Queensland Government

LEC
Land and environment consultants

Bushfire management plan

Proposed development | Aura Lakes Precinct 18 (part of) | Bells Creek Road | Gagalba | Queensland
Prepared for Stockland Development Pty Limited | 4 July 2024

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Bushfire management plan

Final

Report 24065 | Stockland Development Pty Limited | 4 July 2024

Approved by Robert Janssen

Position Managing principal

Signature 

Date 4 July 2024

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Draft	2 July 2024	R. Janssen	LEC
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Disclaimer

Notwithstanding the precautions adopted in this report, it should always be remembered that bushfires burn under a range of conditions. An element of risk, no matter how small always remains, and although AS 3959-2018 is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any building will withstand bushfire attack on every occasion.

It should be noted that upon lodgement of a development proposal, State Government, council and/or the fire service may recommend additional construction requirements.

Although every care has been taken in the preparation of this report, Land and Environment Consultants Pty Ltd accept no responsibility resulting from the use of the information in this report.

1 Introduction

Land and Environment Consultants Pty Ltd (**LEC**) was engaged to prepare a bushfire management plan (**BMP**) for the proposed material change of use, reconfiguring a lot and operational works (**proposed development**) in accordance with the proposed Aura Lakes context plan (**context plan**), which is provided in Appendix 1, and the proposed plan of development.

The proposed development is part of precinct 18 in the context plan and is located within part of lot 2/SP334680 and part of lot 3/SP333886 (**the site**).

A development application is being made for the proposed development under the *Caloundra South Urban Development Area Development Scheme*. Economic Development Queensland is the assessment authority.

The site is identified as a bushfire hazard area by the Aura Lakes *Bushfire prone area map* (**Bushfire prone area map**) which was prepared for the context plan and is provided in Appendix 2. Therefore, under the *Caloundra South Urban Development Area Development Scheme,* the development application for the proposed development is subject to compliance with the example bushfire overlay code (**Bushfire overlay code**) in the *Natural Hazards, Risk and Resilience – Bushfire, State Planning Policy State Interest guidance material* (DSDMIP 2019) (**SPP guidance material – bushfire**).

This BMP has been prepared in general accordance with *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire'* (QFES 2019a) (**BRC guide**) which was prepared by the Queensland Fire and Emergency Services (**QFES**) to provide technical guidance for the implementation of the SPP guidance material – bushfire.

This BMP documents the bushfire hazard assessment and demonstrates how the proposed development will comply with the Bushfire overlay code. It includes:

- an introduction (this section) and description of methods and information resources used for the preparation of this BMP;
- description of the site and proposed development;
- bushfire hazard assessment;
- identification of bushfire hazards associated with the site and proposed development;
- radiant heat exposure assessment;
- a plan for mitigating bushfire hazards; and
- assessment of the proposed development against the Bushfire overlay code.

1.1 Method

To meet requirements of the SPP guidance material – bushfire and the BRC guide, the following tasks were undertaken:

- review of the Bushfire prone area map prepared for the context plan;
- review of the Queensland regional ecosystem map, vegetation hazard class (**VHC**) map and severe fire weather map in the QFES online mapping system (QFES 2023) (**Catalyst**);
- review of fire scar mapping in the Queensland Globe (DR 2024);
- review of the *Caloundra South Priority Development Areas – Environmental Rehabilitation Plan – Aura Precincts 17, 18 and 19 and Part Precinct 6* (SMEC 2023) (**Aura Lakes ERP**) and *Aura Lakes - Gagalba - Statement of landscape intent* (**Aura Lakes SLI**) (Urbis 2024);

- inspection of land within 100 metres (**m**) of the proposed development for vegetation characteristics, current land management practices, slope and evidence of previous fires;
- bushfire hazard assessment in general accordance with the method in the BRC guide;
- radiant heat exposure assessment using the Fire Protection Association of Australia *BAL calculator V4.9* (**BAL calculator**) which models the 'method 2' bushfire attack level assessment procedure in the *Australian Standard* (**AS 3959-2018**) *Construction of buildings in bushfire prone areas*; and
- assessment of the proposed development against the Bushfire overlay code.

Aerial imagery of the site and measuring tools were accessed online from Google Earth and Queensland Globe to assist with validating observations and measurements made during the site assessment.

1.2 Suitably qualified person

This BMP was prepared by Robert Janssen who is a suitably qualified and experienced bushfire management consultant.

Robert is the managing principal at LEC and has over 25 years of experience in bushfire planning and operations. He has prepared bushfire management plan for residential, commercial and industrial property developments, utilities, government facilities and conservation estates.

Robert's formal qualifications as an environmental scientist and consulting experience are coupled with 10 years of experience as a nationally accredited fire-fighter with the national parks and wildlife service in New South Wales and Queensland.

2 Description of the site and proposed development

This chapter provides a description of the site and proposed development.

2.1 Site description

The location of the site is shown in Figure 3.1.

The site and adjoining land within the context plan area is currently used for grazing livestock and consist of grass paddocks. Land to the east of the site and the Bells Creek Arterial Road also mostly consists of grass paddocks. The exception is the land north of Bells Creek Road which has a large continuous area of bushland vegetation.

Land adjoining the site and within the context plan area will be developed in the future for a variety of land uses including residential, school, park and drainage.

A new sub-arterial road connection to the Bells Creek Arterial Road will provide access and egress for the proposed development until the sub-arterial and trunk road network within the context plan area has been developed.

The site will be provided with access to a mains water connection.

2.2 Proposed development

The plan of subdivision for the proposed development is provided in Appendix 3 and shows the proposed layout of roads, residential allotments, super allotments and open space areas.

The proposed super allotments will be used for childcare, medium density residential, state primary school, emerging community and advertising device. The childcare and state primary school are defined as vulnerable uses in Table 7 of the SPP guidance material – bushfire. The school land use is also defined as community infrastructure for essential services.

The proposed open space allotments include drainage, local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and road reserve embellishment/pedestrian linkage. Landscaping proposed within these allotments is identified in the Aura Lakes SLI which is provided in Appendix 4. Some parts of the proposed drainage allotments will have continuous areas of bushfire fuel that will have potential to be a bushfire hazard. The local linear park, local recreation park, neighbourhood recreation park and neighbourhood sports park and road reserve embellishment/pedestrian links will be maintained landscapes that will not carry a bushfire and will be a low bushfire hazard class.

Initially, the proposed development will have access and egress via a new sub-arterial road connection to the Bells Creek Arterial Road. As future development occurs within the context plan area additional access and egress routes will be provided. Until the future development occurs, existing vehicle access tracks within the context plan area will be maintained to provide alternate emergency access and egress.

The proposed development will be connected to mains water and a reticulated hydrant system will be installed in the new road reserves.

2.3 Bushfire prone area map

The Bushfire prone area map for the site is provided in Appendix 2. Verification of the bushfire hazard areas shown in the Bushfire prone area map is provided via the bushfire hazard assessment in Chapter 3.

Please note, in this BMP, the terms ‘bushfire prone area’ and ‘bushfire hazard area’ have the same meaning. Both terms mean an area of vegetation that is determined to have a potential bushfire intensity ≥ 4,000 kilowatts/m (**kW/m**) and the land within 100 m of this vegetation.

3 Bushfire hazard assessment

This chapter provides details about the desktop review, site inspection and bushfire hazard assessment.

3.1 Severe fire weather

The severe fire weather map in Catalyst indicates the 5 % annual exceedance probability forest fire danger index (**FFDI**) for the site is 53. This FFDI value has been used for the potential bushfire intensity calculations in Section 3.5 and the radiant heat exposure assessment in Section 5.9.

3.2 Fire history

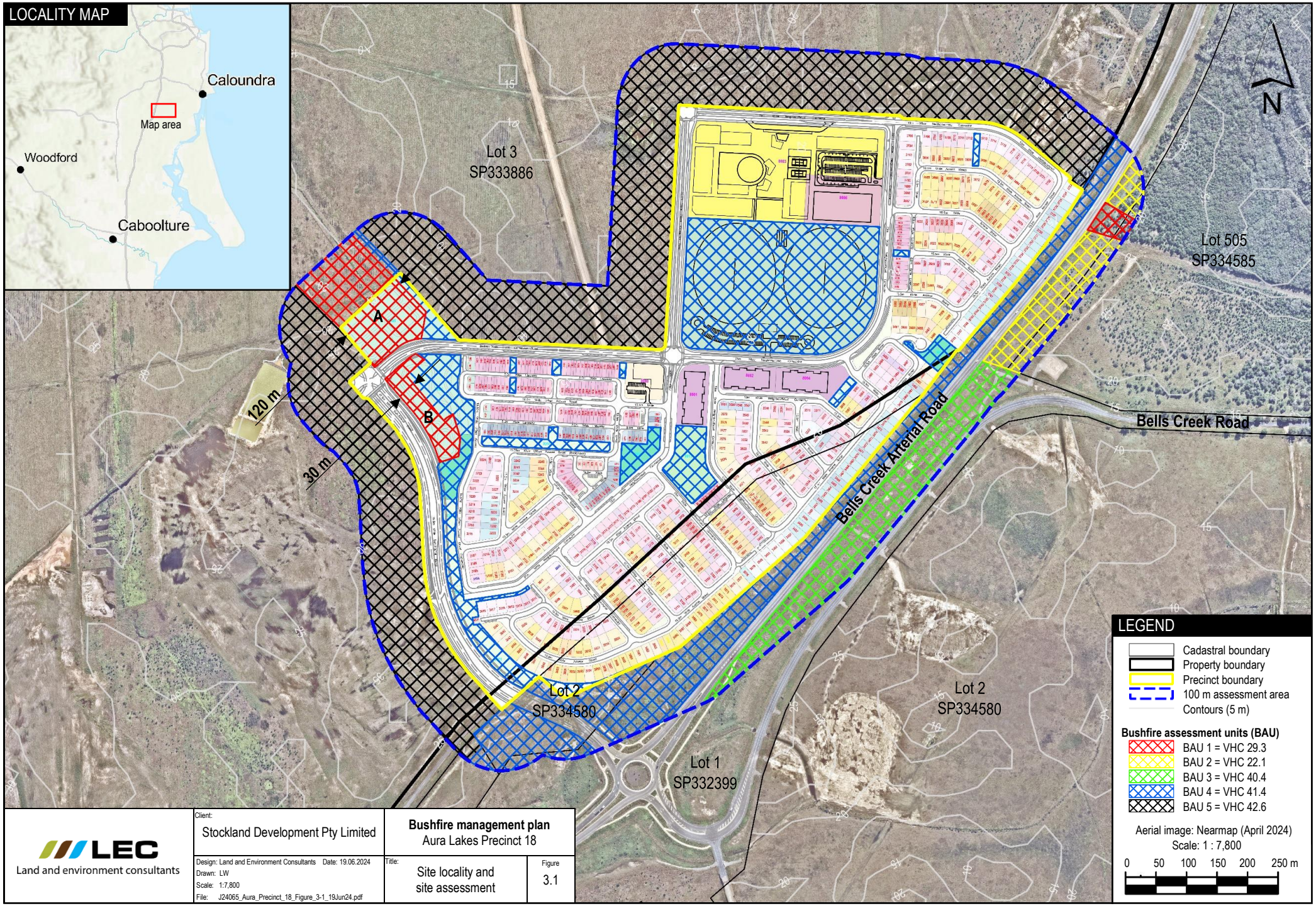
Fire history data in the Queensland Globe indicates numerous fires have occurred within 1 kilometre (**km**) of the site during that past 10 years. Many of these fires have occurred in the forestry plantations and the Bells Creek Conservation area to the south and east of the site, respectively.

3.3 Site inspection

LEC inspected land within 100 m of the proposed development on 18 March 2024. Observations were recorded about current land use and management, vegetation characteristics, the slope of land and evidence of previous fires.

The locations of bushfire assessment units (**BAUs**) used for the bushfire hazard assessment are shown in Figure 3.1. Table 3.1 provides a summary of observations from the site inspection and notes about the bushfire hazard assessment of BAUs which include consideration of future development within the context plan area, proposed rehabilitation of environmental buffers in accordance with the Aura Lakes ERP and proposed landscaping within open space allotments identified in the Aura Lakes SLI.

Features of BAUs are shown in Photographs 3.1-3.3.



