

21 Lobbs Lane, Nagambie Bushfire Assessment Report

FINAL REPORT

Prepared for Urbis Pty Ltd on behalf of Parklea Development Pty Ltd

9 December 2020

Biosis offices

NEW SOUTH WALES

Newcastle

Phone: (02) 4911 4040

Email: newcastle@biosis.com.au

Sydney

Phone: (02) 9101 8700

Email: sydney@biosis.com.au

Wollongong

Phone: (02) 4201 1090

Email: wollongong@biosis.com.au

Albury

Phone: (02) 6069 9200

Email: albury@biosis.com.au

VICTORIA

Melbourne

Phone: (03) 8686 4800

Email: melbourne@biosis.com.au

Ballarat

Phone: (03) 5304 4250

Email: ballarat@biosis.com.au

Wangaratta

Phone: (03) 5718 6900

Email: wangaratta@biosis.com.au

Document information

Report to: Urbis Pty Ltd on behalf of Parklea Developments Pty Ltd

Prepared by: G.McMillan

Biosis project no.: 34127

File name: 34127.Bushfire.Assessment.Report.FIN.20201209.docx

Citation: Biosis 2020. Bushfire Assessment Report. Report for Parklea Developments Pty Ltd. Author: G McMillan, Biosis Pty Ltd, Melbourne. 34127.

Document control

Version	Internal reviewer	Date issued
Draft version 01	BRH	7/12/20
Final version 01	BRH	9/12/20

Acknowledgements

Biosis acknowledges the contribution of the following people and organisations in undertaking this study:

- Urbis Pty Ltd: Rebecca Scullion and Noor Syuhada Shamsul

Biosis staff involved in this project were:

- Julian Turner (mapping)
- Ben Howells (quality assurance)

Contents

1	Purpose and scope of this report	1
1.1	Background	1
1.2	Scope of bushfire assessment	1
2	Methodology	3
2.1	Initial Desktop Assessment and policy review	3
2.2	Desktop Assessment	3
2.3	Field Assessment	3
2.4	Bushfire risk assessment	3
2.5	Client liaison and stakeholder engagement	3
2.6	Assumptions and limitations	4
3	Planning policy context	6
3.1	Integrated bushfire hazard identification and mitigation	6
3.2	State bushfire planning policy Clause 13.02-1S	6
3.3	Guidance and practice notes	7
4	Bushfire Assessment	8
4.1	Site description and surrounds	8
4.2	Planning controls	8
4.2.1	Rezoning and development plan overlay	8
4.2.2	Other future development proposals	8
4.3	Mechanisms of bushfire attack	10
4.4	Hazard assessment	10
4.4.1	Landscape assessment	10
4.4.2	Site assessment	12
5	Discussion and recommendations	15
5.1	Overview	15
5.2	Mitigation measures	15
6	References	17
	Appendix 1 Landscape concept plan	19
	Appendix 2 Development Plan	20
	Appendix 3 Photos of the study area	21
 Figures		
Figure 1	Extract from MSS in Planning Scheme	9
Figure 2	Bushfire landscape scale assessment	11
Figure 3	Bushfire site assessment (existing conditions)	13

1 Purpose and scope of this report

Biosis Pty Ltd (Biosis) has been engaged to prepare a bushfire assessment to support the submission of a development plan for the land at 21 Lobbs Lane, Nagambie (site).

1.1 Background

The Site is currently zoned Low Density Residential Zone (LDRZ) and is affected by Development Plan Overlay (DPO3) and the Floodway Overlay (FO) (in part) under the Strathbogie Planning Scheme (Planning Scheme). The Site is also within a designated Bushfire Prone Area (BPA).

The land was rezoned in 2013. At the same time the DPO3 was applied to the Site, a bushfire assessment was prepared by Terramatrix.¹ This meant that the DPO controls were drafted prior to the introduction of the current State bushfire policy at clause 13.02 of the Planning Scheme.

DPO3 sets out the parameters for the Development Plan. The DPO3 does not specifically refer to bushfire mitigation measures, however there are aspects of the DPO3 which may affect bushfire risk (e.g. landscaping and protection of remnant vegetation).

The Box Grove Masterplan (Ref. P0004244 dated 02/09/2020) (Development Plan) and Box Grove Landscape Masterplan (Ref. P0004244, Revision B) (Landscape Concept Plan) have been prepared by Urbis, in response to the requirements in DPO3.

This bushfire assessment has been prepared to assess the design against current State bushfire policy and inform any bushfire protection measures that should be integrated into the Development Plan.

1.2 Scope of bushfire assessment

The purpose of this bushfire assessment is to inform the Development Plan and to ensure it responds to current State bushfire policy.

This report addresses the following:

- Methodology used to prepare this report.
- Relevant policy objectives at clause 13.02 of the Planning Scheme.
- Likely fire behaviour and risks, at the landscape and local scale affecting the site.

¹ Bushfire Development Report for proposed rezoning of 'Box Grove' Lobbs Lane, Nagambie (Terramatrix, 2013)

- Bushfire mitigation measures, including how the Development Plan could integrate measures to increase resilience to bushfire. This includes a review of the statutory mechanisms already in place, such as the integrated planning and building framework which will affect the risk.
- Conclusion on how the Development Plan responds to relevant bushfire policy objectives.

2 Methodology

The following methodology has been used to conduct this assessment:

2.1 Initial Desktop Assessment and policy review

The relevant policy and guidance was reviewed, including:

- State and local policy and relevant particular provisions in the Planning Scheme.
- Design Guidelines: Settlement Planning at the Bushfire Interface, DEWLP July 2020
- Practice Note 64: Local Planning for Bushfire Protection, DELWP September 2015
- Technical Guide: Planning Permit Applications – Bushfire Management Overlay, DELWP September 2017
- Australian Standard AS3959-2018 Construction of buildings in bushfire prone areas (AS3959).

2.2 Desktop Assessment

An initial desktop assessment was conducted, relying on aerial photography, vegetation mapping and topographical information. The desktop assessment identified:

- Extent of vegetation within the landscape, including its likely classification for bushfire assessment purposes (e.g. grassland, forest, woodland and modified vegetation)
- Topographical features and ruggedness in the landscape.
- Land uses, access, landscape features and places of shelter that could affect the level of bushfire risk.
- Extent of modification expected as a result of the future development anticipated, based on the DPO3 and Council's Municipal Strategic Statement.

2.3 Field Assessment

Biosis conducted field assessments on 20 October 2020 to classify the vegetation in accordance with Method 1 (Simplified procedure) in AS3959.

2.4 Bushfire risk assessment

The outcomes of the desktop and field assessments, policy review were used to:

- Assess the likely fire behaviour, considering different scenarios.
- Assess the level of bushfire risk, having regard to current conditions and future form of development.

2.5 Client liaison and stakeholder engagement

Several meetings have been held with the client, planners and landscape architects in relation to the design of the Development Plan.

Biosis also consulted with Darren Viney, Manager Community Safety at the Country Fire Authority (CFA) on 18 November 2020. The draft Development Plan was discussed, along with the future landscaping design which was at a concept stage. CFA provided the following feedback in relation to the Development Plan.

- In relation to likely bushfire behaviour and risk, CFA suggested that:
 - Overall the site has a relatively low risk compared with other parts of the State.
 - The main risk scenarios are likely to be grassland fire (from north or unmanaged vegetation with the site) or a shrub / woodland fire (from new planting or existing woodland vegetation).
- In relation to the landscape concept design and future layout, CFA suggested that:
 - Maintenance of open space areas is the key. If the vegetation is managed regularly in a low threat state there is less of a risk.
 - Need to consider access for maintenance and fire appliances. If the shared path in the open space is a standard design, this could accommodate a smaller appliance for fire-fighting if required.
 - The key interfaces where buffers should be considered:
 - Areas around open space areas and land outside site (particularly land to north and riparian areas to west)
 - Flooding areas to north west of site (including replanted areas)
 - 'Island' of LDRZ between open space and flood prone land. Noting that there is one access point that could be compromised.
 - Interface between open space areas and any unmanaged woodland or new scrub areas - consider building setbacks – which would include outbuildings
 - CFA would prefer non-Eucalypt species for street planting.

In response to the CFA's feedback the landscape design was revisited to ensure that:

- Future planting could be classified as 'low threat' to the extent practicable through ongoing maintenance.
- There was sufficient access for fire appliances to access the site.
- Appropriate buffers were provided to unmanaged vegetation to ensure that future lots can accommodate dwellings with a radiant heat exposure of 12.5 kilowatts/square metres (or less) under AS3959.

