emergency Response Plan,
- Overseeing the undertaking of education and training, evaluating the outcomes of drills and responses (when applicable), and ensuring appropriate resources are provided to maintain equipment.
- Ensuring that safer places are prepared. There may be one nominated safe place for shelter within the site, and this should be assigned as a responsibility to and for management during an emergency.
- Ensuring all firefighting equipment is in working order.

The Committee will assign roles and responsibilities to staff.

4.2 Emergency Control Organisation (ECO)

The hotel is to appoint an **Emergency Response Team**, which are designated staff personnel who have been trained and certified to undertake/provide specific tasks in the event of an emergency, including the operation of firefighting equipment. The Emergency Response Team is not expected to actively fight fires unless trained and comfortable doing so.

The Emergency Control Organisation comprises the following positions:

- Chief Warden (which is generally the head of staff)
- Area Warden
- Communications Officer
- First Aid Personnel
- Traffic Warden.

4.3 Roles of Evacuation Managers

In planning for the event of a bushfire emergency, the following roles should be assigned.

4.3.1 Chief Warden

The Chief Warden is responsible for:

- Evaluating the need for evacuation.
- Initiating the evacuation.
- Coordinating and supervising the evacuation to a safer place.
- Supervising the emergency response.
- As required, advising authorities that an evacuation is underway – including the Department of Fire and Emergency Services (DFES) and the Shire of Augusta Margaret River fire and emergency services manager.
- Documenting the circumstances of the emergency, processes and outcome.
- Checking on Extreme and Catastrophic FDR days that flammable materials are not located against or close to buildings, including litter, grass and leaves, and rubbish bins.
- Checking on Extreme and Catastrophic FDR days that firefighting equipment is ready and that the safer place has the required equipment for communication, safety (including first aid equipment) and comfort.

4.3.2 Area Warden

Area Wardens are responsible for:

- Taking direction from and carrying out tasks allocated by the Chief Warden.
- Checking all buildings/facilities.
- Ensuring all occupants, staff and visitors have been alerted and evacuation has been initiated.
- Maintaining communication with and updating the Chief Warden with situation reports.
- Providing situational information.
- Contributing to debriefing.

All permanent staff are to be trained in the role of Area Warden.

4.3.3 Communications Officer

The Communications Officer is responsible for:

- Taking direction from and carrying out tasks allocated by the Chief Warden.
- Maintaining communication with and updating the Chief Warden with situation reports.
- Monitoring information sources.
- Providing situational updates to guests and staff.
- Maintaining communication with staff with regard to travel to and from the site.

4.3.4 First Aid Personnel

First Aid Personnel, under the direction of the Chief Warden, are responsible for:

- Evaluating the extent of any injuries.
- Administer first aid (only where safe to do so).
- Assess if the injured can be evacuated safely.

4.3.5 Traffic Warden

The Traffic Warden is responsible for:

- Together with the Chief Warden, arrange for the coordination and supply of additional transport (if required).
- Ensuring an orderly evacuation onto Wallcliffe Road if the decision is made to evacuate the hotel.
- Managing the access and placement of Area Wardens to coordinate vehicles to safely leave the site during a bushfire event.
- Coordinating traffic flows on the grounds during a bushfire evacuation.

4.3.6 Emergency Response Team Identification

The control of a bushfire emergency is greatly assisted by key personnel being quickly identified by staff, guests and emergency services. **Table 1** below outlines the tabards and/or helmets to be worn by the Emergency Response Team to enable them to be identified.

Table 1: Summary of Emergency Response Team Identification

Wearers Title	Identification colour
Chief Warden	White helmet
Area Warden	Red helmet or red vest
Communications Officer	Orange helmet or orange vest
First Aid Personnel	Green Helmet or green vest
Traffic Warden	Yellow helmet or yellow vest

5 Preparation and Actions

The actions outlined below relate specifically to bushfire evacuation and should be managed in the context of the broader Emergency Response Plan for the facility.

5.1 Training requirements

All Chief and Area Wardens, staff and other responsible personnel working at the facility should attend a bushfire evacuation session with a qualified Bushfire Risk Consultant to be informed of and trained in relation to:

- All information contained in this document and all documents referred to in **Section 2.2**.
- Individual roles and responsibilities.
- Access and egress routes.
- Assembly point locations.
- Written evacuation procedures applicable to the process.
- Communication equipment.

All those who have received bushfire training should formally acknowledge that they have read and understood the emergency evacuation procedures, understand their role and responsibilities and whether any questions relating to the evacuation procedure were adequately answered.

5.2 Exercise drills

Emergency drills shall be practiced annually. This will involve ensuring all occupants are safely within the buildings with all doors and windows sealed, ensuring all equipment is accounted for and functional (including testing alarms) and confirming emergency contact information is current.

Staff briefing shall occur prior to each such drill and a debriefing should follow any drill or bushfire event to discuss any issues regarding the implementation of the plan.

5.3 Maintenance of equipment

The communications systems and water supply infrastructure will be regularly checked, tested and serviced according to facility servicing schedules, and in accordance with *Australian Standard 1851-2012 Routine service of fire protection systems and equipment* (AS 1851) (Standards Australia 2012).

5.4 Evacuation plan review

This plan should be treated as a 'living document' and reviewed and revised (if required) prior to each bushfire season (which is from October to May of each year).

In addition to this annual review, a review of the plan and response of the facility personnel, patients and visitors should be undertaken following any bushfire in the area and or after an evacuation.