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Client: Stockland Development Pty Limited

Bushfire management plan
Aura Lakes Precinct 18

Design: Land and Environment Consultants Date: 19.06.2024
Drawn: LW
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File: J24065_Aura_Precinct_18_Figure_3-1_19Jun24.pdf

Title: Site locality and site assessment

Figure 3.1

Table 3.1 Site observations

BAU	Catalyst VHC	VHC	Notes
1	VHC 22.1 *Melaleuca open forests on seasonally inundated lowland coastal swamps* (**VHC 22.1**) and VHC 40.4 *Continuous low grass or tree cover* (**VHC 40.4**)	VHC 29.3 *Heathlands and associated scrubs and shrublands* (**VHC 29.3**)	BAU 1 is aligned with part of the environmental buffer on the eastern side of the Bells Creek Arterial Road and the drainage structures within proposed lots 9005 and 9004, which are labelled A and B respectively in Figure 3.1. The post development VHC of this part of the environmental buffer is based on the target vegetation communities plan in the Aura Lakes ERP. The Aura Lakes SLI indicates the drainage structures will be landscaped with a variety of species from the sedge and heath communities occurring along the Bells Creek corridor. The context plan in Appendix 1 identifies the part of BAU 1 labelled A in Figure 3.1 (**BAU 1A**) will be expanded to the north as future development occurs. Given the ultimate area and width of landscaping within BAU 1A is uncertain at this point of time, it has not been assessed against the small patch and narrow corridor mapping rules in the BRC guide for this BMP. The part of BAU 1 labelled B in Figure 3.1 (**BAU 1B**) will be a narrow corridor of VHC 29.3 which is < 50 m wide. It will adjoin a road reserve and local linear park which will have discontinuous bushfire fuel and has been assessed against the small patch and narrow corridor mapping rules in the BRC guide which is explained in Section 3.4.
2	VHC 22.1 and VHC 40.4	VHC 22.1	BAU 2 is aligned with part of the environmental buffer on the eastern side of the Bells Creek Arterial Road. The post development VHC of this part of the environmental buffer is based on the target vegetation communities plan in the Aura Lakes ERP.
3	VHC 40.4	VHC 40.4	BAU 3 is aligned with the grass paddocks to the east of the Bells Creek Arterial Road.
4	VHC 40.4	VHC 41.4 *Discontinuous low grass or tree cover* (**VHC 41.4**)	BAU 4 is aligned with the proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park, pedestrian links and the part of the Bells Creek Arterial Road reserve which adjoins the site. In the post development landform, BAU 4 will be a maintained landscape which has a low level of discontinuous bushfire fuel, ie formal gardens, mown grass and pathways.
5	VHC 40.4	VHC 42.6 *Nil to very low vegetation cover* (**VHC 42.6**)	BAU 5 is aligned with the future urban development adjoining the site which is identified by the context plan in Appendix 1.

Photograph 3.1 Example of VHC 29.3 at BAU 1

Photograph 3.2 VHC 22.1 at BAU 2

Photograph 3.3 VHC 40.4 at BAU 3

3.4 Small patch and narrow corridor mapping rules

The narrow corridor of VHC 29.3 landscaping in BAU 1B, shown in Figure 3.1, was assessed against the small patch and narrow corridor mapping rules in Section 4.2.6 of the BRG guide which 'reflect the likelihood of lower fireline intensities in smaller vegetation patches and narrow vegetation corridors'.

The narrow corridor of VHC 29.3 in BAU 1B is < 50 m wide and will adjoin a local linear park, ie BAU 4, and road reserve. The VHCs associated with the local linear park and road reserve, ie VHC 41.4 and VHC 42.6, are defined in the BRC guide as having discontinuous bushfire fuel and as being a low hazard, ie they will not carry a bushfire. Therefore, the narrow corridor of VHC 29.3 landscaping in BAU 1B is assessed as meeting the criteria for the 'narrow corridors filter' in the BRC guide.

The BRC guide recognises that narrow corridors of vegetation which meet the criteria for the narrow corridors filter are less likely to ignite due to their disconnection with large areas of continuous bushfire fuel that can carry a running fire front. Therefore, if a narrow corridor of vegetation is ignited it will likely be from a point ignition which requires both distance and area to develop into a running fire front of considerable hazard. On this basis, if a fire front did emerge from the narrow corridor of VHC 29.3 landscaping in BAU 1B, it would be narrow in width and significantly less in intensity than a fire front which has had sufficient time and area to develop. As a result, the BRC guide assigns narrow corridors of vegetation which meet the narrow corridors filter a potential bushfire intensity of < 4,000 kW/m and deems them to be a non-bushfire hazard class for the purpose of land use planning and development assessment.

The area of BAU 1A was not assessed against the small patch and narrow corridor mapping rules in Section 4.2.6 of the BRG guide because the ultimate area and width of VHC 29.3 landscaping associated with BAU 1A is dependent upon future development to the north of the site which has not had detailed planning at this point in time.

3.5 Potential bushfire intensity calculations

The potential bushfire intensity of BAUs was determined using the Queensland Public Safety Business Agency *Potential Bushfire Intensity Calculator* (version November 2014) which is an Excel spreadsheet calculator that models the bushfire hazard assessment method in the BRC guide.

The BRC guide defines bushfire hazard classes as follows:

- very high – potential bushfire intensity > 40,000 kW/m;
- high – potential bushfire intensity 20,000-40,000 kW/m;
- medium – potential bushfire intensity 4,000-20,000 kW/m; and
- non-bushfire hazard – potential bushfire intensity < 4,000 kW/m.

Results of the potential bushfire intensity calculations which determine the bushfire hazard class of BAUs shown in Figure 3.1 are presented in Table 3.2.

Table 3.2 Potential bushfire intensity

BAU	VHC	Potential fuel load (tonnes/hectare)[1]	Slope (°)[2]	Potential bushfire intensity (kW/m)	Bushfire hazard class
1	VHC 29.3	20.1	1	14,224	Medium
1A	VHC 29.3	20.1	1	14,224	Medium
1B	VHC 29.3	-	-	< 4,000[3]	Non-bushfire hazard class
2	VHC 22.1	28.4	1	28,397	High
3	VHC 40.4	5	1	880	Non-bushfire hazard class[4]
4	VHC 41.4	3	0	296	Non-bushfire hazard class
5	VHC 42.6	2	0	131	Non-bushfire hazard class

Notes
1 Potential fuel load taken from the BRC guide.
2 Slope defaults to 0° for VHC 41.4 and VHC 42.6 which are defined in the BRC guide as a low hazard with discontinuous fuel.
3 The area of BAU 1B was assessed against the small patch and narrow corridor mapping rules in the BRC guide which is explained in Section 3.4.
4 VHC 40.4 is defined in the BRC guide as grassfire prone.

3.6 Bushfire hazard areas

Results of the potential bushfire intensity calculations in Table 3.2 confirm that the proposed development is within a bushfire hazard area. Therefore, the development application for the proposed development is subject to compliance with the Bushfire overlay code.

When further information is available about landscaping within the drainage structures to the north of BAU 1A in Figure 3.1, it is possible that this area could be re-assessed as a non-bushfire hazard class based on the small patch and narrow corridor mapping rules in Section 4.2.6 of the BRC guide.

4 Bushfire hazards associated with the site

This chapter identifies bushfire hazards associated with the site.

4.1 Fire danger season

The fire danger season at the site starts in August, peaks in September and will begin to fall when consistent summer rainfall occurs. Typically, the worst fire weather conditions will be experienced during the fire danger season when the wind direction is from the north or west.

An FFDI of 53 will be associated with hot, dry and windy conditions. If a bushfire starts and takes hold under these conditions, it will be difficult to control and fast moving in large areas of unmanaged vegetation.

4.2 Fire history

As discussed in Section 3.2, fire history data indicates numerous fires have occurred within 1 km of the site during the past 10 years and many of these fires have occurred in the forestry plantations and the Bells Creek Conservation area to the south and east of the site, respectively.

4.3 Potential directions of bushfire attack

The proposed development could be exposed to bushfire attack from BAU 1, BAU 1A and BAU 2, shown in Figure 3.1, where hazardous vegetation occurs. These bushfire attack scenarios are further analysed in Section 5.9.

When further information is available about landscaping within the drainage structures to the north of BAU 1A in Figure 3.1, it is possible that this area could be re-assessed as a non-bushfire hazard class based on the small patch and narrow corridor mapping rules in Section 4.2.6 of the BRC guide.

VHC 40.4 at BAU 3 is defined as grassfire prone in the BRC guide. Long grass at this BAU could carry a surface fire to the proposed development. Therefore, grassfire attack from BAU 3 is also analysed in Section 5.9.

4.4 Potential bushfire hazards from adjacent land uses

The rehabilitated environmental buffer on the eastern side of the Bells Creek Arterial Road and landscaping associated within the drainage structures within and adjoining proposed lot 9005 are the main potential bushfire hazards to the proposed development. Notwithstanding, agricultural and forestry uses in unmanaged vegetation to the south and east of the site could involve hot works, eg grinding, welding, etc, and are also a potential bushfire hazard.

4.5 Water and access for emergency services

The site will be provided with access to a mains water connection.

The Bells Creek Arterial Road is the only public road that provides access and egress for the proposed development. Notwithstanding, existing vehicle access tracks will be maintained within the context plan area to provide alternate emergency access and egress until the sub-arterial and trunk road network is developed.

5 Bushfire hazards associated with the proposed development

This chapter identifies potential bushfire hazards associated with the proposed development.

5.1 Siting and design

The proposed development will be designed to mitigate the risk of bushfire hazards determined by the bushfire hazard assessment in this BMP.

The site does not have topographical features, ie steep slopes or ridgelines, that increases the severity of bushfire hazard and influences the layout of the proposed allotments. Notwithstanding, boundaries of the proposed allotments or their development footprints will be appropriately separated from the hazardous vegetation at BAU 1, BAU 1A, BAU 2 and BAU 3, shown in Figure 3.1.

5.2 Land use

The proposed development includes allotments for a childcare and state primary school. The childcare and school land uses are defined as vulnerable uses in Table 7 of the SPP guidance material – bushfire. The school land use is also defined as community infrastructure for essential services.

As adjoining development occurs in accordance with the context plan in Appendix 1, the proposed allotments for the childcare and state primary school will not be within 100 m of hazardous vegetation at BAU 1, BAU 1A and BAU 2 and will not be affected by bushfire or grassfire hazard.

The proposed development does not involve the storage or handling of hazardous materials in the context of bushfire hazard as defined in Table 7 of the SPP guidance material – bushfire.

5.3 Drainage allotments

Parts of the proposed drainage allotments ie BAU 1A and BAU 1B, shown in Figure 3.1, will be landscaped with a variety of species from the sedge and heath communities occurring along the Bells Creek corridor and will correlate with VHC 29.3 as the landscaping matures.

There is potential for BAU 1A to be assessed as a non-bushfire hazard class based on the small patch and narrow corridor mapping rules in Section 4.2.6 of the BRC guide when further information is available about landscaping within the drainage allotments to the north. However, a conservative approach has been taken in this BMP and BAU 1A is treated as a potential bushfire hazard area.

The proposed residential allotments are separated from the potential bushfire hazard area at BAU 1A by a combination of local linear park and road reserve.

BAU 1B was assessed as a non-bushfire hazard class based on the small patch and narrow corridor mapping rules in Section 4.2.6 of the BRC guide.

5.4 Local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links

The proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links will be landscaped in accordance with the Aura Lakes SLI, be maintained areas and will have a low level of discontinuous bushfire fuel. As a result, they can be relied upon to provide a setback between any areas of potentially hazardous vegetation, ie BAU 1A, and the proposed residential allotments.

5.5 Bells Creek corridor and environmental buffers

The Bells Creek corridor does not adjoin the site. The environmental buffers are separated from the site by the Bells Creek Arterial Road which provides an appropriate setback between the hazardous vegetation associated with the environmental buffers and the proposed residential allotments.

5.6 State Forest

There are no State Forest pine plantations or Queensland Parks and Wildlife Service and Partnerships estate adjoining the site.

5.7 Fire-fighter water supply

The proposed development will be connected to mains water and a reticulated hydrant system will be installed in the new road reserves.

5.8 Access and egress

The proposed development includes a new sub-arterial road connection to the Bells Creek Arterial Road which is the only public road that provides access and egress for the proposed development.

As future development occurs within the context plan area additional access and egress routes will be provided via the proposed sub-arterial and trunk road network. Until the sub-arterial and trunk road network is developed, existing vehicle access tracks within the context plan area will be maintained to provide alternate emergency access and egress.

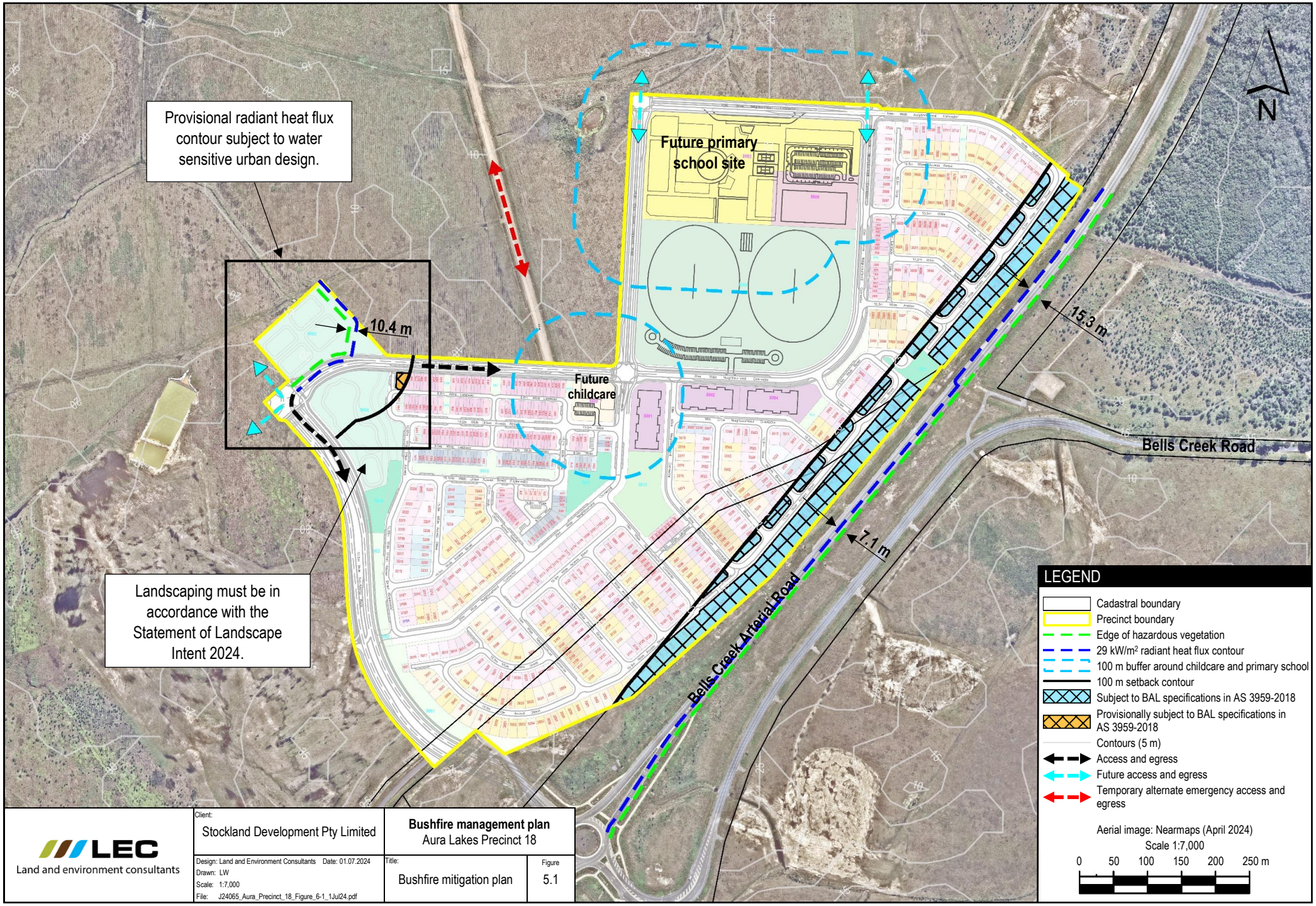
5.9 Radiant heat exposure

The Bushfire overlay code provides guidance about the acceptable level of radiant heat exposure for development within a bushfire hazard area. It requires development to provide allotment boundaries or development footprints (where they are identified in a proposal plan) which are separated from hazardous vegetation by a distance which achieves a radiant heat flux level ≤ 29 kW/m^2 at the boundaries or development footprints. The exceptions are allotments for a vulnerable use or community infrastructure for essential services which are required to be located outside of a bushfire hazard area, ie ≥ 100 m from hazardous vegetation.