The Development Plan and concept landscape design are assessed in more detail at section 4 of this report.

2.6 Assumptions and limitations

The recommendations are based on the Development Plans and Landscape Concept Plan prepared at the time this report was prepared. The subdivision design and more detailed landscape plans will need to be developed at a later time. The assessment has assumed that future planting and landscaping of open space areas will meet the parameters set out in the Landscape Concept Plan, particularly in relation to buffers, maintenance and access arrangements.

This assessment does not consider the consequential loss of vegetation occurring as a result of providing defensible space around dwellings on future lots. Depending on the operations of the exemptions at clause

52.17 and clause 52.12 of the Planning Scheme, a planning permit or other approval requirements may be required. This is outside the scope of this assessment.

3 Planning policy context

3.1 Integrated bushfire hazard identification and mitigation

In Victoria the planning and building system are integrated and two mapping systems are used to identify bushfire risk across the State.

The Bushfire Management Overlay (BMO) is a planning control that is applied to areas that have the potential for extreme bushfire behaviour, such as a crown bushfire and extreme ember attack and radiant heat. These are the type of locations where the creation of new or expanded settlements should be avoided where possible and accordingly the mapping of the BMO has also used as an important input for the landscape scale bushfire assessment.

In the building system, areas that are, or are likely to be subject to bushfire, are designated and mapped as a Bushfire Prone Area (BPA) pursuant to Section 192A of the *Building Act 1993*. This map is used to trigger bushfire construction requirements under the National Construction Code (2019) and as noted above this map is now also referenced in Clause 13.02-1S and is to be used to guide decision making in the planning system.

Areas designated as BPA include all areas mapped in the BMO and also include areas that are exposed to lower levels of bushfire hazard – typically grassland environments and other bushfire prone areas where extreme bushfire behaviour is unlikely to be generated.

Australian Standard AS.3959-2009 – *Construction of buildings in bushfire prone areas* (AS3959) is utilised in both the planning system and the building system to determine the level of bushfire attack on buildings in bushfire prone areas and to determine the appropriate construction response to mitigate these effects for specified types of buildings.

3.2 State bushfire planning policy Clause 13.02-1S

The Planning Policy Framework seeks to increase the Victorian community's resilience to bushfire through risk-based planning that prioritises the protection of human life.

Clause 13.02-1S – Bushfire planning applies to all planning and decision making under the *Planning and Environment Act 1987* (PE Act) on land within the BPA, the BMO or if the land is proposed to be developed in a way that may create a bushfire hazard.

The objective of Clause 13.02-1S is:

To strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life.

The strategies that underpin Clause 13.02-1S include:

Give priority to the protection of human life by:

- *Prioritising the protection of human life over all other policy considerations.*
- *Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.*
- *Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.*

Of particular relevance to this assessment, Clause 13.02-1S sets out the following strategy for settlement planning:

Plan to strengthen the resilience of settlements and communities and prioritise protection of human life by:

- *Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metre under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).*
- *Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009) where human life can be better protected from the effects of bushfire.*
- *Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.*
- *Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reducing bushfire risk overall.*
- *Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local, neighbourhood and site scale, including the potential for neighbourhood-scale destruction.*
- *Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.*
- *Not approving any strategic planning document, local planning policy, or planning scheme amendment that will result in the introduction or intensification of development in an area that has, or will on completion have, more than a BAL-12.5 rating under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).*

The above settlement planning strategies have been a critical input to the development of the assessment methodology and identification of indicative accommodation envelope locations on each of the lots.

Clause 71.02 – *Operation of the planning policy framework* of the Planning Scheme also provides important guidance on the consideration of bushfire in decision making and how this is to be balanced against other policy considerations. In particular, Clause 71.02-3 states the following:

Planning authorities and responsible authorities should endeavour to integrate the range of policies relevant to the issues to be determined and balance conflicting objectives in favour of net community benefit and sustainable development for the benefit of present and future generations. However in bushfire affected areas, planning authorities and responsible authorities must prioritise the protection of human life over all other policy considerations.

3.3 Guidance and practice notes

The following practice notes and guidance have been published in relation to bushfire risk assessment:

- Design Guidelines: Settlement Planning at the Bushfire Interface, DEWLP July 2020
- Planning Advisory Note 68 – Bushfire State Planning Policy Amendment VC140 (2018)
- Practice Note 64: Local Planning for Bushfire Protection, DELWP September 2015
- Technical Guide: Planning Permit Applications – Bushfire Management Overlay, DELWP September 2017

4 Bushfire Assessment

4.1 Site description and surrounds

The Site is located in a predominantly agricultural area just north of Nagambie. The Goulburn River runs around the western side of the Site, with a backwater area of the river also running into the northern part of the Site. As a result, a significant portion of the Site is subject to flood inundation.

To the north of the Site are cropped paddocks. To the east of the Site are also cropped paddocks with some trees planted along Lobbs Lane and several of the fence lines. There are some horse paddocks located to the south of the Site.

4.2 Planning controls

The Site is zoned Low Density Residential Zone (LDRZ) and is affected by Development Plan Overlay (DPO3) and the Floodway Overlay (FO) (in part). The Site is also within a designated Bushfire Prone Area (BPA).

The Site is also subject to a number of particular provisions, including clause 52.17 (Native Vegetation) and clause 53.02 (Planning for Bushfire).

4.2.1 Rezoning and development plan overlay

The land was rezoned in 2013. At the same time the DPO3 was applied to the Site. These controls were drafted prior to the introduction of the current State bushfire policy at clause 13.02 of the Strathbogie Planning Scheme (Planning Scheme).

A bushfire assessment was prepared by Terramatrix² at the time of the rezoning. However, the controls in the Planning Scheme were drafted prior to the introduction of the current State bushfire policy at clause 13.02 of the Planning Scheme.

DPO3 sets out the parameters for the Development Plan. The DPO3 does not specifically refer to bushfire mitigation measures, however there are aspects of the DPO3 which may affect bushfire risk (e.g. landscaping and protection of remnant vegetation).

4.2.2 Other future development proposals

There are a number of development projects are planned or have commenced to the south of the Site, which will affect the future form of development and associated consequences for bushfire risk.

The Municipal Strategic Statement (plan extracted at **Figure 1**) identifies the land immediately to the south of the Site, currently zoned Farming Zone (FZ) as an area for future residential development ('Area B'). We

² Bushfire Development Report for proposed rezoning of 'Box Grove' Lobbs Lane, Nagambie (Terramatrix, 2013)

understand that the owner of that Site has recently lodged a request to rezone the land to a residential zone to accommodate standard residential subdivision.

Figure 1 Extract from MSS in Planning Scheme



4.3 Mechanisms of bushfire attack

There are up to five forms of bushfire attack that need to be taken into account when undertaking bushfire assessments. These are:

- Ember attack.
- Radiant heat.
- Localised flame contact.
- Flame contact from the fire front.
- Extreme fire behaviour.