6 Primary and Secondary Emergency Actions

6.1 Objective of the Bushfire Emergency Evacuation Plan

The objective of this BEEP is to:

- Decrease the level of risk to guests, staff and visitors in the hotel grounds.
- Ensure safe and effective evacuation (both within the hotel and off site) through effective control and management.
- Ensure safe refuge is accessible offsite (evacuation).

There are two principal types of evacuation possible from the hotel:

- Pre-warned evacuation: when authorities contact and coordinate an evacuation. This decision is made to evacuate ahead of a bushfire impacting the site.
- Self-evacuation: a spontaneous evacuation involving the self-initiated movement of occupants, staff and visitors after an assessment has been made that the hotel could be threatened by a bushfire and sufficient time exists to move everyone safely from the site.

An alternative to evacuation is to shelter in place rather than evacuate. This would occur if the risk associated with evacuation were greater than sheltering in place.

In considering the response to a bushfire threat, primary and secondary emergency actions have been determined for the site.

The primary emergency action relates to offsite evacuation to an identified evacuation location (as determined by emergency services). The Margaret River Recreation Centre is to be used as the evacuation centre in lieu of receiving instructions from emergency services to evacuate to another location. The triggers and actions associated with emergency evacuation are addressed within **Section 6.5** and **Part 2**.

The secondary emergency action relates to sheltering in place as a last resort. It is possible that a bushfire event may occur within the vicinity of the site where the risk associated with evacuation is greater than sheltering in place (i.e. it may be safer for the occupants to remain within Wallcliffe House), and/or offsite evacuation may not be triggered. The triggers and processes associated with sheltering in place are addressed in **Section 6.6** and **Part 2**.

6.2 Monitoring for bushfires

Receiving a warning of an approaching fire is enhanced by actively monitoring communications over the internet (i.e. Emergency WA) and observing the environment surrounding the site.

It is common for the first indication that a bushfire is burning nearby to observe smoke in the surroundings.

Fire Danger Ratings (FDRs) provide advice on the level of bushfire threat on any given day and are based on the forecast daily fire danger indices (which include consideration of forecast wind speed, temperature, humidity and fuel conditions). There are four FDRs plus a 'no rating'. These four include

'moderate', 'high', 'extreme' and 'catastrophic' ratings, which provide an indication of how difficult a bushfire will be for authorities to extinguish and on what days bushfires are going to pose the greatest threat to property and lives.

The forecasted FDR can be accessed online through the Department of Fire and Emergency Services or Bureau of Meteorology websites.

On days when the FDR is 'high' or above, bushfires can be unpredictable and uncontrollable, and these days trigger basic preparation and monitoring procedures.

Monitoring involves accessing websites (i.e. those of the Department of Fire and Emergency Services) at regular intervals throughout the day.

In the event that an Advice Warning is received at the site for an approaching bushfire, occupants, staff, and visitors should be notified of the potential need to evacuate or shelter.

If a Watch and Act Warning is received, it is recommended that consideration be given to evacuation on the advice of emergency services.

Area Wardens should check the grounds to ensure the entry and exit lanes to the site are clear and that potentially flammable objects are moved away from buildings or stored areas. Precautionary evacuation may be undertaken.

If an Emergency Warning is received evacuation should be undertaken to the Margaret River Recreation centre or a destination nominated by Emergency Services if the route is safe.

An 'all clear' message means the danger has passed and the fire is under control. Although, it is possible that it still may not be safe to revisit the site. The Chief Warden should inspect the buildings and if determined safe, instruct the Communication Warden to advise occupants, staff, and visitors when it is appropriate to return.

6.3 Emergency assembly point

The Wallcliffe House building has been designated as the 'emergency assembly point' and 'control centre'. This is to eliminate the confusion of guests having to relocate from their buildings, then to a different assembly point, and then to the Wallcliffe House building in the event that the decision is made to shelter in place.

6.4 Communication

The Emergency Control Organisation (Chief Warden, Deputy Wardens, Transport Warden and Area Wardens) will communicate during a bushfire event using two-way handheld radios/walkie-talkies.

Contact with emergency authorities will be maintained through mobile telephone.

Guests will be informed of a bushfire event that may impact the hotel and any action required via a loudspeaker system and / or via Area Wardens moving through the site and communicating face to face.

6.5 Primary action - evacuation

The Chief Warden is responsible for deciding whether an evacuation is necessary and should take the following into consideration when determining if and when to evacuate:

- The advice from Emergency Services, including public warnings.
- The severity of a bushfire incident, proximity of the bushfire and predicted fire spread (i.e. smoke, embers and radiant heat).
- The safety of evacuation routes.

The process that should be followed involves:

- Daily recording of Fire Danger Rating and weather conditions, during the bushfire season.
- Monitoring to establish the extent of bushfire danger (Fire Danger Ratings) and to identify bushfires in the area.
- Determining whether the bushfire is a potential threat.
- Deciding to evacuate or shelter in place (protective action).
- Implementing the protective action decision to evacuate or shelter in place.

The process to monitor for and implement evacuation due to bushfire is outlined below.

6.5.1 Monitoring for bushfire

This should be as per **Section 6.2**.

6.5.2 Evacuation triggers

The following are triggers for evacuation:

- Observation of smoke/fire nearby or awareness by another means. Evacuate if the hotel will be affected.
- Receipt of an official warning to evacuate from the emergency authorities.
- Monitoring of the EmergencyWA web page (https://www.emergency.wa.gov.au/) at regular intervals must occur.