As discussed in Section 4.3, the proposed development could be exposed to bushfire or grassfire attack from BAU 1, BAU 1A, BAU 2 and BAU 3 shown in Figure 3.1, where hazardous vegetation occurs. The radiant heat profile of these bushfire and grassfire attack scenarios were analysed with the BAL calculator. Inputs used in the BAL calculator and results are provided in Appendix 5.

Results of the radiant heat exposure assessment, which are presented in Figure 5.1, demonstrate the proposed development complies with the radiant heat exposure outcome of the Bushfire overlay code:

- the 29 kW/m^2 radiant heat flux contour measured from BAU 1, BAU 2 and BAU 3 is contained within the Bells Creek Arterial Road reserve and does not affect the site;
- the provisional 29 kW/m^2 radiant heat flux contour measured from BAU 1A is contained within a local linear park and road reserve and does not affect the boundaries of the proposed residential allotments adjoining the drainage allotment;
- the provisional radiant heat flux contour from BAU 1A is subject to water sensitive urban design and could be removed when further information is available about landscaping within the drainage allotments to the north; and
- the proposed allotments for childcare and state primary school are > 100 m from hazardous vegetation.



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Client: Stockland Development Pty Limited

Bushfire management plan
Aura Lakes Precinct 18

Design: Land and Environment Consultants Date: 01.07.2024
Drawn: LW
Scale: 1:7,000
File: J24065_Aura_Precinct_18_Figure_6-1_1Jul24.pdf

Title: Bushfire mitigation plan

Figure 5.1

6 Bushfire mitigation plan

This chapter identifies mitigation measures that must be implemented as part of the proposed development to comply with the Bushfire overlay code.

It is the total of the mitigation measures in this chapter that will reduce the risk of bushfire hazard to a tolerable level. Failure to implement all actions in their entirety could result in an increased level of exposure to bushfire hazards.

6.1 Landscaping

Landscaping within the proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links must also be in accordance with the Aura Lakes SLI and result in a low level of discontinuous bushfire fuel.

The proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links must be maintained at regular time intervals during the calendar year. Woody regrowth, weeds, rubbish and vegetation debris must be removed, and areas of turf must be maintained as lawn at a nominal height ≤ 100 millimetres.

6.2 Building design and construction

Building development applications for allotments within 100 m of hazardous vegetation, ie a designated bushfire prone area, must meet the mandatory bushfire provisions in the *Building Code of Australia* (ABCB 2022) (**BCA**) which may defer to the bushfire attack levels (**BAL**) and associated construction specifications in AS 3959-2018.

The residential allotments that are subject to (or provisionally subject to) the mandatory bushfire provisions in the BCA and BAL specifications in AS 3959-2018 are identified in Figure 5.1. A prospective purchaser of these residential allotments must be notified about the BAL rating at the point of sale.

6.3 Fire-fighter water supply

The proposed allotments must be connected to mains water and a hydrant system must be installed in the new road reserves.

The mains water supply connection must be in accordance with the local water retailer's specifications for supply and pressure.

The hydrant system must be designed and constructed in accordance with the Queensland Fire and Emergency Services *Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots* (QFES 2019b) (**Fire hydrant and vehicle access guidelines**) which defers to the local water retailer's specifications and the *Australian Standard* (**AS 2419.1-2021**) *Fire hydrant installations system design, installation and commissioning.*

Where there are differences between AS 2419.1-2021 and the local water retailer's specifications, the higher level standard should prevail.

6.4 Access and egress

New roads must be designed and constructed to meet requirements for an urban fire truck in the Fire hydrant and vehicle access guidelines which defers to the *Road Planning and Design Manual – 2nd Edition* (DTMR 2013) for load bearing capacity, geometry and turning radii.

The existing access track leading to the north of the site must be maintained as a temporary alternate emergency access and egress route until the sub-arterial and trunk road network is developed within the context plan area.

Access and egress, future access and egress and the temporary alternate emergency access and egress route are shown in Figure 5.1.

6.5 Service installation

Reticulated services, ie water, electricity, gas, and communications must be installed underground.

7 Conclusion

This BMP was prepared by a suitably qualified person and is in general accordance with the BRC guide.

A bushfire hazard assessment determined the site is within a bushfire hazard area and the development application for the proposed development is subject to compliance with the Bushfire overlay code.

Mitigation measures that must be implemented as part of the proposed development are specified in Chapter 6. With the implementation of these mitigation measures the proposed development complies with the Bushfire overlay code as demonstrated in Appendix 6.

References

Australian Building Codes Board (ABCB) 2022, *National Construction Code Series, Building Code of Australia*, Australian Government and States and Territories of Australia, adopted from 1 May 2023

Queensland Department of Resources (DR) 2024, *Queensland Globe*, accessed online at https://qldglobe.information.qld.gov.au/, January 2024

Queensland Department of Transport and Main Roads (DTMR) 2013, *Road Planning and Design Manual – 2nd Edition*, 2013

Queensland Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) 2019, *Natural Hazards, Risk and Resilience – Bushfire, State Planning Policy – state interest guidance material*, December 2019

Queensland Fire and Emergency Service (QFES) 2019a, *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire'*, October 2019

Queensland Fire and Emergency Service (QFES) 2019b *Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots*, March 2019

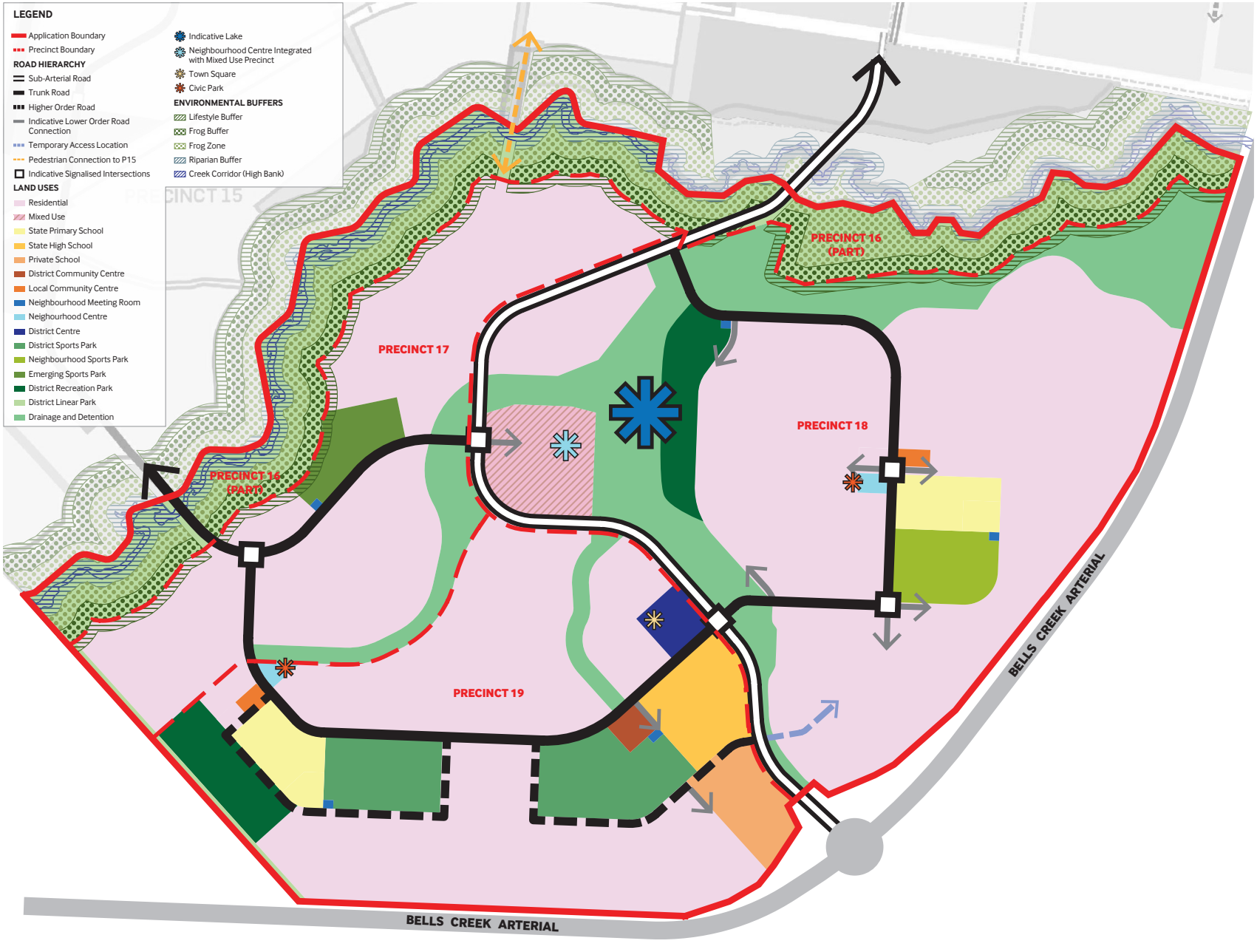
Queensland Fire and Emergency Services (QFES) 2024, *Catalyst - Sustainable development mapping system*, QFES Sustainable Development Unit, accessed online at https://catalyst.qfes.qld.gov.au/sdu/ via user login, January 2024

SMEC 2023, Caloundra South Priority Development Areas – Environmental Rehabilitation Plan – Aura Precincts 17, 18 and 19 and Part Precinct 6, prepared for Stockland Development Pty Ltd, 9 February 2023

Standards Australia Limited (Standards Australia) 2018, *Australian Standard 3959-2018 Construction of buildings in bushfire prone areas*, Fourth edition, November 2018

Urbis 2024, *Aura Lakes - Galalba - Statement of landscape intent,* prepared for Stockland Development Pty Limited, 10 April 2024

Appendix 1 Aura Lakes context plan



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AURA LAKES
SITE CONTEXT PLAN
P17, P18 & P19

PLAN REF: AU12885-14B
DATE: 22 MARCH 2024
CLIENT: STOCKLAND
DRAWN BY: MD / JC
CHECKED BY: MD / PHE

DISCLAIMER

The contents of this plan are conceptual and for discussion purposes only. All areas and dimensions are approximate and subject to relevant studies, survey, engineering and Council approval.

The information used in this plan is drawn from the following sources:

Site Boundaries: Urbis & RPS Survey.
Adjoining Context Area Information: Urbis.
Environmental Buffers: RPS Survey.