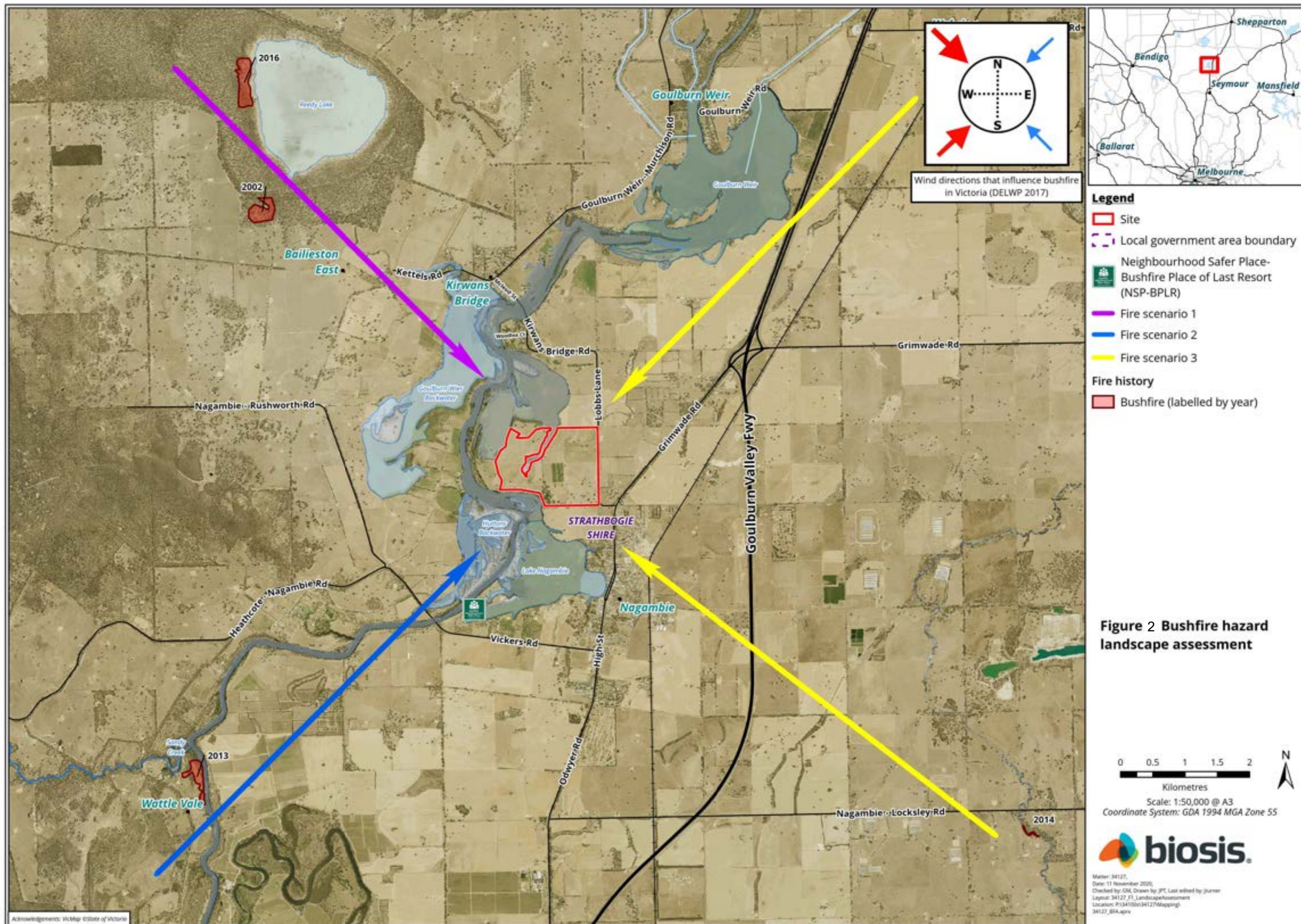
4.4 Hazard assessment

4.4.1 Landscape assessment

A landscape hazard assessment has been prepared (Figure 2). This outlines different landscape fire scenarios which may impact on the Site, including:

- **Fire scenario 1** – Fire approaching from the north west. A forest fire could be generated in the Whroo Nature Conservation Reserve and travel through (and over) the paddocks and grassed areas closer to the Site. In this scenario it is expected that the Site would be subject to ember attack and potentially some localized flame contact, if ember ignited spot fires in the riparian vegetation along the Goulburn River.
- **Fire scenario 2** - Fire approaching from the south west. A forest fire could be generated in the forested area to the south west of Mitchellstown and travel through (and over) the paddocks and grassed areas closer to the Site. In this scenario it is expected that the Site would be subject to ember attack and potentially some localized flame contact, if ember ignited spot fires in the riparian vegetation along the Goulburn River.
- **Fire scenario 3** – Fire approaching from the east (or directly from the north) of the Site. A grassfire could develop in the farmland to the east or north of the Site. In this scenario it is expected that the Site would be subject to fast moving grassfire (e.g. direct flame contact) and localized flame contact if the fire ignited hedgerows close to the Site.

In all three credible fire scenarios the main form of bushfire attack is ember attack and localised flame contact. The main risks are fast moving grassland fires.



4.4.2 Site assessment

Existing conditions

At the site scale, the most significant bushfire hazards are the woodland areas shown on Figure 3. These woodland areas, to the north of the site and around the Box Grove Homestead are likely to remain woodland. If a fire is ignited in either of these areas, a localised fire with associated flame contact could be expected.

The other bushfire risk is the unmanaged grassland (paddocks) within the Site boundary and immediately to the north, south and east of the Site as shown on Figure 3. It is expected that a fast moving grassland fire could sweep across these areas, creating the potential for direct (albeit lower intensity) flame contact.

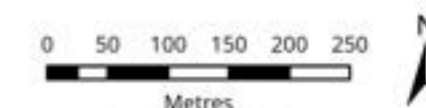
The photographs at Appendix 3 show existing conditions and areas of classified vegetation.



Legend

- Site
- Assessment area
- Vegetation**
 - Grassland
 - Grassland/modified
 - Woodland

Figure 3 Bushfire hazard site assessment (existing conditions)



Scale: 1:6,250 @ A3
Coordinate System: GDA 1994 MGA Zone 55



Master: 34127,
Date: 11 November 2020,
Checked by: GMA, Drawn by: JPT, Last edited by: JPT
Layout: 34127_F2_SiteAssessment
Location: P:\34100\34127\Mapping\34127_BIA.aprx

Future conditions

Future planting on the Site

The landscape concept design (Appendix 1) was developed to address bushfire risk. The following features and bushfire protection measures were integrated into the design:

- All replanted areas (in open space areas and street trees) could be maintained in a low threat state where practicable.
- That managed buffers (of at least 20m in width) were provided between unmanaged (or classified vegetation) and new planting or lots.
- That street planting was designed to limit connectivity between indigenous planting and the future low density residential lots (e.g. to reduce the risk of fire ladders being created).
- Access was provided for fire appliances into open space areas.

Future conditions to the south of the Site.

It is expected that the land to the south of the Site, which is currently grassland, will be redeveloped given it is earmarked for residential development in Council's MSS (see Figure 1). It is therefore considered that the risk of a fire being generated from the south will be lower in the future.

Assessment

It is expected that in the ultimate design (e.g. operational phases), all vegetation on the Site (except for the woodland area around Box Grove Homestead) would be classified as low threat vegetation under AS3959. There will be some grassland areas to the north of the Site and to the east of the Site. A buffer to these areas has been incorporated into the Development Plan and Landscape Concept Plan.

There will be an interim period, as lots are develop, where unmanaged grassland within the Site may present a risk during the fire danger period. To address this risk, it is recommended that any grassland vegetation within 100m of a completed stage, be mowed or slashed to a maximum of 100mm during the declared fire danger period. This interim management requirement has been incorporated into the Landscape Concept Plan.

Water supply

It is expected that the future subdivision will be provided with reticulated water supply, including fire hydrants. On this basis, it is not considered that a dedicated water supply for fire-fighting is necessary.

Access

The Development Plan and Landscape Concept Plan anticipate standard width access roads within the Site. The CFA recommended that the shared paths in the open space area should be designed to accommodate smaller fire appliances. These recommendations have been incorporated into the Landscape Concept Plan.

5 Discussion and recommendations

5.1 Overview

Having regard to existing and future conditions on and around the Site, it is expected that future residents would be exposed to a relatively low level of bushfire risk. There is a potential for ember attack, fast (but less intense) grassfires and some localised flame contact in more extreme conditions.

The DPO3 conceived prior to the introduction of current State policy at clause 13.02 which directs all new development to low risk locations. However, a bushfire risk was conducted at the time and therefore the DPO3 already took account of the risk to some extent.

The policy at clause 13.02 of the Planning Scheme is very prescriptive and directs planning authorities as follows:

Plan to strengthen the resilience of settlements and communities and prioritise protection of human life by:

- *Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metre under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).*

This assessment has been conducted in this policy context. The current and future conditions have been carefully considered, along with interim phases of development where there will be some risk of grassfires within the Site boundary. The Development Plan and Landscape Concept Plan have been developed iteratively, to integrate the recommendations of this assessment, including the advice from the CFA.

This assessment has also assumed that the Site will continue to be within the designated BPA, where a minimum construction standard of BAL-12.5 will apply to all future dwellings.

Subject to the measures recommended below, it is considered that the Development Plan and associated Landscape Concept Plan is consistent with current State policy for bushfire.

5.2 Mitigation measures

The following bushfire mitigations measures are recommended to be integrated into the design of the Development Plan, Residential Design Guidelines and Landscape Concept Plan:

- The landscape design should include the following measures:
 - All replanted areas (in open space areas and street trees) should be maintained in a low threat state where practicable.
 - That managed buffers (of at least 20m in width) were provided between unmanaged (or classified vegetation) and new planting or lots.
 - That street planting was designed to limit connectivity between indigenous planting and the future low density residential lots (e.g. to reduce the risk of fire ladders being created).
 - Shared access paths in open space should be designed to accommodate a small fire appliances (e.g. a small truck with a slipon unit).