The Emergency Alert Telephone warning system is generally used during an emergency to send messages to registered landline and mobile phones within a defined area where lives and homes are deemed to be under direct and imminent threat from a bushfire.

These warnings should trigger an evacuation if they are received in a timely manner. These official warnings however must be assessed against the local conditions before evacuation is undertaken and when it is judged by the Chief Warden that a bushfire has the potential to impact the site.

6.5.3 Evacuation alarm

When the decision is made to **Evacuate**, the Chief Warden will:

- Sound the Alarm.
- Notify Area Wardens and staff that a bushfire evacuation is underway.
- The Chief Warden will convene the ECO, and each member will wear their ECO hat/vest for role identification.

6.5.4 Evacuation

- Staff will relocate guests and visitors to outside the Wallcliffe House building.
- The Area Wardens will acquire personal protective clothing and check all buildings are clear and secured (air conditioning turned off, vents and windows closed, door closed, outdoor bins closed.
- Staff will confirm all guests and visitors are accounted for.
- An Area Warden will be sent to receive the arrival of all guests and visitors, and together with the supervising staff inform the Chief Warden that everyone has arrived and are accounted for.
- The ECO will evacuate the site. Guests and staff will use their own vehicles.

6.5.5 Phasing of evacuation

Responsibility for vehicular evacuation rests with the occupants, both staff and guests. It is intended that evacuation will be predominantly through the use of private vehicles and if required supplementary transport. Ambulances may be required to assist any occupants with special needs/disabilities but should not be relied upon.

The number of private vehicles is expected to be sufficient to cater for the number of guests and staff as all will arrive in private vehicles.

The Chief Warden must be aware if there is sufficient vehicle capacity (i.e. arrangements with bus companies, private vehicles on site) every day during the bushfire season (between December and April each year, or as designated) to be able to evacuate every person from the site whenever occupied.

6.5.6 Communications

DFES will need to be notified of the choice to either evacuate or shelter in place to assist in broader decision-making.

6.6 Secondary action - shelter in place as a last resort

An alternative to evacuation is to take shelter in place (within the Wallcliffe House building). This would occur if the risk associated with evacuation is greater than sheltering in place, or the threat is considered manageable, and it may be safer for guests to remain within the site in the Wallcliffe House building or their accommodation.

The Wallcliffe House building has been designed to adequately accommodate the site occupants in tenable conditions (through tenability calculations at the detailed design stage) and compliance certification prior to its operation. It has also been designed to permit rapid evacuation after the passing of the fire front if required.

The Wallcliffe House building is required to be certified as fit for purpose as a bushfire refuge, by a certified fire engineer, prior to each bushfire season and should occur in August annually. It will be the responsibility of the Chief Warden to ensure the total number of occupants on-site at one time during the bushfire season is within the capacity of the Wallcliffe House building to operate as a refuge. Number of occupants will be limited by tenability.

The Wallcliffe House is the nominated 'control building' for bushfire emergencies and will have access to all of the portable equipment necessary to deal with a bushfire event (e.g. first aid equipment and fire extinguishers). Additional equipment required to ensure the Wallcliffe House building can function as the control building includes ensuring that a list of key contacts is available at all times, in addition to ensuring that at least one person has a mobile phone during an emergency.

Extreme conditions diminish quickly after the passing of the fire front. Buildings, if ignited usually, lose tenability after the passing of a fire front.

Notwithstanding Wallcliffe House is the nominated building, its condition should be monitored through the bushfire event. If the building ignites, the evacuation to a burnt or paved area should be taken. Towels issued to occupants should be wetted in the allocated buckets and used for protection and filtering smoke if it is necessary to leave the building.

6.6.1 Shelter triggers

The following are triggers for sheltering in place:

- The threat is considered manageable, and it may be safer for occupants to remain within the site in the Wallcliffe House building.
- An assessment is made by the Chief Warden or by emergency services that evacuation would be unsafe due to conditions along evacuation routes i.e. travel delays caused by congestion and insufficient time before the arrival of the fire.
- A bushfire is observed in close proximity and is approaching the site with not enough time to safely evacuate and clear the fireground.

6.6.2 Implementation of sheltering in place

Shelter in place is based on an assessment by the Chief Warden or advice that transport is not available, or it is not safer to leave.

If a decision to shelter in place is taken, occupants will shelter within the Wallcliffe House building. For sheltering in place, the following procedures shall be implemented:

- Chief Warden/Area Wardens to notify all occupants/guests that shelter-in-place is underway.
- Advise emergency services of the decision to shelter in place.
- Chief Warden/Area Wardens to ensure all people have returned and are present (or accounted for if offsite).
- Remove all flammable objects from under the eaves of the Wallcliffe House building and close all external windows, vents and doors.

The site may be subject to an ember attack that may last for many hours. Embers may cause fires on-site that threaten lives. Staff must therefore be prepared when sheltering, keep calm and methodically look for embers or small fires and extinguish them using fire-fighting equipment provided.

After the fire front has passed, the Chief Warden should:

- Inspect the Wallcliffe House building (or individual accommodation areas, depending upon where occupants need to seek shelter) and extinguish small fires using firefighting equipment provided at the accommodation (where safe to do so).
- Monitor the grounds and buildings for small fires for 24 hours after the fire.
- If the site is damaged, the damage should be reported to DFES to assists its investigations.

A summary of the shelter-in-place procedure is provided in **Part 2**.