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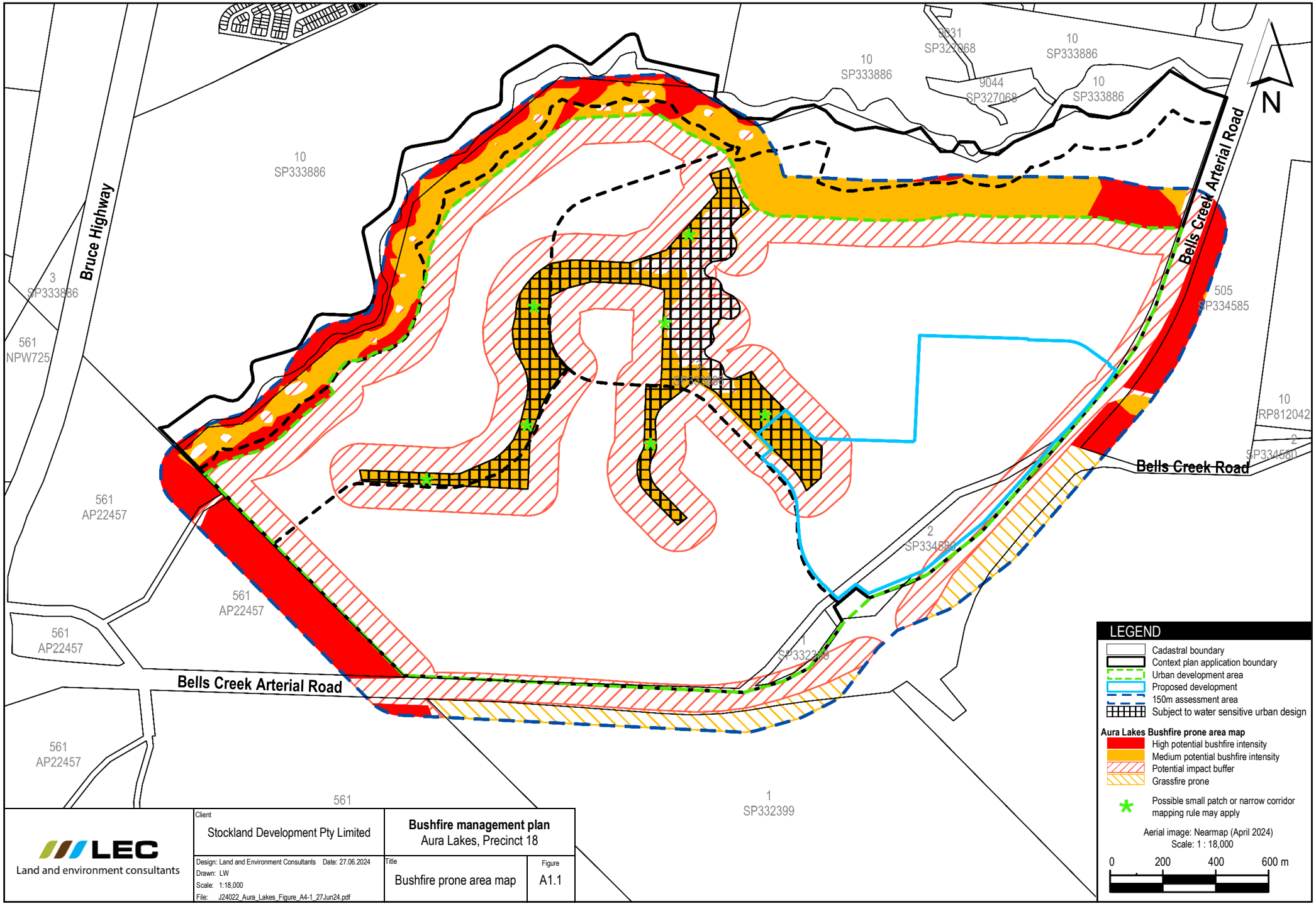
Appendix 2 Bushfire prone area map



LEC
Land and environment consultants

Client: Stockland Development Pty Limited	**Bushfire management plan** Aura Lakes, Precinct 18	
Design: Land and Environment Consultants Date: 27.06.2024 Drawn: LW Scale: 1:18,000 File: J24022_Aura_Lakes_Figure_A4-1_27Jun24.pdf	Title: Bushfire prone area map	Figure: A1.1

Appendix 3 Plan of subdivision

AURA LAKES

PLAN OF SUBDIVISION P18 OVERALL

0 20 40 60 80 100 1 : 4,000 @ A3

PLAN REF: AU12885 – 24
Rev No: B
DATE: 18 JUNE 2024
CLIENT: STOCKLAND
DRAWN BY: MD / JC
CHECKED BY: MD

Legend

- Aura Lakes Site Boundary
- P18 Stage Boundary
- Stage Boundary
- 1m Contours
- Lifestyle Buffer

Super Allotment

- Child Care
- Medium Density
- State Primary School
- Emerging Community
- Advertising Device

Open Space

- Drainage
- Local Linear Park
- Local Recreation Park
- Neighbourhood Recreation Park
- Neighbourhood Sports Park
- Road Reserve Embellishment / Pedestrian Linkage

Residential Allotments

Other

- Urban Warehouse - 12m x 14m
- Urban Loft Type A - 8.2m x 12m
- Urban Loft Type C - 8.5m x 12m

16.5m Deep

- Laneway Terrace - 6.6m x 16.5m
- Laneway Terrace - 6.6m+ x 16.5m (Ends)

21m Deep

- Laneway Terrace - 4.6m x 21m
- Laneway Terrace - 6.6m x 21m
- Laneway Terrace - 6.6m+ x 21m (Ends)

25m Deep

- Laneway Terrace - 4.6m x 25m
- Laneway Terrace - 6.6m x 25m
- Laneway Terrace - 6.6m+ x 25m (Ends)
- Front Loaded Terrace - 7.5m x 25m
- Front Loaded Terrace - 9m+ x 25m (Ends)
- Urban Villa - 8.5m x 25m
- Villa - 10m x 25m
- Premium Villa - 12.5m x 25m
- Courtyard - 14m x 25m
- Traditional - 16m x 25m

28m Deep

- Front Loaded Terrace - 7.5m x 28m
- Front Loaded Terrace - 9m+ x 28m (Ends)
- Urban Villa - 8.5m x 28m
- Villa - 10m x 28m
- Premium Villa - 12.5m x 28m
- Courtyard - 14m x 28m
- Traditional - 16m x 28m

30m Deep

- Villa - 10m x 30m
- Premium Villa - 12.5m x 30m
- Courtyard - 14m x 30m
- Traditional - 16m x 30m

Note:

All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Source Information:

Site boundaries: RPS Survey.
Adjoining information: RPS Survey.
Contours: Stantec.
Environment constraints: RPS Survey.

Stockland

AURA

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Appendix 4 Aura Lakes – Gagalba - Statement of landscape intent

AURA LAKES
GALALBA LAKES
STATEMENT OF LANDSCAPE INTENT

+ URBIS

REVISION: A
PREPARED BY URBIS FOR STOCKLAND
10 APRIL 2024

ACKNOWLEDGMENT OF COUNTRY

Urbis acknowledges the Kabi Kabi people and the Jinibara people, the Traditional Custodians of the land on which Aura is located. We pay our respects to their Elders past and present and would like to extend that respect to all Aboriginal and Torres Strait Islander peoples.

We recognise and respect the connection to their land, cultural heritage and community, and we acknowledge the important contribution that Kabi Kabi people and Jinibara people will have in creating a strong and vibrant Australian society.

PURPOSE
OF THIS LANDSCAPE MASTER PLAN

Landscape plays a vital role in the creation of unique connections between people and place. Successful communities are characterised by open spaces and signature places which facilitate interaction and invite intrigue and exploration.

This document articulates the landscape Master Plan for AURA Lakes, Application 1. This Master Plan is based on a detailed understanding and consideration of the site and of the 'Caloundra South Open Space Strategy' and the values, place principles, thematic elements and other environmental, civil, hydraulic and WSUD strategies being applied by Stockland across all facets of development at Caloundra South.

This document also illustrates compliance with the statutory open space requirements and the required standards of provision approved under the LGIA as well as demonstrates the proposed open space network. This document also provides descriptions of the proposed recreation park networks and hierarchy contained within Precinct 18.

This Landscape Master Plan is to be used as a guide to future planning and whilst it presents concept layouts and details, is indicative only and subject to change through detailed design. Following commencement of the Economic Development Act 2012 on 1st February 2012, the ULDA has become Economic Development Queensland (EDQ) and the Caloundra South UDA has become the Caloundra South Priority Development Area (PDA).

CONTENTS
DOCUMENT STRUCTURE

01

SITE LOCATION AND UNDERSTANDING

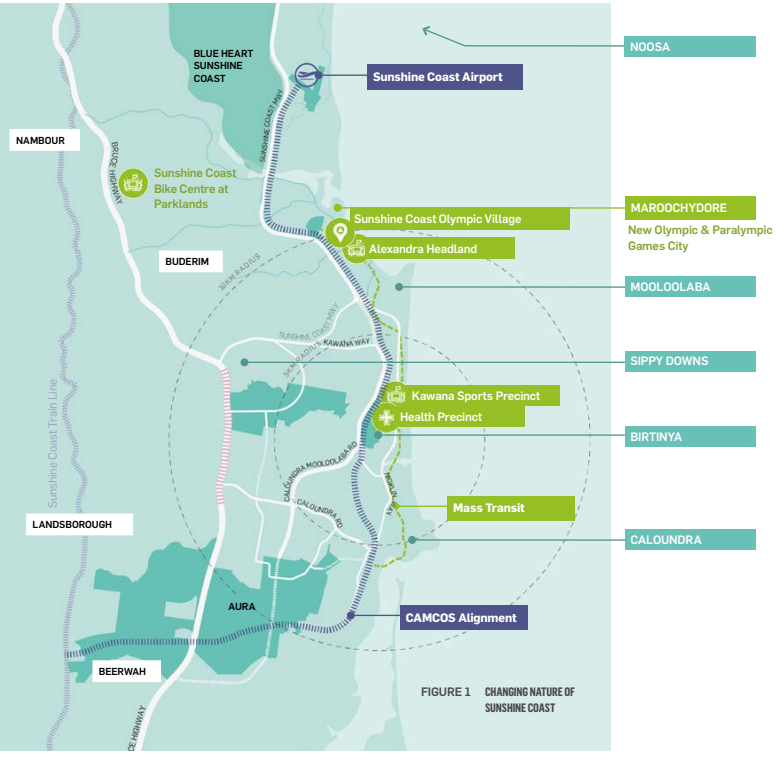


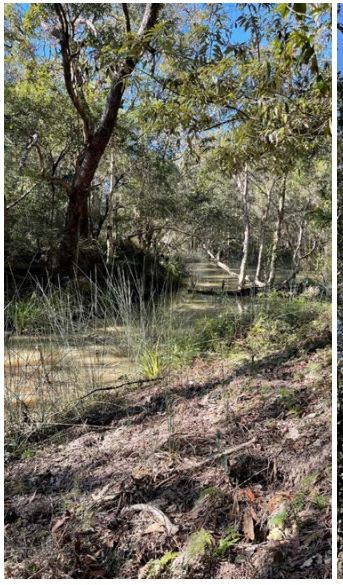
FIGURE 1 CHANGING NATURE OF SUNSHINE COAST

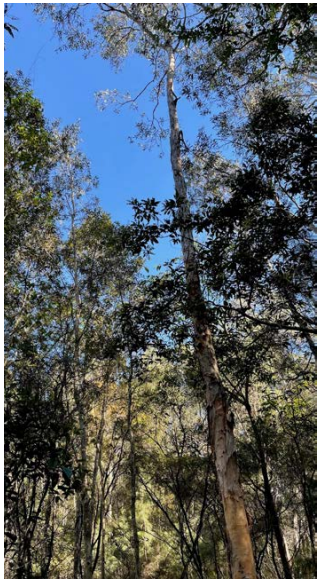

LEGEND
Application Boundary
Precinct Boundary
ROAD HIERARCHY
Sub-Arterial Road
Trunk Road
Higher Order Road
Indicative Lower Order Road Connection
Temporary Access Location
Pedestrian Connection to P15
Indicative Signalised Intersections
LAND USES
Residential
Mixed Use
State Primary School
State High School
Private School
District Community Centre
Local Community Centre
Neighbourhood Meeting Room
Neighbourhood Centre
District Centre
District Sports Park
Neighbourhood Sports Park
Emerging Sports Park
District Recreation Park
District Linear Park
Drainage and Detention
Conservation
Indicative Lake
Neighbourhood Centre Integrated with Mixed Use Precinct
Town Square
Civic Park
Lifestyle Buffer
PRECINCT 15
PRECINCT 16 (PART)
PRECINCT 17
PRECINCT 18
PRECINCT 16 (PART)
PRECINCT 19
ROL 1 - SUBJECT SITE
BELLS CREEK ARTERIAL
BELLS CREEK ARTERIAL
AURA LAKES
SITE CONTEXT PLAN
P17, P18 & P19
AU12885-14C
DISCLAIMER


SITE ANALYSIS PLAN
ROL 1

LANDSCAPE CHARACTER

Prior to development the site was predominantly land used as pasture. The design mazimises connection to the natural wonders of the nearby creeks and invokes thoughts of water throughout the development.





02

AURA LAKES VISION

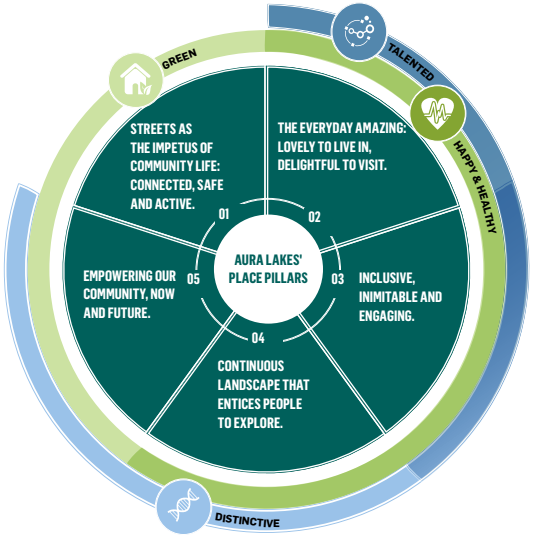
LIVING AURA'S AMBITION

AURA LAKES' PLACE FRAMEWORK

The city of Aura has been built on four strategic goals: green, talented, happy and healthy, Distinctive. These pillars build the basis for everything that has been created in the City of Colour, and will continue to be foundational goals for Aura Lakes.

Through a co-creation process, a clear intent has been derived for each of this goal. This enable us to crystalise the strategic intent of Aura Lakes and determine the place-specific ingredients that are required to realise the ambition to be a next generation liveable master-planned community. These place-specific ingredients are framed as 'place pillars' for Aura Lakes, supporting the realisation of the vision.