- During the development phase of the subdivision, any grassland vegetation within 100m of a completed stage, must be mowed or slashed to a maximum of 100mm during the declared fire danger period.

(these recommendations are reflected in the Landscape Concept Plan at Appendix 1)

- The following indicative setbacks must be given effect through the Residential Design Guidelines:
 - 33m setback from any vegetation which is classified as woodland (where effective slope is flat) at the time the land is developed. This setback can be adjusted subject to a Bushfire Attack Level (BAL) assessment to be completed at the relevant time.
 - 27m setback from any vegetation which is classified as scrub (where effective slope is flat) at the time the land is developed. This setback can be adjusted subject to a Bushfire Attack Level (BAL) assessment to be completed at the relevant time.
- The shared access path in the open space areas should be designed to accommodate a small slip-on fire appliance (e.g. the standard design width for a shared path). This recommendation is addressed in the Landscape Concept Plan at Appendix 1.

6 References

Australian Standard AS3959-2018 Construction of buildings in bushfire prone areas (AS3959).

DELWP 2015. Planning Practice Note 64 Local planning for bushfire protection, Victorian Government, Department of Environment, Land, Water and Planning.

DELWP 2017. Guidelines for the removal, destruction or lopping of native vegetation, https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/91146/Guidelines-for-the-removal,-destruction-or-lopping-of-native-vegetation,-2017.pdf.

DELWP 2017. Technical Guide: Planning Permit Applications in the Bushfire Management Overlay, Victorian Government Department of Environment, Land, Water and Planning.

DELWP 2018. Planning Advisory Note 68: Bushfire State Planning Policy Amendment VC140, Victorian Government Department of Environment, Land, Water and Planning.

DELWP 2020. Design Guidelines: Settlement Planning at the Bushfire Interface, Victorian Government Department of Environment, Land, Water and Planning.

Appendices

Appendix 1 Landscape concept plan



LEGEND: GENERAL

- BOX GROVE ESTATE BOUNDARY
- KEY ROADS
- KEY ACCESS TRACKS
- KEY INTERNAL STREETS AND CONNECTIONS
- FUTURE PEDESTRIAN/CYCLE LINK ALIGNMENT
- BOAT RAMP
- HOMESTEAD DRIVEWAY/PATHWAYS
- GOULBURN RIVER 60M BACKWATER OFFSET
- GOULBURN RIVER
- EXISTING HOMESTEAD BUILDINGS
- OPEN SPACE
- EXISTING VEGETATION IN ESTATE BOUNDARY (APPROX.)
- LOW DENSITY RESIDENTIAL
- SITE VIEWS
- FLOODING EXTENT
- RECREATION/SEATING/VIEWING NODES
- OPEN SPACE VEGETATION - Species to be indigenous/native selected from suggested planting palette LCP-02
- STREET TREE - *Brachychiton populneus*
- STREET TREE - *Corymbia citriodora*
- STREET TREE - *Ulmus parvifolia*
- STREET TREE - *Acer buergerianum*
- ENTRY STATEMENTS - To Future Detail

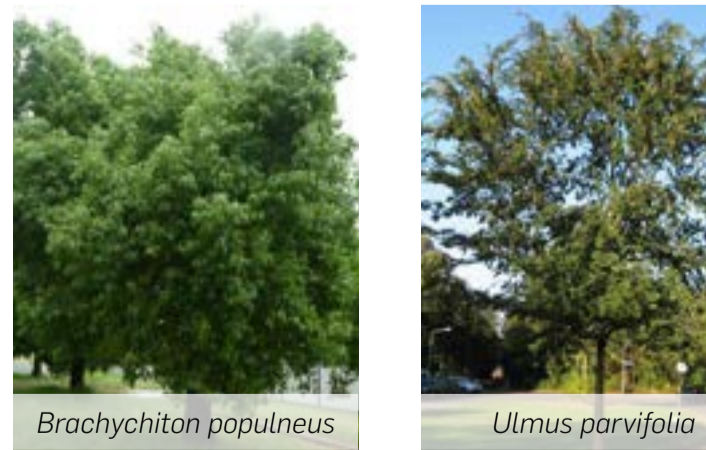
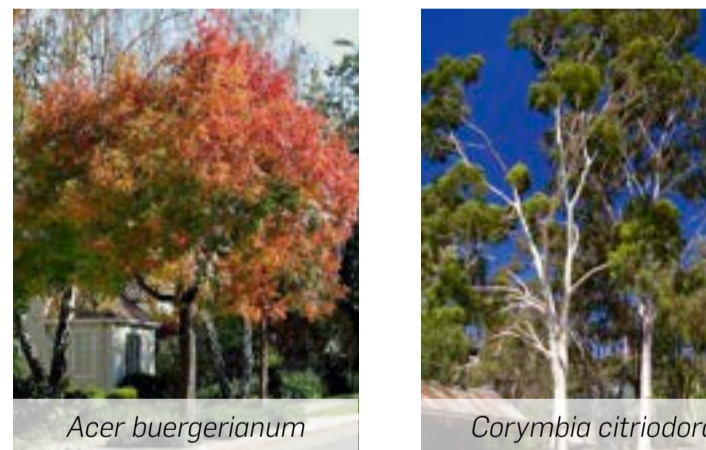
LEGEND: ADJOINING ZONES

- FUTURE RURAL RESIDENTIAL
- EXISTING GENERAL RESIDENTIAL
- POTENTIAL URBAN EXTENT
- EXISTING HOMESTEAD SITE/ FUTURE ADAPTIVE RESIDENTIAL

NOTES:

All land use boundaries and street alignments (excluding 21No. lots at Stage 1) are approximate only and will be refined at the detailed design stage

STREET TREE SPECIES:



SITE CONTEXT

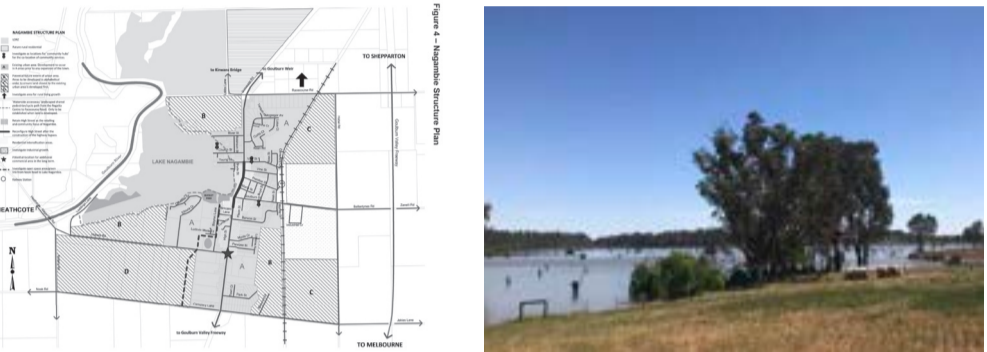
ENTRY STATEMENTS

- The site is identified in the Nagambie Structure Plan and is based on the Nagambie Growth Management Strategy for the sequencing of future residential growth to accommodate the growth in population.
- The subject site is located in the Strathbogie Shire in central northern Rural Victoria and traversed between two major roads - Hume Freeway and Goulburn Valley Highway approximately 140kms from Melbourne.
- The Goulburn River supported a population of members of the Taungurung (Daung wurrung) Aboriginal people which participate widely as cultural heritage advisors for the area.
- The proposed Box Grove development is located approximately 3.3kms from the Nagambie City Centre.
- The current land use around the site is primarily agricultural purposed (land grazing).
- The site is zoned for low density residential with the surrounding areas zoned as future rural residential, existing general residential and potential urban extent.
- The existing Homestead site (including all existing vegetation) will be protected and retained and is nominated as the future adaptive residential site to be re-landscaped.
- The relevant Ecological Vegetation Classes (EVC's), particularly along the Goulburn River are characterised by Plains Grassy Woodland interspersed with Plains Grassy Wetland, Grassy Woodland, Box Ironbark Forest, and a large section of Floodplain Riparian Woodland/Plains Grassy Woodland Mosaic to the western shore, south of Kirwans Bridge.