6.7 Communications

DFES will need to be notified of the choice to either evacuate or shelter in place to assist in broader decision making.

6.7.1 Details to be provided to emergency services

The following information should be provided to the emergency services if sheltering on site is required:

1. Nature of the emergency:
    - Immediacy – Can the bushfire be seen/ distance from the accommodation?
    - Evidence of ember attack?
    - Evidence of spot fires?
2. Details of individuals sheltering:
    - Number of people
    - Condition/state
    - Special needs (i.e. disabilities, medical conditions)
3. Location:
    - Address of accommodation (Lot 101 Wallcliffe Road, Margaret River)
    - Nearest cross roads (Wallcliffe Road, Isaacs Road)
    - Exact location of shelter building (Wallcliffe House building).

6.8 Recovery

Following a bushfire event, recovery will include:

- The Chief Warden will receive the ‘All Clear’.
- The Chief Warden and Area Warden will return to the site and inspect.
- If determined safe by the Chief Warden, the Communications Warden will issue details of the return to the hotel.
- The ECO will debrief the EPC.

7 References

Department of Planning, Lands and Heritage (DPLH) 2019, *A Guide to developing a Bushfire Emergency Evacuation Plan*, Western Australian Planning Commission.

Department of Planning, Lands and Heritage, and Western Australian Planning Commission, (DPLH & WAPC) 2021, *Guidelines for Planning in Bushfire Prone Areas Version 1.4*, Perth, Western Australia.

Standards Australia 2010, *Australian Standard 3745-2010 Planning for Emergencies in Facilities*.

Standards Australia 2012, *Australian Standard 1851-2012 Routine service of fire protection systems and equipment (AS 1851-2012)*, SAI Global Limited, Sydney.

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Perth.

Western Australian Planning Commission 2019, *Bushfire Emergency Evacuation Plan template for Western Australia*, Version 1.1.

This page has been left blank intentionally.

Part 2

Bushfire Emergency Evacuation Plan for Quick Reference Guide

BUSHFIRE EMERGENCY EVACUATION PLAN

Name of Site / Facility	Wallcliffe House		
Address of Site / Facility	Lot 101 (no. 752) Wallcliffe Road, Margaret River in the Shire of Augusta Margaret River		
Owner/Operator	Wallcliffe House Pty Ltd		
Plan Prepared By	Kirsten Knox		
Plan Approved By	Anthony Rowe (BPAD Level 3)	**BPAD No.**	36690
Date Approved		**Plan Version**	DRAFT 1A

The **Primary Action** to follow under **normal** bushfire conditions is to:

EVACUATE
and to shelter on site as a last resort if it is not safer to leave

Refer to Pre-emptive Procedures when forecast conditions exceed normal

IMPORTANT:

If conditions change during an evacuation and the safety of the evacuation roads cannot be guaranteed, return to the hotel and shelter.

The purpose of this plan is to identify procedures for occupants and site managers to follow in the event of a bushfire emergency.

This is a living document that must be reviewed annually, prior to the bushfire season, and after any bushfire event.

Information within this plan must be maintained, and key personnel must review their responsibilities under this plan.

Table of Contents

1 Communications 3

1.1 Site Emergency Contact(s) 3
1.2 Site Details 3
1.3 List of Emergency Control Personnel 4
1.4 Emergency Contacts 4

2 Preparations prior to bushfire season 5

3 Evacuation Procedures 7

3.1 Assembly Points 8
3.2 Off-Site Refuge(s) 8
3.3 Evacuation Transportation Arrangements 8

4 Shelter as a Last Resort Procedures 9

4.1 On-Site Refuge(s) 9
4.2 Sheltering Procedures 9

5 Procedures Following Bushfire 10

5.1 Evacuated 10
5.2 Shelter-In-Place 10
5.3 Debriefing 10

6 Pre-emptive Procedures 11

7 Attachments 11

Document Control

Date	Plan reviewed	Modification requested	Action procedures practiced	Responsible person	
		Yes/no/details	Yes/no	Name	Signature

1 Communications

1.1 Site Emergency Contact(s)

Primary contact			
Position / role	Chief Warden		
Phone number (BH)		**Phone number (AH)**	
Secondary contact			
Position / role	Area Warden		
Phone number (BH)		**Phone number (AH)**	

1.2 Site Details

Type of facility / site	Hotel		
Number of buildings	16	**Number of employees**	
Number of occupants		**Number with support needs**	

Description of support needs
Guests unfamiliar with the area will be onsite and will require direction in the event of an emergency.

*Append daily registers of occupants

1.3 List of Emergency Control Personnel

The following table identifies the **Emergency Control Organisation (ECO)** – the individuals responsible for implementing the emergency procedures in the event of a bushfire emergency.

Function	Name	Contact No.
Chief Warden		
Area Warden		
Communications Officer		
First Aid Personnel		
Traffic Warden		

1.4 Emergency Contacts

Dial '000' for emergency assistance.

The following table identifies important contacts and information sources for bushfire emergency management purposes.