The following pages unfold the strategic intents, ambitions and pillars of Aura Lakes in further details, and how these align with Sunshine Coast Community Strategy 2019-2041, specifically the outcomes and policy objectives to build a strong community together.



ALIGNMENT WITH SCCS 201-2041'S OUTCOMES

	Green	Talented	Happy and Healthy	Distinctive
				
STRATEGIC INTENTS	DISTRICT SCALE SUSTAINABILITY IS A REAL OUTCOME.	AURA LAKES IS AND FEELS COSMOPOLITAN	OUR COMMUNITY IS HEALTHIER AND FEELS HAPPIER THAN GENERAL POPULATION	I HAVE A DEEPER CONNECTION TO AND CARE FOR LAND AND COUNTRY + I DON'T LEAVE AURA ON THE WEEKEND
AMBITION STATEMENTS	OUR WATER, WASTE, ENERGY, AND MOBILITY NETWORK ARE DESIGNED TO SUPPORT RESILIENCY OF OUR DISTRICT ECOSYSTEM. HOMES ARE AFFORDABLE, ACCESSIBLE, AND ADAPTABLE FOR ALL STAGES OF LIFE.	OUR DIVERSE CULTURE AND ASPIRATION ARE CELEBRATED AND INTEGRATED INTO OUR EVERYDAY LIVES.	GREEN AND ACTIVE LIFESTYLE – OUR COMMUNITY ENJOYS THE HEALTHIEST ENVIRONMENT OF THE COAST AND THE CONVENIENCE OF A SEAMLESSLY CONNECTED ACTIVE TRANSPORT NETWORK.	OUR NEIGHBOURHOOD HAS A GENUINE CONNECTION TO PLACE – OUR LANDSCAPE AND PLACES ARE CURATED TO CREATE A SENSORY AND MEMORABLE EXPERIENCES.
STRONG COMMUNITY OUTCOMES	CONNECTED, RESILIENT COMMUNITIES	VIBRANT COMMUNITIES + INCLUSIVE COMMUNITIES	HEALTHY, ACTIVE COMMUNITIES	CREATIVE, INNOVATIVE COMMUNITIES

ALIGNMENT WITH THE SCCS 2019-2041'S OUTCOMES

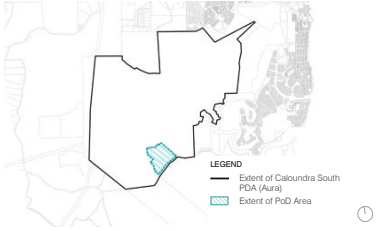
03

LANDSCAPE MASTER PLAN

LANDSCAPE MASTER PLAN
CALOUNDRA SOUTH PDA

The Caloundra South Priority Development Area (PDA, declared on 22 October 2010, covers 2,310 hectares and is located south of the existing Caloundra urban area, the Caloundra Aerodrome and the Sunshine Coast Regional Business and Industry Park. The Bruce Highway forms the western boundary and Bells Creek Road forms the southern boundary of the PDA.

The Caloundra South PDA will become a community providing approximately 20,000 dwellings to house a population of approximately 50,000 people. Vibrant, mixed use activity centres will provide a focus for the community and offer convenient access to retail, services, well designed civic spaces, community and cultural facilities and local employment opportunities. The PDA will provide for the enhancement of local and regional biodiversity values through the protection of ecologically important areas. Integrated water cycle management will contribute to protecting the water quality values of the Pumicestone Passage and the Bells Creek, Lamerough Creek riparian corridors and their tributaries.



AURA LAKES - GAGALBA

Precinct 18 (herein referred to as AURA Lakes) is located in the suburb of Gagalba, the most recent and Southern suburb of AURA. Located South of the suburb of Banya, Gagalba is adjacent to the Bruce Highway, as well as Bells Creek Arterial Road. The site itself includes Bells Creek South.

Gagalba means 'Shining place', inspired by the future lakes community. It is a neighbourhood surrounded by water bodies that embraces the life cycle movement of water and the habitat it fosters.

Built around a community that embraces the sustainable principles of water sensitive urban design (WSUD), AURA Lakes will cultivate a neighbourhood rich in aesthetically pleasing, harmoniously designed spaces that not only enhance social and recreational amenity, but offer environmental benefits such as natural systems and habitat protection, improvement of water quality, reduction of runoff, and integration of stormwater into the landscape. Aura Lakes will promote interaction with water to inspire and encourage adventure and discovery, and to educate visitors about the delicacy of our ecosystems.

LANDSCAPE MASTER PLAN
AURA LAKES - GAGALBA
PRECINCT 18 - ROL 1

AURA Lakes, Application 1 is the southern portion of the AURA Lakes precinct and will get direct access off of Bells Creek Arterial Road extension.

From a landscape and public realm character perspective, Application 1 will set the tone for the broader AURA Lakes precinct and deliver a unique arrival experience of deep green living, with access to water.

Drawing inspiration from water and water sensitive urban design principles, Application 1 will deliver a series of water bodies and water treatment catchments on the AURA Lakes arrival viewline. The water bodies will be immersed in green open space, inspired by the surrounding environment of Bells Creek South, delivering an urban design layout that threads the landscape into the village with a clear and direct focus on a vibrant central community hub.

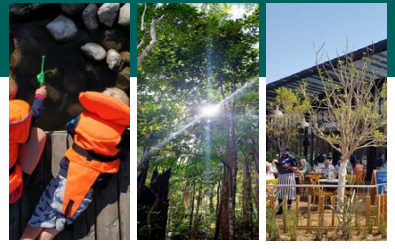
FIVE KEY PILLARS

PILLAR 1 -STREETS AS THE IMPETUS OF COMMUNITY LIFE: CONNECTED, SAFE AND ACTIVE.

PILLAR 2 - THE EVERYDAY AMAZING: LOVELY TO LIVE IN, DELIGHTFUL TO VISIT.

PILLAR 3 -INCLUSIVE, INIMITABLE AND ENGAGING.

PILLAR 4 -CONTINUOUS LANDSCAPE THAT ENTICES PEOPLE TO EXPLORE.



PILLAR 5 - EMPOWERING OUR COMMUNITY, NOW AND FUTURE.

PILLAR 1: STREETS AS THE IMPETUS OF COMMUNITY LIFE: CONNECTED, SAFE AND ACTIVE.

At Aura Lakes using our car is not the automatic choice - a seamless network of active and public transport enables our local and district movement patterns.

At Aura Lakes, street life forms part of our neighbourhood lifestyle. We provide robust active network with innovative mobility solutions to drive modal choice and shift in travel behaviour for the better – cleaner (energy) and more convenient.

Vibrant, people centred streets support our active neighbourhood lifestyle.

ACTIVE TRANSPORT NETWORK

LEGEND

- 3.0m WIDE CYCLE LANE
- 3.0m WIDE SHARED PATH
- 2m WIDE PEDESTRIAN PATH
- 1.8m WIDE PEDESTRIAN PATH

*1.5m wide pedestrian path all other roads

- BUS STOPS
- COMMUNITY AND SHOPS
- PARKS AND GREEN SPACE
- SCHOOLS

A network of clear pathways and through routes enables easy travel across ROL 1. On the edges of the site 3m wide cycle lane and 2m pedestrian path link ROL 1 to other parts of Aura lakes and the wider aura area.

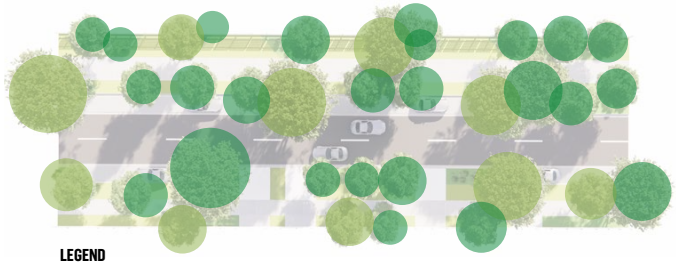
The shared paths draw residents and visitors to the water and connects them to the community, retail, school and sports facilities within the sites.

SHADE IN OUR STREETS

One of the primary benefits of integrating shade in streetscapes is the reduction of the urban heat island effect. This effect occurs when cities and towns experience significantly higher temperatures than surrounding rural areas due to human activities. With increasing urbanization, the urban heat island effect is becoming a significant problem in many cities worldwide. However, the provision of shade can help to mitigate this effect, as it reduces the amount of direct sunlight hitting the ground and buildings.

"STREET TREES ON ROUTES TO SCHOOL ENCOURAGE CHILDREN TO WALK TO SCHOOL AND PROMOTE WALKING AND CYCLING IN ADOLESCENTS AND ADULTS."

CONNECTED TREE CANOPY AND REDUCED HEAT ISLAND EFFECT



LEGEND

- STANDARD CANOPY COVER
- PROPOSED AURA ADDITIONAL CANOPY COVER

WAYFINDING AND SIGNAGE

PILLAR 2 - THE EVERYDAY AMAZING: LOVELY TO LIVE IN, DELIGHTFUL TO VISIT.

A diverse constellation of environments and experiences that reflect a mirage of moods and moments. Creating a network of destinations to explore, operating at different scales, where journeys overlap.

Creating inimitable places which evolve its spaces, paths and journeys (grain) together with its textures, scales, activations and programs (grit) to build character and identity.

Our homes are diverse, our buildings, streets and green spaces are designed for life.

RECREATION STRATEGY

The recreational strategy enables easy access to parks and play areas from the whole of the ROL 1 site and creates a green spine in which the rest of Aura lakes is connected. The linear open spaces create green links through the development giving priority for pedestrians and cyclist to transverse through housing blocks rather than around them.

LEGEND

- NEIGHBOURHOOD SPORTS PARK
- NEIGHBOURHOOD RECREATION PARK
- LOCAL RECREATION PARK
- LOCAL LINEAR OPEN SPACE
- DRAINAGE

ENTRY STATEMENTS INTO PRECINCT

The feature entry statement is located at the entrance to the site via Bells Creek Arterial Road. A series of poles will create a flowing effect to invoke the image of running water. The poles will be used at smaller scales to repeat that image across the whole site.

LEGEND

- ENTRY STATEMENTS
- ART OPPORTUNITIES
- PARKS AND GREEN SPACE

PARK DESIGNS

There is a variety of green spaces throughout ROL 1 creating a tapestry of green across ROL 1 creating community at different scales.

The Sports Park - both local and area wide sports events.

Little Spring Neighbourhood Recreation Park - the neighbourhood park for the residences of ROL 1 and the start of the water story.

Main Linear Park - Links the Little Spring Park to the wetland corridor and is an area for both play, education and local wildlife.

Local Recreation Park - Supports residents of ROL 1 with space to play and areas to socialise.

Wetland Corridor - A feature of Aura Lakes is the water and this area houses the first wetland as part of the arrival space. It also incorporates water filtration and storage seemlessly with the cycling and pedestrian pathways.

Urban Micro Forests and Mid Street Micro Forests - dwelling spaces within the street and spaces for larger canopy trees. Adoption of these spaces by local residents or students will be promoted.

Community Gardens - Spaces for residents to grow produce in a community setting.

NEIGHBOURHOOD SPORTS PARK

LEGEND

01 CRICKET FIELD
02 CRICKET PRACTICE AREA
03 FLAT LAWN
04 MOUNDED LAWN
05 DROP OFF AREA
06 CHANGE ROOMS AND VIEWING AREAS
07 PLANTING BED
08 CAR PARK
09 TURNING CIRCLE
10 FUTURE NEIGHBOURHOOD MEETING ROOMS

*Indicative design

WETLAND CORRIDOR & LOCAL RECREATION PARK

LEGEND

01 LOCAL RECREATION PARK BOUNDARY
02 LAWN
03 WETLAND
04 BIOBASIN
05 SEDIMENT BASIN
06 VIEWING PLATFORM
07 ENTRANCE FEATURE
08 SEATING
09 CONTRA-FLOW CYCLE PATH
10 LINK TO THE LINEAR PARK AND LITTLE SPRING PARK

*Indicative design

LITTLE SPRING NEIGHBOURHOOD RECREATION PARK

LEGEND

01 BREAKOUT LAWN (KICK AND THROW AREA)
02 ART OPPORTUNITY
03 MOUNDED PLANTING BED
04 LAWN
05 PLAYGROUND WITH SMALL CIVIL WATER PLAY
06 BIOBASIN / WETLAND
07 SHADE SHELTER WITH SEATING
08 BINS
09 CAR PARK
10 PLAYGROUND

*Indicative design

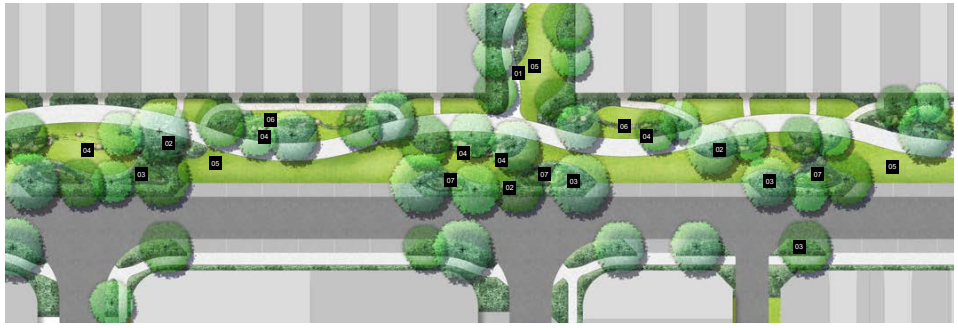
LOCAL RECREATION PARKS

LEGEND

- 01 BREAKOUT LAWN (KICK AND THROW AREA)
- 02 ART OPPORTUNITY
- 03 MOUNDED PLANTING BED
- 04 LAWN
- 05 SHADE SHELTER WITH SEATING
- 06 BIOBASIN / WETLAND
- 07 SHADE SHELTER WITH SEATING
- 08 BINS
- 09 CAR PARK