DESIGN INTENT & PRINCIPLES

- The design intent for Box Grove estate will be to thoughtfully design the large extent of Open Space and Streetscapes to enhance the character of Nagambie for the existing and future residents. The landscape masterplan highlights the landscape species choices and other landscape elements.
- The key landscape principles of Box Grove are as follows:
 - The aim is for the Landscape Masterplan to frame the approach of design to integrate the features of the development together sinuously and create a sense of place relevant to the sites location.
 - The sites context is situated to highlight views toward the Goulburn River and backwater by framing linear landscape reserves adjacent the main roads and entry gateways.



DESIGN RESPONSE/CHARACTER

- The site's character is currently a rural setting with existing remnant native vegetation framing views to the Goulburn River.
- The site will encompass an overall indigenous/native vegetation character throughout and avenue planting along local streets
- The local street network will be distinguished by different indigenous/native tree species with feature drought tolerant deciduous tree species proposed along internal roads (not abutting open space/river interfaces)
- Key native vegetation is to be protected and retained where possible in landscape pockets to enhance pedestrian permeability
- The existing Homestead site will be retained and protected (including all existing remnant vegetation where possible) and involve future landscape design
- Pedestrian/cycle networks will be provided to link open space areas for safe public enjoyment and accessibility across the site with through to the indicative waterside accessway
- Provide gateway entry statements reflective of the landscape and local site character
- Key areas of public space activation/intervention – otherwise retaining the natural setting
- Design intervention with consultation with the Taungurung (Daung wurrung) Aboriginal people and cultural heritage advisors
- Environmentally sustainability principles such as use of appropriate vegetation and permeable surfaces
- Use recycled and renewable resources where possible and consideration of drought tolerant species for water requirements



OPEN SPACE TYPOLOGIES/PUBLIC AMENITY

- The site open space typologies aim to reinforce the local character of the site and guide design of the open space and streetscape design.
- Historic:
 - Heritage elements, particularly referencing the Taungurung (Daung wurrung) Aboriginal people.
 - Existing fabric of the Homestead to be the adaptive residential area
 - Materiality choices to reference the history and character of the existing site
- Linear Parks and Streetscapes
 - Linear parks to highlight views to the Goulburn River and create aspect from the main road entries
 - Streetscape design can create views and a sense of entry and space such. Deciduous trees can be used to create a colourful avenue and evergreen native trees can be used to form a larger boulevard avenue experience.
- Open Space
 - Elements in parkland open space are to be carefully thought out to create intimate recreational spaces for viewing and relaxation while maintaining a element of rural and open native areas.
 - Where possible native remnant vegetation is to be retained and used to frame views and areas of congregation
 - Open space areas and streetscapes to be maintained regularly and maintenance access/fire appliances to be considered in detailed design phase.
 - Key interface setbacks are to be considered to account for defendable zones particularly in the open space areas and land outside in the north, flooding areas and interface between open space and unmanaged areas.
- The public amenity will enhance the future residents and their needs and safe enjoyment of the site, they are as follows:
 - Furniture and fencing elements to enhance the history of Nagambie and make reference to the rural character of the site
 - Public lighting of the site in public open space areas and linear reserves to allow for public surveillance through the night
 - Shared pathways and meeting/congregation/relaxation areas to be provided for access through site and to consider safe surveillance through site meeting CPTED principles.
- Fire Safety Requirements
 - Shared paths are to be a standard minimum trafficable width of 3.5m and be substantially clear of encroachments for at least 0.5m on each side and clear of encroachments at least 4m vertically to accommodate fire access (for maintenance and in case of an emergency)
 - Slashing to 100mm in the area during fire season is to be completed during the Construction Phase to at least 100m from the lots.
 - Vegetation within the site boundary should be low threat where possible. This includes glasslands 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 (as defined in AS3959).
 - Suitable schedule of ongoing maintenance for open space areas to be adhered to – to future detail.



- The primary gateways throughout the site are to enforce the main aspect of the estate and the clients brand in a rural setting
- The gateways are to have a more subtle rural character and framed around the existing lot design
- The gateways are to be set into the lot splay and reflect the aspect of the site through the direction of pillars/fencing
- Figure 1 indicates an indicative example of a subtle corner splay entry statement with a stone wall across splay (possibly with estate lettering for place making) and timber post and stone pillar wall

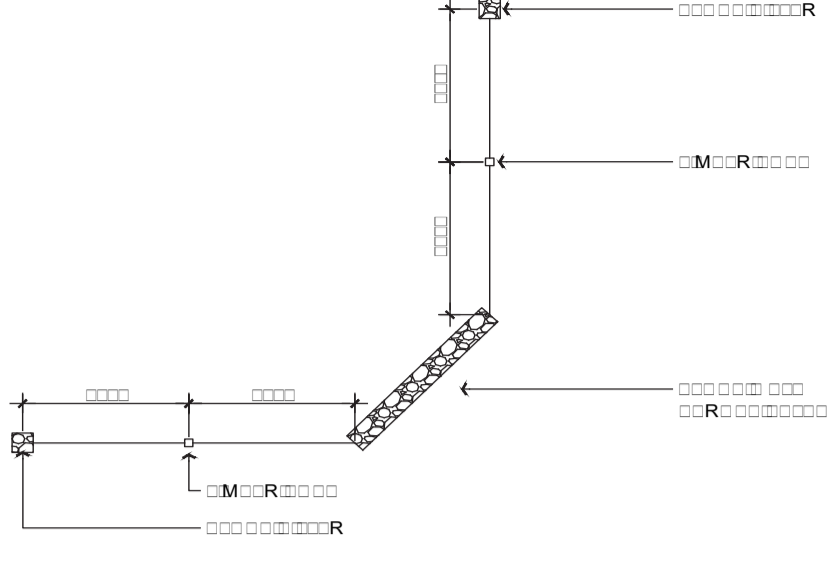


Figure 1 | Indicative splay entry wall statement



SUGGESTED PLANTING PALETTE & TYPICAL LANDSCAPE DETAILS

Code	Botanical Name	Common name	Size at maturity (HxW)
TREES			
ACA imp	Acacia implexa	Acacia implexa	12m x 10m
ACA pyc	Acacia pycnantha	Acacia pycnantha	12m x 10m
ACE bue	Acer buergerianum	Acer buergerianum	12m x 10m
ALL ver	Allocasuarina verticillata	Allocasuarina verticillata	12m x 10m
BRA pop	Brachychiton populneus	Brachychiton populneus	12m x 10m
COR cit	Corymbia citriodora	Corymbia citriodora	12m x 10m
COR mac	Corymbia maculata	Corymbia maculata	12m x 10m
EUC cam	Eucalyptus camaldulensis	Eucalyptus camaldulensis	12m x 10m
EUC leu	Eucalyptus leucoxylon 'Rosea'	Eucalyptus leucoxylon 'Rosea'	12m x 10m
EUC ova	Eucalyptus ovata	Eucalyptus ovata	12m x 10m
ULM par	Ulmus parvifolia	Ulmus parvifolia	12m x 10m
SHRUBS/TUFTS			
ATR sem	Atriplex semibaccata	Atriplex semibaccata	12m x 10m
BUR spi	Bursaria spinosa	Bursaria spinosa	12m x 10m
CAS arc	Cassinia arcuata	Cassinia arcuata	12m x 10m
DIA rev	Dianella revoluta s.s.	Dianella revoluta s.s.	12m x 10m
DIC rep	Dichondra repens	Dichondra repens	12m x 10m
GOO pin	Goodenia pinnatifida	Goodenia pinnatifida	12m x 10m
LOM fil	Lomandra filiformis	Lomandra filiformis	12m x 10m
LOM lon	Lomandra longifolia	Lomandra longifolia	12m x 10m
PIM hum	Pimelea humilis	Pimelea humilis	12m x 10m
POA lab	Poa labillardieri	Poa labillardieri	12m x 10m
THE tri	Themeda triandra	Themeda triandra	12m x 10m
WES fru	Westringia fruticosa	Westringia fruticosa	12m x 10m
GROUNDCOVERS			
CAS mel	Cassytha melantha	Cassytha melantha	12m x 10m
CAR mod	Carpobrotus modestus	Carpobrotus modestus	12m x 10m
DRO mac	Drosera macrantha	Drosera macrantha	12m x 10m
THY pat	Thysanotus patersonii	Thysanotus patersonii	12m x 10m

Notes:
1. All trees to be healthy well grown specimens free of pests and diseases. Trees to be watered while still in their pots, prior to planting.
2. Stake all trees with 2 No. 50x50x2400mm chisel pointed hardwood stakes. Tie trees immediately after planting with flexible canvas or rubber ties in a figure 8. Secure tie to stakes by wrapping around stake and nailing with galvanised nails.
3. Ensure plants are placed so as to match crown of plant with surrounding surface level. Gently tease outer root system avoiding major disturbance of plant. Soil ring berm forming a watering saucer around immediate crown of plant to hold at least 5litres of water.
4. Keep much away from trunk base
5. Raised ring of soil to direct water into rootball - especially important if top of rootball is raised above grade.
6. 100mm existing site topsoil, cultivated by mechanical means.
7. Apply osmocote slow release fertiliser 50 gms to evergreen tree spread into backfill. Avoid direct root contact with fertiliser.
8. Pack backfill soil around base of rootball to stabilise; allow rest of backfill to settle naturally, or tamp lightly.
9. Set ball on undisturbed soil to prevent settling.