Name / Organisation	Phone No. / Website
Fire, Police, Ambulance	000
Department of Fire and Emergency Services (DFES)	13 33 37 for non-urgent
Western Australian Police (WAPOL)	131 444 for non-urgent
Shire of Augusta Margaret River Emergency Coordinator	
Water Corporation Emergencies	1800 882 037
Electricity (Western Power Emergencies)	13 13 51
Bureau of Meteorology	www.bom.gov.au
Emergency WA	https://www.emergency.wa.gov.au/

2 Preparations prior to bushfire season

SEASONAL CHECKLIST - WORKS	COMPLIES (Y/N)
• Prune all vegetation in accordance with the Standards for Asset Protection Zones (*Schedule 1 Guidelines for planning in bushfire prone areas V1.3).* • TREES: No tall trees >5 m (trunk)s are to be within six (6) metres of a building and branches are not to overhang a building or be within three (3) metres. Trim branches vertically to a minimum 2 m. • SHRUBS: No shrubs or trees up to 3 m are to be within three (3) metres of a building. • GRASSES: No grasses within the facility should exceed 50 mm and vegetation less than 0.5 m high is to be no closer than 2 m from the building. • Clear dead and flammable material. Maximum fuel load of 2 tonnes per hectare in grounds.	
• Ensure all roof and building junctions are clear of litter.	
• Check all roofs present no gaps greater than 2 mm. By external inspection or observation of daylight in the roof cavity. Screen any gaps (steel mesh 2 mm aperture) or fill with mineral wool or non-flammable sealant.	
• Ensure all building surfaces present no gaps greater than 2 mm, including deck boards.	
• Ensure all window and door screens are steel mesh 2 mm aperture and unbroken.	
• All buildings are free of flammable materials, including roof gutters, and none located within 3 m.	
• All objects attached to the buildings are non-combustible or easily removable, and the removal mechanism is in working order.	
• The hoses supplied for firefighting are protected from radiant heat (non-flammable fire reel cover) and are in working order.	
• Fire Extinguisher charge levels are in working order and the instructions on use is attached.	
• Smoke detectors are in working order.	
• The Evacuation Diagram is clearly displayed on immediately next to all external doors.	
• Emergency Contact details are current and identified on the Evacuation Diagram.	
• Ensure induction details for personnel during the bushfire season are up to date.	
• Confirm driveways and access routes allow for the safe passage of emergency vehicles to all buildings and assets on the land	
• Confirm driveways and access routes allow for the safe passage of emergency vehicles to all buildings and assets on the land	
• If applicable, confirm roof-mounted evaporative air coolers fitted with ember-proof screens to the filter media to reduce the possibility of bush fire embers igniting the air cooler	
Date of inspection	

MANAGEMENT PREPARATION CHECKLIST – BUSHFIRE SEASON	COMPLIES (Y/N)
• The Chief Warden and Area Warden are thoroughly familiar with the Bushfire Emergency Evacuation Plan.	
• Ensure guests, staff, and visitors have been made aware of the Bushfire Emergency Evacuation Plan.	
• Ensure guests are aware of the hotel's procedures during a bushfire.	
• Ensure supplementary transport arrangements have been established for assistance during a bushfire event.	
• Ensure the Bushfire Emergency Evacuation Plan is reviewed prior to the bushfire season.	
• Ensure the Chief Warden and Area Wardens are liaising with the relevant authorities, including (but not limited to) the Department of Fire and Emergency Services, the Department of Biodiversity, Conservation and Attractions, WA Police, local volunteer fire brigade, and local government representative.	
• Ensure the above authorities are aware of the primary evacuation arrangements.	
• Ensure evacuation drills are practised prior to the start of the bushfire season.	
• Check the Department of Fire and Emergency Services website for any alerts.	
Date of compliance	

EVACUATION

3 Evacuation Procedures

Evaluation of bushfire risk and the safety of employees and occupants is the **PRIMARY** action to follow under normal bushfire conditions. Evacuation is the preferred option if there is time to safely leave. Due to the location of the hotel and likely bushfire hazard, there may be limited warning of an approaching bushfire. This may reduce the response time to accommodate a safe evacuation, therefore shelter may be required. Also, the preference for evacuation is by the single Wallcliffe Road and it may be affected by road congestion depending upon the number of people in Gnarabup and Prevelly also seeking to evacuate. A safer option may be to shelter on-site.

Evacuation

To facilitate the orderly evacuation of the facility, the departure of guests, staff and visitors should be phased if necessary, depending upon the number of occupants at the facility and the resources available. This can be achieved by:

- Evacuating the most vulnerable people first, and prioritising the evacuation of people with special needs.
- Using private staff vehicles if required to transport guests (if private vehicles not available).

Implement the following procedures:

- Engage the discrete alarm system.
- Notify staff that a bushfire evacuation is underway.
- Guests, staff and visitors to be informed and organised for evacuation by Area Wardens.
- Assemble all guests and staff at Wallcliffe House.
- Area Wardens are to secure the buildings including closing all windows and doors.
- Determine the route to be used for evacuation. This includes providing clear instructions on the direction of travel for vehicles.
- Determine the safety of the route, whether there is time available before the fire arrives, and if the route is safe for a sufficient time for people to be clear of the fire risk. Consider the road congestion (increasing) and the time that vehicles are taking to complete turning onto Caves Road.
- Occupants are to be instructed to evacuate via the public road network (i.e. east and then north/south).
- Complete headcount prior to evacuation and at each stage of evacuation.
- Commence evacuation.
- Take the Emergency Mobile Phone and Action Cards with you.
- Enact transport plan.
- Advise emergency authorities of the decision to evacuate and propose a route.
- Nominated Area Wardens are to ensure the facility is completely evacuated before the site is secured.
- Evacuate away from the threat - to a place not in a bushfire-prone area.

Once the threat has passed, refer to *Procedures Following Bushfire*.