MAIN LINEAR PARK

*Indicative design

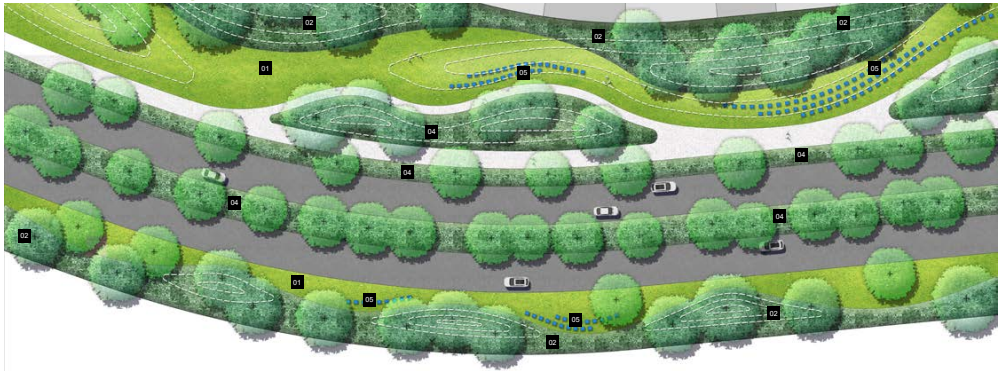


LEGEND

- 01 MAIN LINK NORTH WITH CLEAR VISA
- 02 PLANTING BEDS
- 03 PASSIVE IRRIGATED TREES
- 04 BOULDERS
- 05 LAWN
- 06 DRY SWALE
- 07 DRY BASIN (PASSIVE)

ENTRY STATEMENTS

*Indicative design



LEGEND

01 LAWN
02 PLANTING BEDS
03 PASSIVE IRRIGATED TREES
04 TREES WITH LOW GROUNDCOVERS ENABLING PASSIVE SURVEILLANCE
05 ENTRY STATEMENT ARTWORK

TYPICAL BOULEVARD

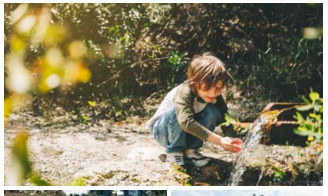
*Indicative design

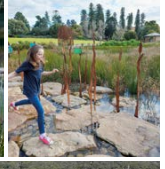
LEGEND

01 LAWN
02 PLANTING BEDS
03 PASSIVE IRRIGATED TREES
04 STREETSIDE BIO-RETENTION
05 ON-STREET CAR PARKING
06 TREES WITH LOW GROUNDCOVERS ENABLING SLIGHT LINES
07 SEATING
08 CYCLE LANE
09 PRIVATE DRIVEWAYS

The blue corridors and spaces are part of community's daily life.

It defines our identity and extends our appeal. There are symphony of sensory experience along the blue corridors. Communities are encouraged to meet, gather and interact in and around the blue spaces - creating a shared rituals and memories, not like anywhere else.





LATEST TECHNOLOGY AND DETAILS

STRUCTURAL CELL

SWALES

TURF IN PAVERS

RAIN GARDENS

PERMEABLE PAVING

BIOBASINS

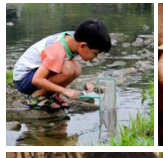
This development places a strong emphasis on celebrating the presence of water in the environment. Through the implementation of various Water Sensitive Urban Design (WSUD) technologies along the streets. Our objective is to make the most of rainfall on site allowing for its intentional capture on site for irrigation, cooling, and biodiversity benefits.

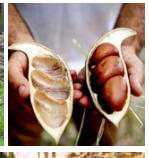
INTEGRATED WSUD JOURNEY

LEGEND

- ROAD RUN-OFF TO IRRIGATE ADJACENT GREENSPACE
- STREETSIDE BIO-RETENTION
- SWALES
- DRY SWALE
- BIO-BASINS
- WETLANDS
- DRY BIO-BASINS

EDUCATION AND STEWARDSHIP





PILLAR 4 - CONTINUOUS LANDSCAPE THAT ENTICES PEOPLE TO EXPLORE.

The green and blue spaces of Aura Lakes are connected, restorative and experience driven. These spaces are carefully designed to enable opportunities for cultural, recreation, informal sport, and daily active use. Encouraging constant exploration and supporting a robust relationship with nature that can strengthen community health and wellbeing.

INTEGRATED THREADS OF GREEN

To inspire connection to the environment within ROL 1, there is a suite of different and unique experiences within the precinct. Along the links within ROL1 there are wetlands, pocket parks, dry swales, rainagardens and biobasins emphasising the significance of water and nature. For the local streets of ROL 1, there is a focus on creating extra amenity for the terrace blocks and streets by creating community building pocket spaces and space for large canopy trees.

LEGEND

- RECREATIONAL PARKS WITH LAWN KICK AND THROW LAWN AREAS
- ECO-PARKS - A CHANCE TO CONNECT TO NATURE AND WILDLIFE
- MICRO FORESTS, COMMUNITY GARDENS AND POCKET-PARKS
- MID STREET MICRO FOREST - SPACE FOR SUBSTANCE GREEN AND TREES
- GREEN LINKS BETWEEN BLOCKS
- ⟷ BROADER COMMUNITY LINK
- ⟷ LOCAL NEIGHBOURHOOD LINK

PLANT PALETTE

PLANTING CHARACTER

CIVIC SPACES

The planting of AURA Lakes within the urban areas, will be lush and verdant, reminiscent of the Sunshine Coast Hinterland, to create a truly subtropical environment. The planting approach will create a deep green and exemplary urban landscape with clearly visible layers of subtropical planting. The planting strategy will apply a combination of unique species selected for their ability to enhance the overall vitality and verdant character.

PLANTING CHARACTER

SWALES, CREEKS, WSUD WATERBODIES AND OPEN SPACE

The planting adjacent to the wetlands and WSUD water bodies, will take on a more native, character, offering a natural relief, whilst also remaining tough, hardy and low maintenance. The native species will also assist in the stabilisation of the landforms, as well as dramatically increase the water quality within the wetland systems, through the use of suitable sedges and wetland species. Planting will include more forest / woodland / heath-type planting communities, appropriate to form dense landscape buffers along the existing creeklines.

PLANT PALETTE

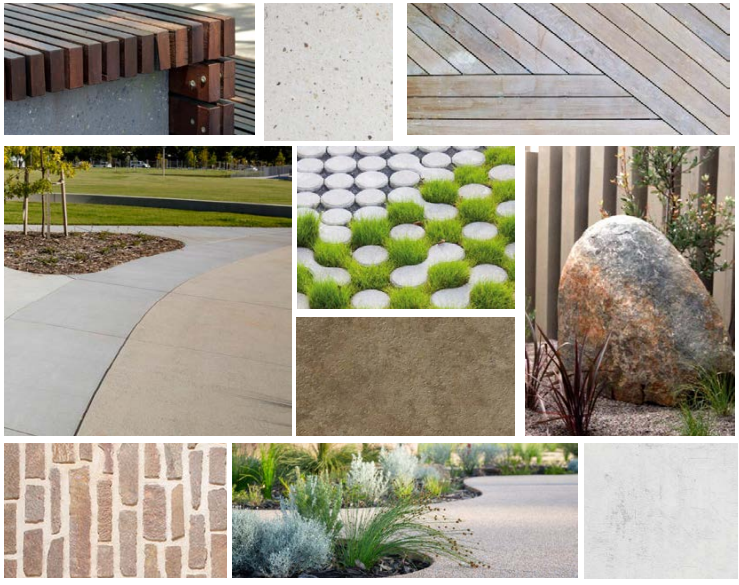
PLANTING THAT IS LEAFY, LUSH AND DEEP GREEN

MATERIALITY

The hardscape finishes and detail will create a unique public setting that uses colour, texture and form to drive fluidity in the ground-plane. The design and application of materials throughout the public realm will be characterised by a range of materials that enhance the essence of the various spaces and complement any adjoining architecture.

- Material selection and detailing will be driven by qualities including:
- Unique combinations of materials
- Unit sizes to create grain that supports spacial form
- Variation in finishes to add tone and texture whilst maintaining cohesion
- Climatically responsive materials that reduce heat and glare
- Robust, low maintenance material selection for all elements

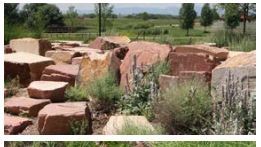
This robustness of materials would be achieved through the use of natural, sustainable material such as Australian hardwood timbers and locally sourced pine (where appropriate), porous, bush-trail bitumen products, instead of decomposed granite, and powder-coated mild steel work, in replace of corten steel.











PILLAR 5 - EMPOWERING OUR COMMUNITY, NOW AND FUTURE.

We are inspiring and enabling people to write their own story, delivering education fit for a new future with assets and facilities that support learning everywhere and all the time.

We actively engage local people in the curation of purposeful places that encourage social interactions and create collective memory to strengthen social cohesion and social capital.








SOCIAL SPACES

As this will be a new community, it is important to form a network of designations for local events and to draw people both locally and from the wider community. The landscaping area form an important part of this network creating a range of opportunities for people to interact in the outdoor environment.

LEGEND

- PARKS
- MICRO FORESTS, COMMUNITY GARDENS AND POCKET-PARKS
- COMMUNITY SPACES
- SCHOOLS

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Appendix 5 Radiant heat exposure assessment

Bushfire attack from BAU 1 and BAU 1A

- Forest fire danger index - 53
- Vegetation - VHC 29.3 *Heathlands and associated scrubs and shrublands*
- Understorey fuel load – 14.5 tonnes/hectare (**t/ha**)
- Total fuel load – 20.1 t/ha
- Effective slope – 1° slope
- Site slope – 0° slope
- Flame width – 100 metres (**m**)
- Flame temperature – 1,090 Kelvin (**K**)

Note Inputs used for the radiant heat exposure assessment are in accordance with Section 7.3 of *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire 2019* (**Bushfire resilient communities**).

Calculated March 28, 2024, 12:59 pm (MDc v.4.9)

J24024

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	53	Rate of spread	3.07 km/h
Vegetation classification	Shrubland	Flame length	9.140000000000001 m
Understorey fuel load	14.5 t/ha	Flame angle	54 °, 64 °, 72 °, 77 °, 79 ° & 84 °
Total fuel load	20.1 t/ha	Elevation of receiver	3.69 m, 4.1 m, 4.34 m, 4.45 m, 4.48 m & 4.54 m
Vegetation height	m	Fire intensity	31,884 kW/m
Effective slope	1 °	Transmissivity	0.883, 0.869, 0.849, 0.827, 0.8139999999999999 & 0.743
Site slope	0 °	Viewfactor	0.5931, 0.4342, 0.2921, 0.1983, 0.1614 & 0.0441
Flame width	100 m	Minimum distance to < 40 kW/m²	7.6 m
Windspeed	45 km/h	Minimum distance to < 29 kW/m²	10.4 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	15.4 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	22.4 m
		Minimum distance to < 10 kW/m²	27 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

Bushfire attack from BAU 2

- Forest fire danger index - 53
- Vegetation - VHC 22.1 *Melaleuca open forests on seasonally inundated lowland coastal swamps*
- Understorey fuel load – 23.4 tonnes/hectare
- Total fuel load – 28.4 t/ha
- Effective slope – 1° slope
- Site slope – 0° slope
- Flame width – 100 m
- Flame temperature – 1,090 K

Note Inputs used for the radiant heat exposure assessment are in accordance with Section 7.3 of Bushfire resilient communities.

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Calculated March 28, 2024, 12:53 pm (MDc v.4.9)

J24024

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	53	Rate of spread	1.59 km/h
Vegetation classification	Forest	Flame length	13.77 m
Understorey fuel load	23.4 t/ha	Flame angle	53 °, 63 °, 71 °, 75 °, 77 ° & 83 °
Total fuel load	28.4 t/ha	Elevation of receiver	5.49 m, 6.13 m, 6.51 m, 6.65 m, 6.7 m & 6.83 m
Vegetation height	n/a	Fire intensity	23,397 kW/m
Effective slope	1 °	Transmissivity	0.873, 0.855, 0.83, 0.805, 0.791 & 0.729
Site slope	0 °	Viewfactor	0.5978, 0.4442, 0.2999, 0.2039, 0.1658 & 0.045
Flame width	100 m	Minimum distance to < 40 kW/m²	11.4 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	15.3 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	22.4 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	31.6 m
		Minimum distance to < 10 kW/m²	37.5 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

Bushfire attack from BAU 3

- Forest fire danger index – 53
- Grassfire danger index - 76
- Vegetation - VHC 40.4 *Continuous low grass or tree cover*
- Understorey fuel load – 4.5 t/ha
- Total fuel load – 5 t/ha
- Effective slope – 1° slope
- Site slope – 0° slope
- Flame width – 100 m
- Flame temperature – 1,090 K

Note Inputs used for the radiant heat exposure assessment are in accordance with Section 7.3 of Bushfire resilient communities.