1 TYPICAL TREE PLANTING DETAIL
LMP-02 SECTION DETAIL 1:25



Acacia implexa



Acacia pycnantha



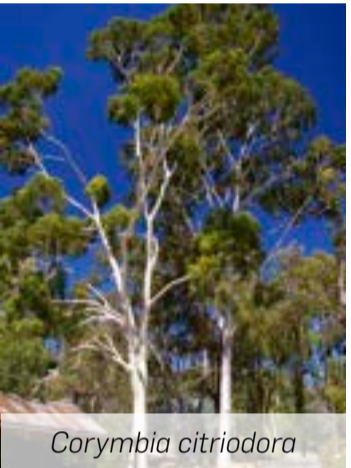
Acer buergerianum



Allocasuarina verticillata



Brachychiton populneus



Corymbia citriodora



Corymbia maculata



Eucalyptus camaldulensis



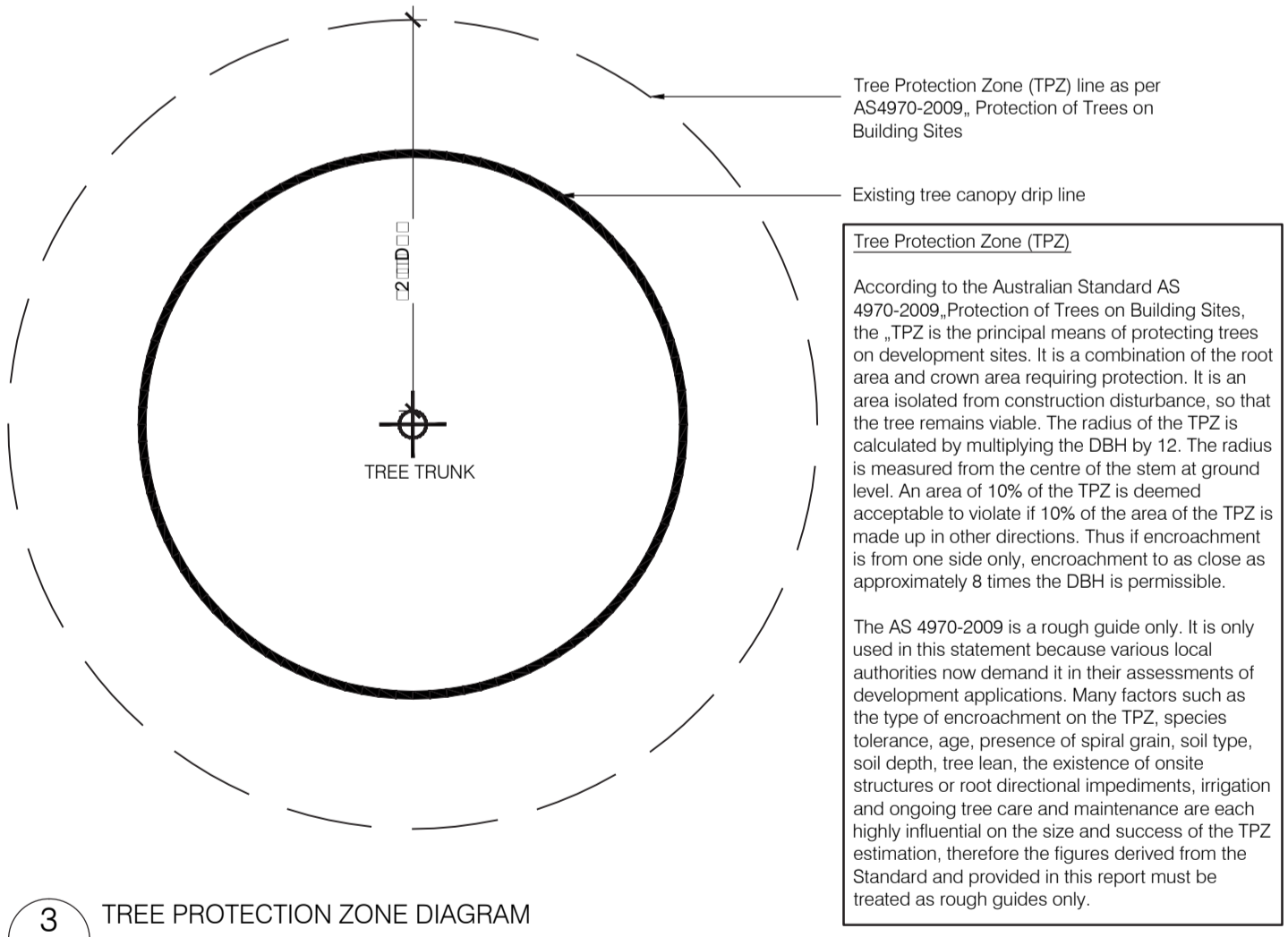
Eucalyptus leucoxylon 'Rosea'