3.1 Assembly Points

Designated Evacuation Assembly Points
1. Guest are to wait in their assigned rooms until told otherwise.
2. Guests and staff to proceed in an orderly fashion to Wallcliffe House

3.2 Off-Site Refuge(s)

Primary Off-Site Refuge	
Name of venue:	Margaret River Recreation Centre
Address of venue:	51 Wallcliffe Road, Margaret River
Nearest cross-street:	Farrelly Street
Map reference:	
Venue phone number:	
Travel time to venue:	13-14 minutes (7.6 km)

Secondary Off-Site Refuge	
Name of venue:	
Address of venue:	
Nearest cross-street:	
Map reference:	
Venue phone number:	
Travel time to venue:	

3.3 Evacuation Transportation Arrangements

Transportation Arrangements	
Number & type of vehicles required:	Private vehicles
Name of transport provider:	
Phone number:	
Time required before transport on-site:	

SHELTER-IN-PLACE

4 Shelter as a Last Resort Procedures

Evaluation of bushfire risk and the safety of occupants has determined that the **SECONDARY** action to follow under normal bushfire conditions is to shelter, as a last resort, in the nominated on-site refuge. The decision to shelter should only be made if it is not safe to evacuate. If in doubt, shelter-in-place as a last resort.

4.1 On-Site Refuge(s)

Designated On-Site Refuges
Wallcliffe House

4.2 Sheltering Procedures

- Notify staff that a bushfire warning is current or there is a bushfire in the vicinity.
- Engage discrete alarm system.
- Move occupants, guests and staff to Wallcliffe House, the designated shelter building and if time permits guests should bring their belongings including a long-sleeve shirt, long clothing and closed shoes.
- Area Warden will secure all buildings including the closing of all windows and doors.
- Check and confirm all occupants are accounted for (use guest/staff/visitor registers).
- Secure Wallcliffe House - close the windows and blinds. The Chief Warden to continue to observe the fire front.
- Advise the Emergency Services Incident Controller (DFES or Shire) that shelter is being taken at the location, and the number of occupants, guests and staff.
- Monitor conditions in the building, keep calm, block smoke ingress, and keep guests hydrated.
- Monitor conditions in the building after the fire's passing – do not stay in a burning building
- Seek instructions from the Emergency Services Incident Controller (DFES or Shire)

Once the threat has passed, refer to *Procedures Following Bushfire*.

POST-EMERGENCY

5 Procedures Following Bushfire

5.1 Evacuated

- Chief Warden, with advice from Emergency Services, will decide when the buildings can be re-occupied.
- If required, the Emergency Planning Committee (EPC) will arrange for guests to be reallocated to other areas.
- Re-entry to the building is not permitted until a 'Stand Down – All Clear' has been issued.

5.2 Shelter-In-Place

- The Chief Warden, will inspect the site for damage and consult with Emergency Services, to determine when the buildings can be re-occupied.
- If there are damaged buildings DFES or the police may wish to examine the damage, as part of their examinations following a bushfire.
- Await instruction from Emergency Services that the threat has passed. Ensure air quality is acceptable before reopening doors or windows or allowing occupants to exit.
- Confirm with DFES or the police when it will be safe to leave the site. Evacuation may be delayed due to roadway blockages.

5.3 Debriefing

- Follow debriefing procedures.
- The Emergency Control Organisation (ECO) will debrief the EPC.

PRE-EMPTIVE

6 Pre-emptive Procedures

Evaluation of bushfire risk and the safety of occupants has determined that the following pre-emptive measures should be implemented outside of normal bushfire conditions.

Trigger(s)	Actions
1. Extreme or catastrophic forecast	Hotel grounds should be inspected, to ensure there are no flammable materials against or in proximity to the buildings
2. Direction from DFES or Emergency Control Organisation	Follow advice regarding the suitability to evacuate or shelter-in-place as a primary response. Follow any other advice provided.
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