FLAMESOL
FPA AUSTRALIA

Calculated June 17, 2024, 1:47 pm (MDc v.4.9)

J24022

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Grassland Fire Danger Index	76	Rate of spread	10.58 km/h
Vegetation classification	Grassland	Flame length	6.23 m
Understorey fuel load	4.5 t/ha	Flame angle	54 °, 64 °, 73 °, 78 °, 80 ° & 85 °
Total fuel load	5 t/ha	Elevation of receiver	2.52 m, 2.8 m, 2.98 m, 3.04 m, 3.06 m & 3.1 m
Vegetation height	n/a	Fire intensity	27,346 kW/m
Effective slope	1 °	Transmissivity	0.889, 0.879, 0.864, 0.845, 0.834 & 0.759
Site slope	0 °	Viewfactor	0.5879, 0.4325, 0.2876, 0.1938, 0.1574 & 0.0431
Flame width	100 m	Minimum distance to < 40 kW/m²	5.2 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	7.1 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	10.7 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	15.8 m
		Minimum distance to < 10 kW/m²	19.4 m

Rate of Spread - Noble et al. 1980

Flame length - Purton, 1982

Elevation of receiver - Douglas & Tan, 2005

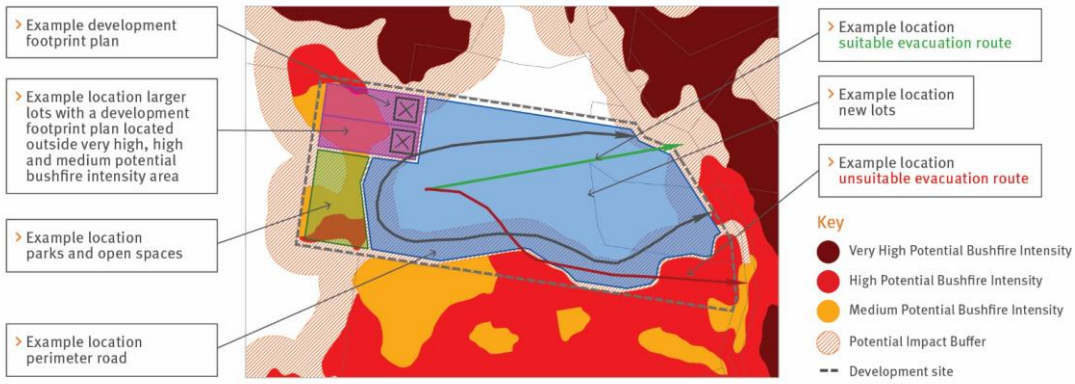
Flame angle - Douglas & Tan, 2005

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

Appendix 6 Bushfire overlay code assessment

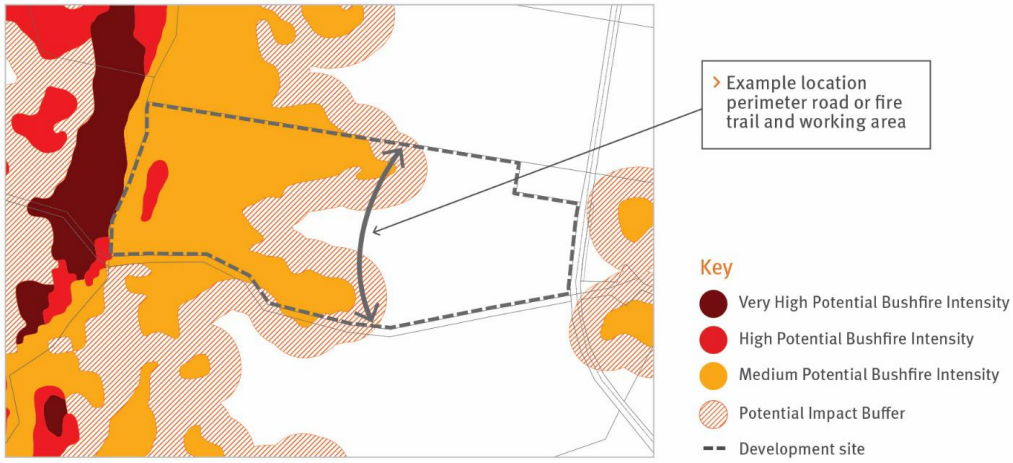
Performance outcomes	Acceptable outcomes	Compliance assessment
Section A **Reconfiguring a lot (RaL) – where creating lots of more than 2,000 square metres**		
PO1 The subdivision layout: (a) enables future buildings to be located away from slopes and land forms that expose people or property to an intolerable risk to life or property; and (b) facilitates emergency access and operational space for firefighters in a reduced fuel area between future buildings and structures and hazardous vegetation, that reduce risk to an acceptable or tolerable level. Note – An applicant may seek to undertake a site-level verification of the location and nature of hazardous vegetation and resulting potential bushfire intensity levels, for example where changes in foliage have occurred (e.g. as a consequence of adjoining permanent urban development) or where an applicant seeks to verify the regional ecosystem map inputs. This verification should form part of a bushfire hazard assessment in accordance with the methodology in the QFES *Bushfire resilient communities* document. The outcomes of this assessment can demonstrate how an alternate solution to the acceptable outcome can deliver an acceptable or tolerable level of risk.	**AO1.1** A development footprint plan is identified for each lot that avoids ridgelines, saddles and crests where slopes exceed 15 per cent. **AO1.2** A development footprint plan is identified for each lot that is separated from the closest edge to the adjacent mapped medium, high or very high potential bushfire intensity area by: (a) a distance that is no closer than the distances specified in Table 5 at all development footprint plan boundaries; or (b) a distance that achieves a radiant heat flux level of 29 kW/m2 or less at all development footprint plan boundaries. Note – This separation area is often termed an asset protection zone. Note – The radiant heat flux levels can be established by undertaking a bushfire hazard assessment in accordance with the methodology in the QFES Bushfire resilient communities document.	**Not applicable** The proposed development does not involve creating allotments > 2,000 square metres (**m^2**).
PO2 The subdivision layout enables: (a) future buildings to be located as close as possible to property entrances to facilitate safe evacuation during a bushfire event; and (b) future site access to be located and designed to allow safe evacuation of the site by occupants and maintain access by emergency services under critical event conditions.	**AO2** A development footprint plan is identified for each lot that: (a) is located within 60 metres of the street frontage; and (b) sited to enable a route between the development footprint plan and the street frontage with a gradient that does not exceed of 12.5 per cent.	**Not applicable** The proposed development does not involve creating allotments > 2,000 m^2.
Section B		
Reconfiguring a lot (RaL) – where creating lots of 2,000 square metres or less		

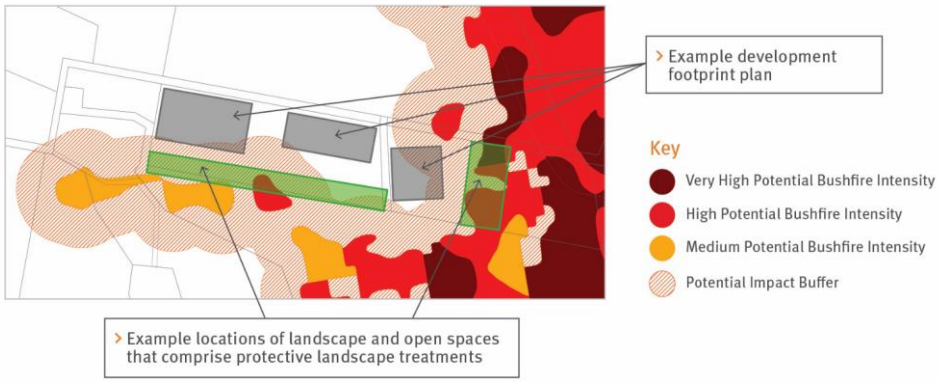
Performance outcomes	Acceptable outcomes	Compliance assessment
PO3 The subdivision layout: (a) avoids creating lots on slopes and land forms that expose people or property to an intolerable risk to life or property; and (b) facilitates emergency access and operational space for firefighters in a reduced fuel area between future buildings and structures and hazardous vegetation, that reduce risk to an acceptable or tolerable level. Note – An applicant may seek to undertake a site-level verification of the location and nature of hazardous vegetation and resulting potential bushfire intensity levels, for example where changes in foliage have occurred (e.g. as a consequence of adjoining permanent urban development) or where an applicant seeks to verify the regional ecosystem map inputs. This verification should form part of a bushfire hazard assessment, in accordance with the methodology in the QFES *Bushfire resilient communities* document. The outcomes of this assessment can demonstrate how an alternate solution to the acceptable outcome can deliver an acceptable or tolerable level of risk.	**AO3.1** The subdivision layout results in lots that are sited so that they are separated from the closest edge to the adjacent mapped medium, high or very high potential bushfire intensity area by: (a) a distance that is no closer than the distances specified in Table 5 at all lot boundaries; or : (b) a distance that achieves a radiant heat flux level of 29 kW/m^2 or less: (i) at the building envelope, if identified at RaL stage; or (ii) where a building envelope is not identified, at all lot boundaries. Note – This separation area is often termed an asset protection zone. Note – The radiant heat flux levels can be established by undertaking a bushfire hazard assessment in accordance with the methodology in the QFES *Bushfire resilient communities* document. Note – For staged developments, temporary separation areas may be absorbed as part of subsequent stages. Note - Existing cleared areas external to the site may only be used in calculating necessary separation where tenure ensures that the land will remain cleared of hazardous vegetation (for example the land is a road, watercourse or highly managed park in public ownership).	**Complies with AO3.1** The proposed allotments will have boundaries which are setback from hazardous vegetation by a distance which achieves a radiant heat flux level ≤ 29 Kilowatts(**kW**)/m^2. Figure 5.1 in the bushfire management plan (**BMP**) demonstrates the 29 kW/m^2 radiant heat flux contours are contained within road reserves and local linear park.
	AO3.2 The subdivision layout does not create lots that are within bushfire prone areas and on ridgelines, saddles and crests where slopes exceed 15 per cent (roads and parks may be located in these areas).	**Complies with AO3.2** The site does not have topographical features, ie steep slopes or ridgelines, that increase the severity of bushfire hazard and influences the layout of the proposed allotments.
Section C		
Reconfiguring a lot (RaL) – where creating more than 20 lots		
PO4 The subdivision layout is designed to minimise the length of the development perimeter and number of lots exposed to hazardous vegetation. Note – For example, avoid finger-like subdivision patterns or substantive	**AO4** No acceptable outcome is prescribed	**Complies with PO4** The proposed development does not include finger-like subdivision patterns or substantive vegetation corridors between lots. The proposed allotments will have boundaries which are setback from

Performance outcomes	Acceptable outcomes	Compliance assessment
vegetated corridors between lots.		hazardous vegetation by a distance which achieves a radiant heat flux level ≤ 29 kW/m^2. Figure 5.1 in the BMP demonstrates the 29 kW/m^2 radiant heat flux contours are contained within road reserves and local linear park.
PO5 The subdivision layout provides for adequate access and egress and safe evacuation routes, to achieve an acceptable or tolerable risk to people.	**AO5.1** The subdivision layout: (a) avoids the creation of bottle-neck points in the movement network within the development (for example, avoids hourglass patterns); and (b) ensures the road network has sufficient capacity for the evacuating population.	**Complies with PO5** The proposed development includes a new sub-arterial road connection to the Bells Creek Arterial Road which is the only public road that provides access and egress for the proposed development. As future development occurs within the Aura Lakes context plan area (**context plan area**) additional access and egress routes will be provided via the proposed sub-arterial and trunk road network. Until the sub-arterial and trunk road network is developed, existing vehicle access tracks within the context plan area will be maintained to provide alternate emergency access and egress.
	AO5.2 The subdivision layout ensures evacuation routes: (a) direct occupants away from rather than towards or through areas with a greater potential bushfire intensity; and (b) minimise the length of route through bushfire prone areas. Refer Figure 5.	
 *Figure 5 – Subdivision layout and evacuation routes*		
PO6 The subdivision layout provides adequate buffers between hazardous vegetation and development. Note – An applicant may seek to undertake a site-level verification of the location and nature of hazardous vegetation and resulting potential bushfire intensity levels, for example where changes in foliage have occurred (e.g. as a consequence of adjoining permanent	**AO6.1** The subdivision layout results in an asset protection zone being located to create a separation area from adjacent mapped medium, high or very high potential bushfire intensity areas.	**Complies with AO6.1, AO6.2 and AO6.3** Figure 5.1 of the BMP demonstrates the setbacks from hazardous vegetation to the 29 kW/m^2 radiant heat flux contours are contained within road reserves and local linear park. Development footprint plans are not required.
	AO6.2 The asset protection zone is comprised of: (a) parks and open spaces; and/or	

Performance outcomes	Acceptable outcomes	Compliance assessment
urban development) or where an applicant seeks to verify the regional ecosystem map inputs. This verification should form part of a bushfire hazard assessment, in accordance with the methodology in the QFES *Bushfire resilient communities* document. The outcomes of this assessment can demonstrate how an alternate solution to the acceptable outcome can deliver an acceptable or tolerable level of risk.	(b) lots greater than 2000 square metres; and/or (c) public roads (termed perimeter roads). Note – Parks and open space may be located within the mapped medium, high and very high potential bushfire intensity areas to create a separation between the development and the balance of the bushfire prone area. Note – Portions of lots greater than 2000 square metres may be located within the mapped medium, high and very high potential bushfire intensity areas. Refer Figure 5.	
	AO6.3 Where the asset protection zone includes lots greater than 2000 square metres a development footprint plan is identified for each lot that is located in accordance with AO1.2.	
PO7 Parks or open space provided as part of the asset protection zone do not create additional bushfire prone areas. Note –The undertaking of a bushfire hazard assessment, in accordance with the methodology in the QFES *Bushfire resilient communities* document may assist in demonstrating compliance with this performance outcome.	**AO7** Where the asset protection zone includes parks or open spaces, they: (a) comprise only low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, cultivated gardens and nature strips; or (b) are designed to ensure a potential available fuel load is maintained at less than eight tonnes/hectare in aggregate and with a fuel structure that remains discontinuous. Note – Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack, for example short-cropped grass to a nominal height of 10 centimetres.	**Complies with AO7** Landscaping within the proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links will be in accordance with the *Aura Lakes – Galalba - Statement of Landscape Intent 2024* (**Aura Lakes SLI**) and will result in a low level of discontinuous bushfire fuel. The proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links will be maintained at regular time intervals during the calendar year. Woody regrowth, weeds, rubbish and vegetation debris will be removed and areas of turf will be maintained as lawn at a nominal height ≤ 100 millimetres.
PO8 Perimeter roads are accessible for fire-fighting vehicles, to facilitate emergency access and operational space for fire- fighting, maintenance works and hazard reduction activities.	**AO8.1** Where the asset protection zone includes a perimeter road it: (a) has a two-lane sealed carriageway clear of hazardous vegetation; and (b) is connected to the wider public road network at both ends and at intervals of no more than 200 metres; and (c) does not include design	**Complies with AO8.1 and AO8.2** The road that separates the provision bushfire hazard area within proposed lot 9005 complies with AO8.1(a)-(c). Sections 6.3 and 6.4 of the BMP require the road network and hydrants to be designed in accordance with AO8.2(a)-(b).