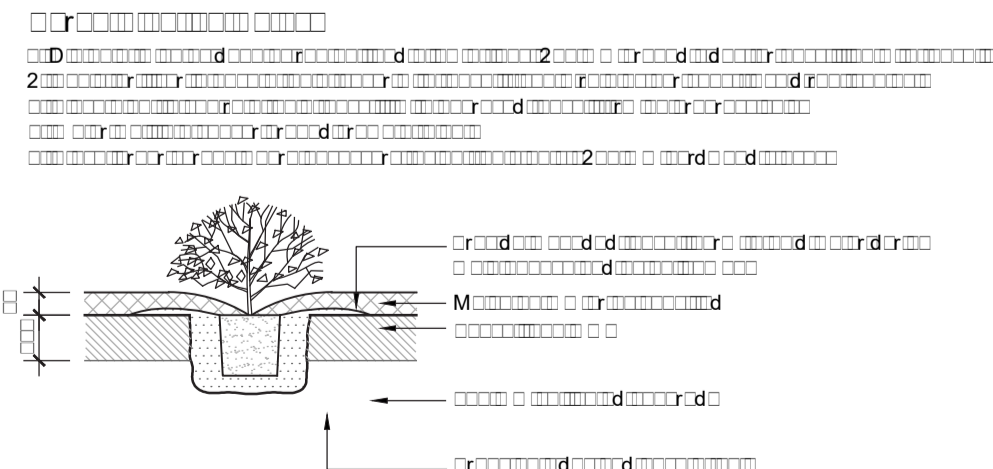
Eucalyptus ovata



Ulmus parvifolia



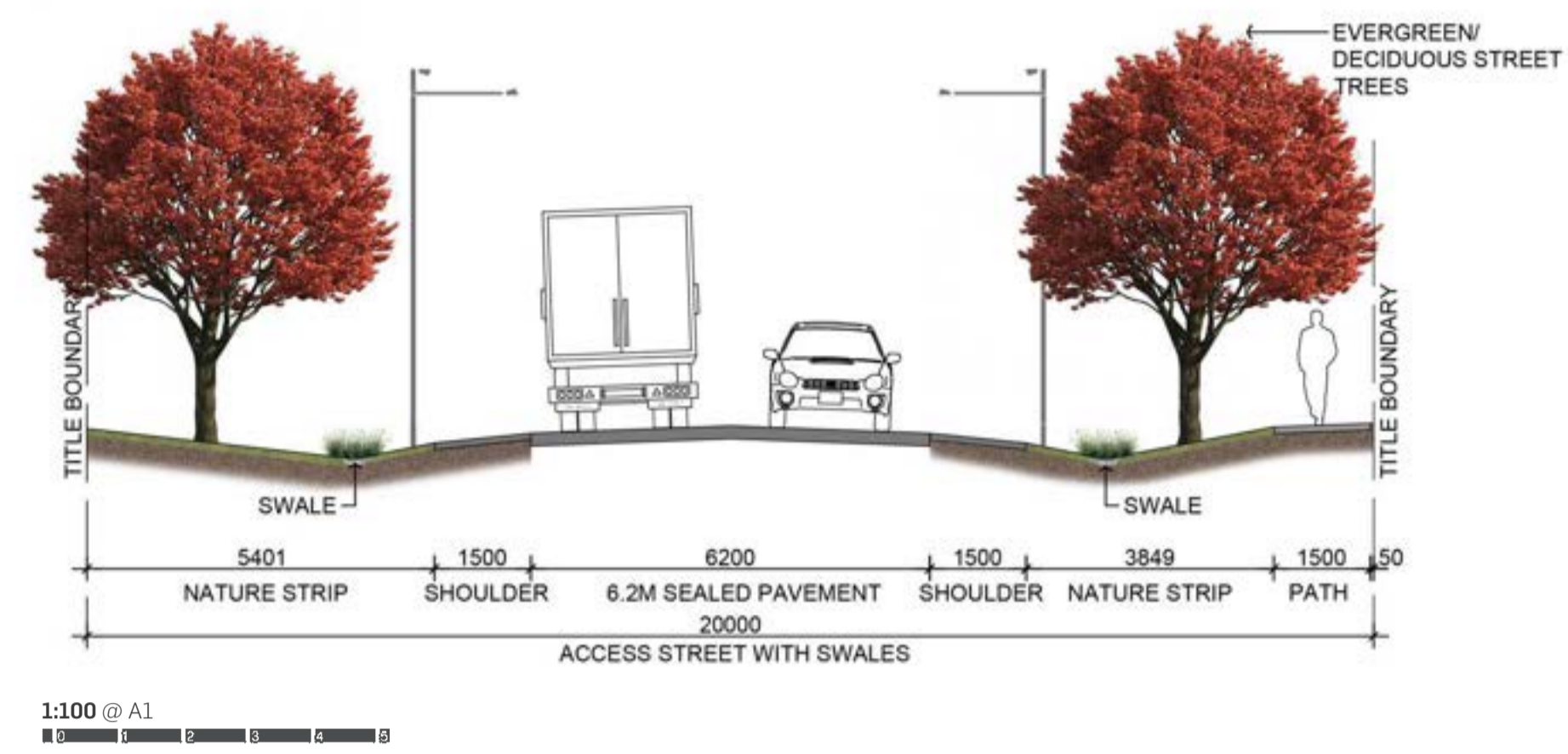
3 TREE PROTECTION ZONE DIAGRAM
LMP-02 PLAN NTS