7 Attachments

☐ Bushfire Emergency Evacuation Plan

☐ DFES Bushfire Warning Levels

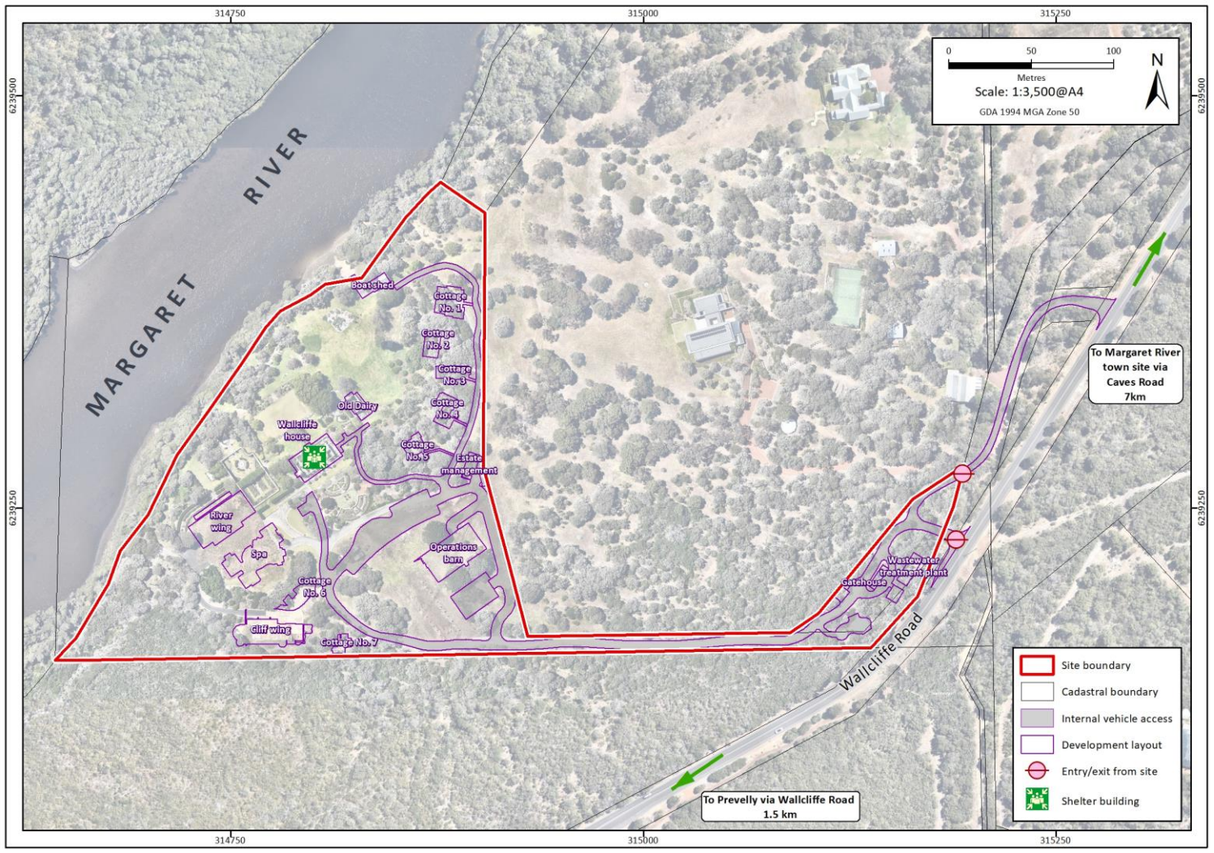
☐ Occupant/staff register

☐ Guest contact register

☐

☐

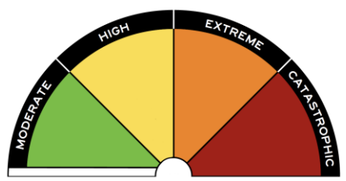
BUSHFIRE EMERGENCY EVACUATION PLAN



Key Phone Numbers	
Emergency (Police, Ambulance, Fire)	**000**
DFES Information Line	**13 33 37**
Police (non-urgent)	**13 14 44**
Shire of Augusta Margaret River Emergency Services	

Contacts	Name	Number
Chief Warden		
Area Warden		
Communications Officer		
First Aid Personnel		
Traffic Warden		

FIRE DANGER RATING



MODERATE — Plan and prepare

HIGH — Be ready to act

EXTREME — **Take action now** to protect life and property

CATASTROPHIC — For your survival, **leave bushfire risk areas**

EMERGENCY WA – WARNINGS AND INCIDENTS

ASSEMBLY POINT

EP18-128(14)—043a

ON ADVICE OF A BUSHFIRE THREAT OR YOU NOTICE A BUSHFIRE

Assess situation and assign a member of supervising personnel to monitor website or information line (if DFES on 13 DFES (13 33 37) or www.dfes.wa.gov.au and Emergency WA website: www.emergency.wa.gov.au).

- Turn off evaporative air conditioners.
- Close roof vents, windows and doors for all buildings.
- Check availability of vehicles to evacuate occupants if required.
- Account for occupants (guests, staff and visitors).

EVACUATION

If you are told to leave – **EVACUATE**

To facilitate the orderly offsite evacuation of the site, the departure of occupants, should be phased if necessary, depending upon the number of occupants and the resources available. This can be achieved by:

- Evacuating the most vulnerable occupants first, such as the disabled, those with medical conditions and/or those likely to have breathing difficulty.
- Using private vehicles to evacuate the hotel (where appropriate).

Implement the following procedures:

- Sound Alarm.
- Assemble all guest and staff in the Wallcliffe House building.
- Account for all guests and staff.
- Determine the route to be used for evacuation. This includes providing clear instructions on the direction of travel for vehicles.
- Determine the route is safe before commencing evacuation.
- Occupants to be instructed to evacuate via public road network (i.e. east and then north/south).
- Assemble at Wallcliffe House and await direction from the Chief Warden.
- Evacuate when directed.

Option 1: Margaret River Recreation Centre
OR
Option 2: Location designated by emergency services

IMPORTANT: If conditions change during an evacuation and the safety of the evacuation roads cannot be guaranteed, return to Wallcliffe House building to seek shelter.

SHELTER

If external conditions are hazardous – **TAKE SHELTER**

- Move occupants, guests and staff to Wallcliffe House, the designated shelter building.
- Close windows and blinds.
- Check occupant, guest and staff registers that everyone is accounted for.
- Check all buildings have been evacuated
- Fill buckets with water, one per two people, and issue towels to each person
- Advise the Emergency Services Incident Controller (DFES or Shire) on the location of occupants, guests and staff.
- Monitor conditions in the building, keep calm, block smoke ingress, keep hydrated.
- Monitor conditions in the building after the fire's passing – do not stay in a burning building*
- Seek instructions from the Emergency Services Incident Controller (DFES or Shire)

ALL CLEAR

Seek instructions from the Emergency Services Incident Controller (DFES) – All clear.