Performance outcomes	Acceptable outcomes	Compliance assessment
	elements that may impede access for fire-fighting and maintenance for fire- fighting purposes (for example traffic calming involving chicanes).	
	AO8.2 Where the subdivision contains a reticulated water supply, the road network and fire hydrants are designed and installed in accordance with: (a) *Fire Hydrant and Vehicle Access Guidelines for residential, commercial and industrial lots*, Queensland Fire and Emergency Services, 2015, unless otherwise specified by the relevant water entity; and (b) the *Road Planning and Design Manual 2nd edition*, Department of Transport and Main Roads, 2013.	**Complies with AO8.2** Sections 6.3 and 6.4 of the BMP require the road network and hydrants to be designed in accordance with AO8.2(a)-(b).
Section D		
Reconfiguring a lot (RaL) – where creating additional lots for the purpose of residential development and a reticulated water supply is not provided.		
PO9 The subdivision layout provides for perimeter roads or fire trail and working areas that are accessible by the type of fire-fighting vehicles servicing the area, to facilitate emergency access and operational space for fire-fighting, maintenance works and hazard reduction activities.	**AO9.1** The subdivision layout includes: (a) a fire trail and working area designed and constructed in accordance with the design parameters in Table 6 that separates the residential lot or development footprint plan from adjacent mapped medium, high or very high potential bushfire intensity areas; or (b) a perimeter road designed and constructed in accordance with AO8.1. Refer Figure 6.	**Not applicable** The proposed development will be connected to mains water.

Performance outcomes	Acceptable outcomes	Compliance assessment
 *Figure 6 – Siting of fire trail and working area*		
Section E		
Material change of use		
PO10 Site layout achieve an acceptable or tolerable risk to people. Landscape or open space provided as part of the development: (a) acts as a buffer between hazardous vegetation and development; and (b) does not create additional bushfire prone areas. Note – An applicant may seek to undertake a site-level verification of the location and nature of hazardous vegetation and resulting potential bushfire intensity levels, for example where changes in foliage have occurred (e.g. as a consequence of adjoining permanent urban development) or where an applicant seeks to verify the regional ecosystem map inputs. This verification should form part of a bushfire hazard assessment in accordance with the methodology in the QFES *Bushfire resilient communities* document. The outcomes of this assessment can demonstrate how an alternate solution to the acceptable outcome can deliver an acceptable or tolerable level of risk.	**AO10.1** Site layout places the landscape and open spaces within the site between premises and adjacent mapped medium, high or very high potential bushfire intensity areas. Refer Figure 7.	**Complies with AO10.1** Figure 5.1 of the BMP demonstrates the setbacks from hazardous vegetation to the 29 kW/m^2 radiant heat flux contours are contained within road reserves and local linear park. Development footprint plans are not required.
	AO10.2 This landscaping and open space comprises protective landscape treatments that: (a) comprise only low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses and cultivated gardens; or (b) are designed to ensure a potential available fuel load is maintained at less than 8 tonnes/hectare in aggregate and that fuel structure remains discontinuous. Note – Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack, for example short-cropped grass to a nominal height of 10 centimetres.	**Complies with AO10.2** Landscaping within the proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links will be in accordance with the Aura Lakes SLI and will result in a low level of discontinuous bushfire fuel. The proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links will be maintained at regular time intervals during the calendar year. Woody regrowth, weeds, rubbish and vegetation debris will be removed and areas of turf will be maintained as lawn at a nominal height ≤ 100 millimetres (**mm**).

Performance outcomes	Acceptable outcomes	Compliance assessment
 *Figure 7 – Siting of protective landscape treatments*		
PO11 The development establishes evacuation areas, to achieve an acceptable or tolerable risk to people.	**AO11** If in an isolated location, development establishes direct access to a safe assembly/evacuation area. Note – Guidance on identifying safe evacuation areas is contained in the QFES *Bushfire resilient communities* document.	**Not applicable** The proposed development is not in an isolated location. Notwithstanding, the proposed state primary school and neighbourhood sports park are not affected by bushfire hazard and would provide a safe assembly or evacuation area.
PO12 If on a lot of over 2,000 m^2, where involving a new premises or an existing premises with an increase in development footprint, development: (a) locates occupied areas as close as possible to property entrances to facilitate safe evacuation during a bushfire event; and (b) ensures vehicular access is located and designed to allow safe evacuation of the site by occupants and maintain access by emergency services under critical event conditions	**AO12** No acceptable outcome is prescribed.	**Not applicable** The proposed development does not involve new premises or existing premises.
PO13 Development is located within a reticulated water supply area or includes a dedicated static water supply that is available solely for fire-fighting purposes and can be accessed by fire-fighting vehicles. Note – Swimming pools, farm ponds and dams are not considered reliable sources of static water supply in Queensland due to regular drought events. Note for Local Government – Information on how to provide an appropriate static water supply, may form a condition of a development approval. For further information on preferred solutions refer	**AO13** No acceptable outcome is prescribed	**Complies with PO13** The proposed development will be provided with a mains water connection.

Performance outcomes	Acceptable outcomes	Compliance assessment
to the QFES *Bushfire resilient communities* document.		
PO14 Vulnerable uses listed in Table 7 are not established or intensified within a bushfire prone area unless: (a) there is an overriding need in the public interest for the new or expanded service the development provides; and (b) there are no other suitable alternative locations within the required catchment; and (c) site planning can appropriately mitigate the risk (for example, siting ovals for an educational establishment between the hazardous vegetation and structures. Note – The preparation of a bushfire management plan in accordance with the methodology in the QFES *Bushfire resilient communities* document may assist in demonstrating compliance with this performance outcome	**AO14.1** No acceptable outcome is prescribed.	**Complies with PO14** The proposed childcare and state primary school allotments are not located within a bushfire hazard. Figure 5.1 of the BMP demonstrates they are > 100 m from any areas of hazardous vegetation.
PO15 Community infrastructure providing essential services listed in Table 7 are not established within a bushfire prone area unless: (a) there is an overriding need in the public interest for the new or expanded service the development provides (for example, there are no other suitable alternative locations that can deliver the required level of service or meet emergency service response times during and immediately after a bushfire event); and (b) the infrastructure can function effectively during and immediately after a bushfire event. Note – The preparation of a bushfire management plan in accordance with the methodology in the QFES *Bushfire resilient communities* document may assist in demonstrating compliance with this performance outcome.	**AO15** No acceptable outcome is prescribed.	**Complies with PO15** The proposed state primary school allotment is not located within a bushfire hazard. Figure 5.1 of the BMP demonstrates it is > 100 m from any areas of hazardous vegetation.
PO16 Development avoids or mitigates the risks to public safety and the environment from the manufacture or storage of materials listed in Table 7 that are hazardous in the context of bushfire to an acceptable or	**AO16** No acceptable outcome is prescribed.	**Not applicable** The proposed development does not involve hazardous materials in the context of bushfire.

Performance outcomes	Acceptable outcomes	Compliance assessment
tolerable level. Note – The preparation of a bushfire management plan in accordance with the methodology in the QFES *Bushfire resilient communities* document may assist in demonstrating compliance with this acceptable outcome. Editor's note – In addition to the requirements of this code the *Work Health and Safety Act 2011* and associated Regulation and Guidelines, the *Environmental Protection Act 1994* and the relevant building assessment provisions under the *Building Act 1975* contain requirements for the manufacture and storage of hazardous substances. Information is provided by Business Queensland on the requirements for storing and transporting hazardous chemicals, available at: www.business.qld.gov.au/running-business/protecting-business/risk-management/hazardous-chemicals/storing-transporting.		
Section F		
Where involving an asset protection zone		
PO17 Asset protection zones are designed and managed to ensure they do not increase the potential for bushfire hazard. Note – The preparation of a landscape management plan undertaken in accordance with the methodology in the QFES *Bushfire resilient communities* document may assist in demonstrating compliance with this performance outcome.	**AO17.1** Landscaping treatments within any asset protection zone comprise only low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks. Note – Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack, for example short-cropped grass to a nominal height of 10 centimetres. OR **AO17.2** Landscaping management within any asset protection zone maintains a: (a) potential available fuel load which is less than eight tonnes/hectare in aggregate; and (b) fuel structure which is discontinuous. Note – The preparation of a landscape management plan undertaken in accordance with the methodology in the QFES *Bushfire resilient communities* document may assist in demonstrating compliance with this acceptable outcome.	**Complies with AO17.1** Figure 5.1 of the BMP demonstrates the setbacks from hazardous vegetation to the 29 kW/m2 radiant heat flux contours are contained within road reserves and local linear park. Landscaping within the proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links will be in accordance with the Aura Lakes SLI and will result in a low level of discontinuous bushfire fuel. The proposed local linear park, local recreation park, neighbourhood recreation park, neighbourhood sports park and pedestrian links will be maintained at regular time intervals during the calendar year. Woody regrowth, weeds, rubbish and vegetation debris will be removed and areas of turf will be maintained as lawn at a nominal height ≤ 100 mm. Compliance with AO17.2 is not required.
Section G		
Where planning provisions or conditions of approval require revegetation or rehabilitation		

Performance outcomes	Acceptable outcomes	Compliance assessment
PO18 Revegetation or rehabilitation areas are designed and managed to ensure they do not result in an unacceptable level of risk or an increase in bushfire intensity level. Note – The undertaking of a bushfire hazard assessment in accordance with the methodology in the QFES *Bushfire resilient communities* document may assist in demonstrating compliance with this performance outcome.	**AO18.1** Required revegetation or rehabilitation: (a) is located outside of any asset protection zone; or (b) maintains a potential available fuel load which is less than eight tonnes/hectare in aggregate and fuel structure which is discontinuous. Note – The preparation of a landscape management plan undertaken in accordance with the methodology in the QFES *Bushfire resilient communities* document may assist in demonstrating compliance with acceptable outcome (b).	**Complies with AO18.1(a) and AO18.2** The Bells Creek Corridor and environmental buffers that will be rehabilitated under the *Caloundra South Priority Development Areas – Environmental Rehabilitation Plan – Aura Precincts 17, 18 and 19 and Part Precinct 6 2023* are located outside of the setbacks between hazardous vegetation and the 29 kW/m^2 radiant heat flux contours shown in Figure 5.1 of the BMP. A vegetation management plan is not required to demonstrate compliance with AO18.2.
	AO18.2 Revegetation or rehabilitation of areas located within mapped medium, high or very high potential bushfire intensity areas, revegetate and rehabilitate in a manner that maintains or reduces the existing fuel load. OR Revegetation or rehabilitation of areas located within the mapped potential impact buffer area, revegetate and rehabilitate in a manner that maintains or reduces the existing fuel load. Note – The preparation of a vegetation management plan undertaken in accordance with the methodology in the QFES *Bushfire resilient communities* document may assist in demonstrating compliance with this acceptable outcome.	

Table 6 – Fire trail and working area design parameters

Parameter	Provisions
Width	Contains a width of at least 20 metres including: 1. A trafficable area (cleared and formed); a. with a minimum width of 4 metres than can accommodate a rural firefighting vehicle b. with no less than 4.8 metres vertical clearance from canopy vegetation c. with no adjacent inhibiting embankments or retaining walls 2. A working area each side of the trafficable area: a. with a minimum width of 3 metres each side b. cleared of all flammable vegetation greater than 10 centimetres in height 3. The balance (i.e. 10 metre width) managed vegetation area: a. sited to separate the trafficable area from adjacent mapped medium, high or very high potential bushfire intensity areas managed vegetation b. comprising managed vegetation clear of major surface hazards.
Access	Access is granted in favour of the local government and Queensland Fire and Emergency Services Note – this access is commonly granted in the form of a easement that is to be maintained by the grantor.
Egress	Contains trafficable vehicle routes in to low hazard areas, every 200 metres

Table 7 – Vulnerable uses, community infrastructure for essential services and materials that are hazardous in the context of bushfire hazard

Group	**Uses**
Vulnerable uses	*childcare centre, community care centre, detention facility, educational establishment, hospital, nature-based tourism, relocatable home park, rooming accommodation, residential care facility, resort complex, retirement facility, tourist park*
Community infrastructure for essential services	*educational establishment, emergency services, hospital*
Hazardous materials in the context of bushfire hazard	Hazardous chemicals that are present at the levels or in the quantities that would constitute the use being a hazardous chemical facility Hazardous materials that are present in the quantities in the Work Health and Safety Regulation, schedule 15