2 TYPICAL SHRUB PLANTING DETAIL
LMP-02 SECTION DETAIL 1:25

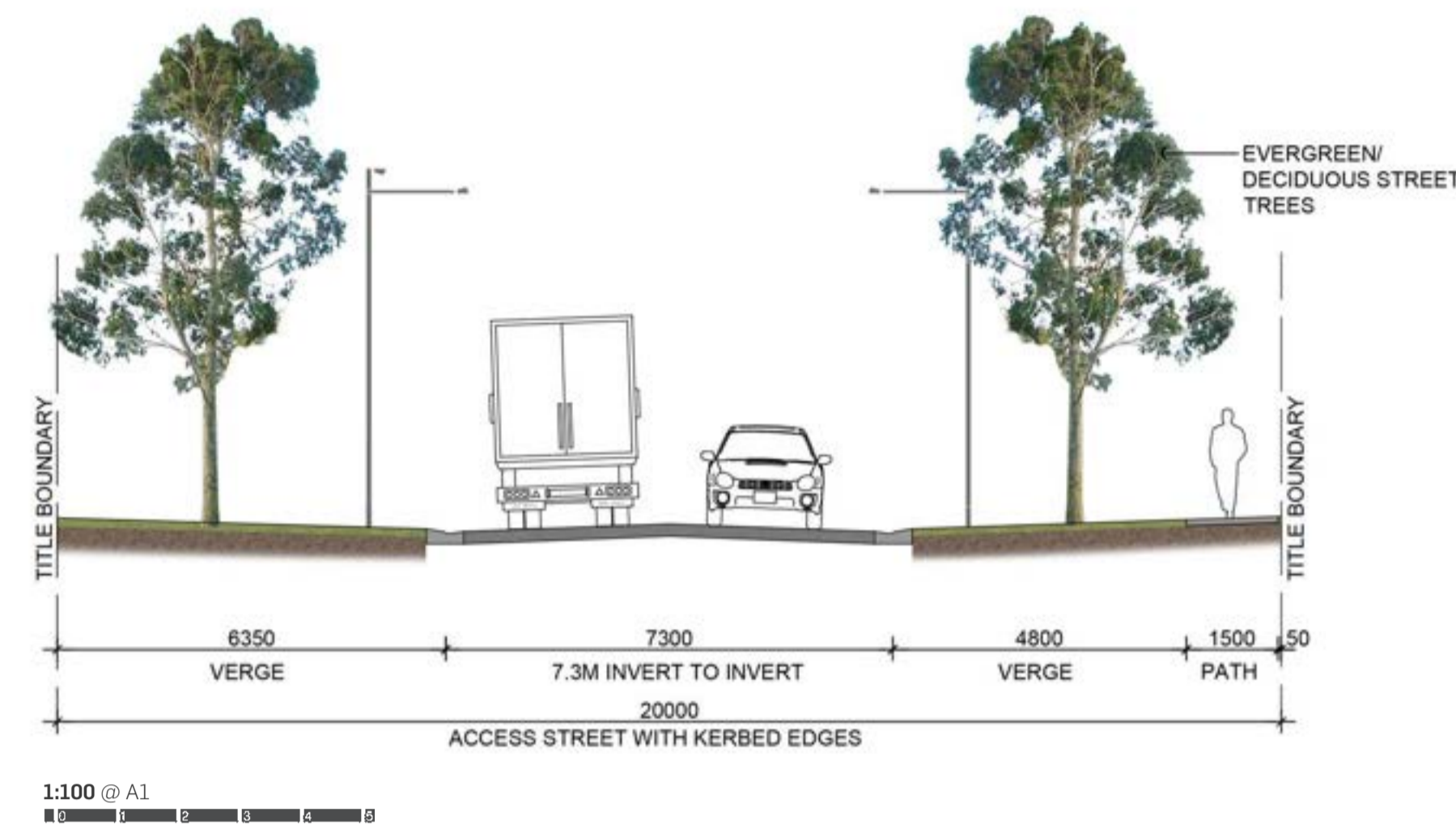
CROSS SECTION A

TYPICAL LOW DENSITY RESIDENTIAL ACCESS STREET

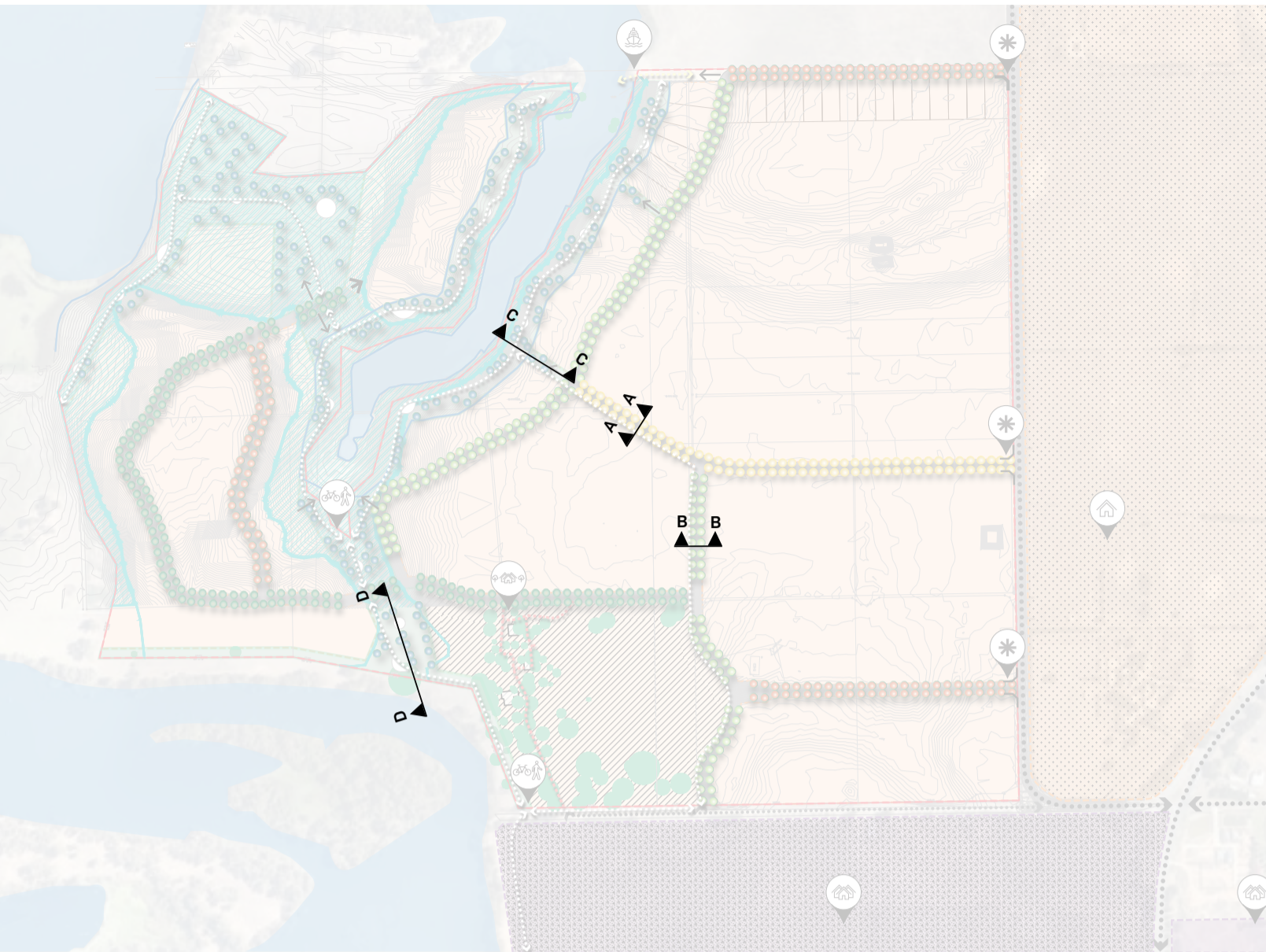


CROSS SECTION B

TYPICAL URBAN ACCESS STREET

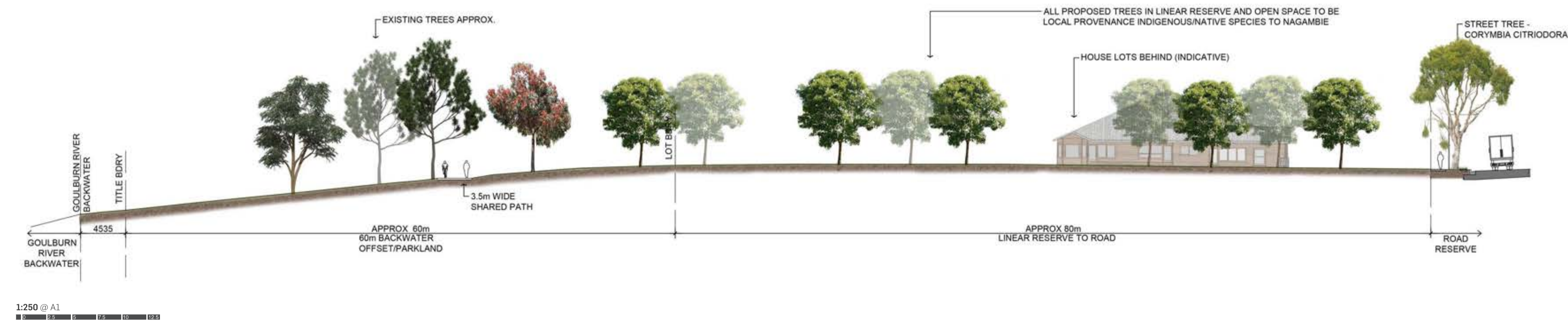


KEY PLAN



CROSS SECTION C

GOULBURN RIVER BACK WATER

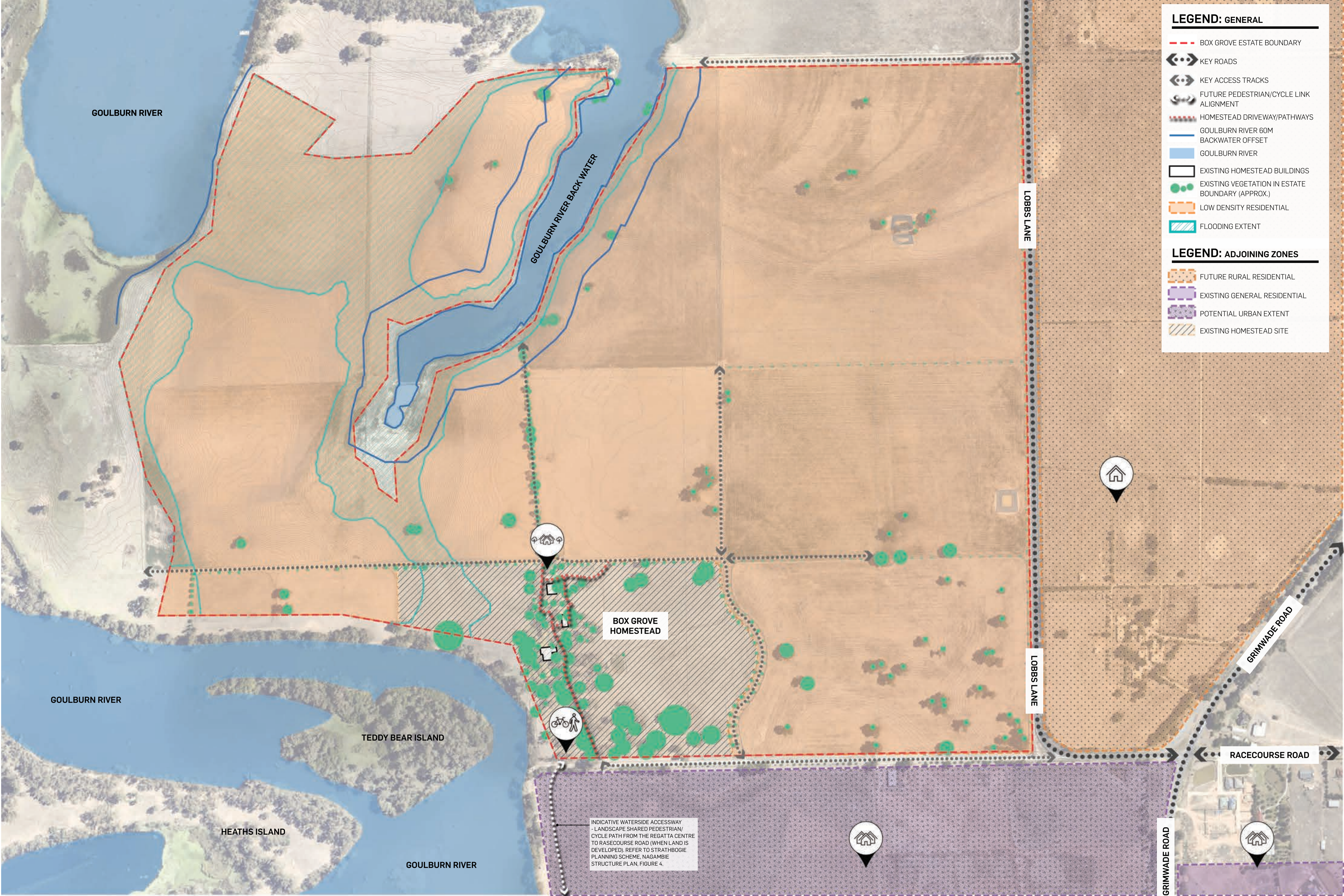


CROSS SECTION D

GOULBURN RIVER TO OPEN SPACE



Appendix 2 Development Plan





Appendix 3 Photos of the study area



Photo 1 View to the grassland areas to north



Photo 2 Riparian vegetation along the Goulburn River, weestern side of the site



Photo 3 Woodland vegetation around the Box Grove Homestead



Photo 4 View of adjoining property to the East of the site



Photo 5 Existing grassland on site