Appendix D

1200K Calculations

Forest – flat/upslope

FLAMESOL
FPA AUSTRALIA

Calculated October 26, 2023, 6:30 pm (MDc v.4.9)

Wallcliffe

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	80	Rate of spread	2.4 km/h
Vegetation classification	Forest	Flame length	19.8 m
Understorey fuel load	25 t/ha	Flame angle	63 °, 68 °, 73 °, 75 °, 77 ° & 82 °
Total fuel load	35 t/ha	Elevation of receiver	8.82 m, 9.17 m, 9.460000000000001 m, 9.56 m, 9.640000000000001 m & 9.800000000000001 m
Vegetation height	n/a	Fire intensity	43,400 kW/m
Effective slope	0 °	Transmissivity	0.843, 0.822, 0.796, 0.775, 0.764 & 0.712
Site slope	0 °	Viewfactor	0.4235, 0.3149, 0.2132, 0.144, 0.1168 & 0.0313
Flame width	100 m	Minimum distance to < 40 kW/m²	22.9 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	29.9 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	41.2 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m²	54.9 m
		Minimum distance to < 10 kW/m²	63.2 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Forest – downslope >0 - <5

FLAMESOL
FPA AUSTRALIA

Calculated October 26, 2023, 6:29 pm (MDc v.4.9)

Wallcliffe

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	80	Rate of spread	3.38 km/h
Vegetation classification	Forest	Flame length	26.22 m
Understorey fuel load	25 t/ha	Flame angle	65 °, 70 °, 74 °, 77 °, 79 ° & 86 °
Total fuel load	35 t/ha	Elevation of receiver	9.4 m, 9.109999999999999 m, 8.25 m, 7.09 m, 6.37 m & 0 m
Vegetation height	n/a	Fire intensity	61,280 kW/m
Effective slope	5 °	Transmissivity	0.831, 0.8090000000000001, 0.783, 0.763, 0.754 & 0.699
Site slope	5 °	Viewfactor	0.4304, 0.3201, 0.2163, 0.1464, 0.1186 & 0.0319
Flame width	100 m	Minimum distance to < 40 kW/m²	28.4 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	36.7 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	49.7 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m²	65 m
		Minimum distance to < 10 kW/m²	74.3 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Forest – downslope >5 - <10

FLAMESOL FPA AUSTRALIA

Calculated October 26, 2023, 6:28 pm (MDc v.4.9)

Wallcliffe House

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	80	Rate of spread	4.78 km/h
Vegetation classification	Forest	Flame length	35.3 m
Understorey fuel load	25 t/ha	Flame angle	62 °, 66 °, 71 °, 74 °, 76 ° & 84 °
Total fuel load	35 t/ha	Elevation of receiver	12.38 m, 12.09 m, 11.37 m, 10.13 m, 9.359999999999999 m & 1.71 m
Vegetation height	n/a	Fire intensity	86,527 kW/m
Effective slope	10 °	Transmissivity	0.8169999999999999, 0.795, 0.771, 0.752, 0.744 & 0.6860000000000001
Site slope	5 °	Viewfactor	0.4365, 0.3261, 0.2204, 0.1486, 0.12 & 0.0325
Flame width	100 m	Minimum distance to < 40 kW/m²	36.6 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	46.1 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	60.8 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m²	78 m
		Minimum distance to < 10 kW/m²	88.59999999999999 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Woodland – flat/upslope

FLAMESOL
FPA AUSTRALIA

Calculated October 26, 2023, 6:32 pm (MDc v.4.9)

Wallcliffe

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	80	Rate of spread	1.43 km/h
Vegetation classification	Woodland	Flame length	12.35 m
Understorey fuel load	15 t/ha	Flame angle	65 °, 71 °, 76 °, 79 °, 80 ° & 84 °
Total fuel load	25 t/ha	Elevation of receiver	5.6 m, 5.84 m, 5.99 m, 6.06 m, 6.08 m & 6.14 m
Vegetation height	n/a	Fire intensity	18,599 kW/m
Effective slope	0 °	Transmissivity	0.862, 0.845, 0.821, 0.797, 0.785 & 0.73
Site slope	0 °	Viewfactor	0.412, 0.3066, 0.2067, 0.14, 0.1137 & 0.0306
Flame width	100 m	Minimum distance to < 40 kW/m²	14.8 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	19.8 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	28.4 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m²	39.3 m
		Minimum distance to < 10 kW/m²	46.1 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Scrub – flat/upslope

FLAMESOL
FPA AUSTRALIA

Calculated October 26, 2023, 6:33 pm (MDc v.4.9)

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	80	Rate of spread	4.16 km/h
Vegetation classification	Scrub	Flame length	11.62 m
Understorey fuel load	25 t/ha	Flame angle	65 °, 71 °, 76 °, 79 °, 80 ° & 84 °
Total fuel load	25 t/ha	Elevation of receiver	5.26 m, 5.49 m, 5.64 m, 5.7 m, 5.72 m & 5.78 m
Vegetation height	m	Fire intensity	53,815 kW/m
Effective slope	0 °	Transmissivity	0.865, 0.848, 0.824, 0.8, 0.788 & 0.732
Site slope	0 °	Viewfactor	0.413, 0.3045, 0.2058, 0.1396, 0.1134 & 0.0304
Flame width	100 m	Minimum distance to < 40 kW/m²	13.9 m
Windspeed	45 km/h	Minimum distance to < 29 kW/m²	18.7 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	27 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m²	37.5 m
		Minimum distance to < 10 kW/m²	44.1 m

Rate of Spread - Catchpole et al. 1998

Flame length - Byram, 1959

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005