BAL ASSESSMENTS | BUSHFIRE MANAGEMENT PLANS | CONSULTANCY

RUIC FIRE

BUSHFIRE MANAGEMENT PLAN

Strategic Planning Proposal

Kemerton Strategic Industrial Area, Wellesley

Version: 1.3 Reference: 5549 Date: March 2017

Project Number:	5549
Project Name:	Kemerton Strategic Industrial Area, Wellesley
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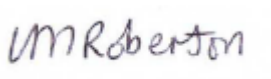

Author: Louisa Robertson
Date: 15th March 2017

Approved by: Darrel Krammer
Date: 15th March 2017

In the signing the above, the author declares that this Bushfire Management Plan meets the requirements of State Planning Policy 3.7. This report supersedes all previous Bushfire Management Plans for the site.

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1.0 Introduction

1.1 Purpose of Report

The aim of this Bushfire Management Plan (BMP) is to provide a strategic Bushfire Hazard Level Assessment and an assessment of the bushfire protection criteria of *Guidelines for Planning in Bushfire Prone Areas* (the Guidelines) (WAPC, 2015b) relevant to the proposed Kemerton Strategic Industrial Area (KSIA) Structure Plan.

1.2 Subject Site

The site the subject of this Bushfire Management Plan (BMP) is known as the Kemerton Strategic Industrial Area (KSIA). The site is located within the Locality of Wellesley, approximately 13km straight line and 20km driving distance north east of the Bunbury CBD. The site is bordered by Forrest Highway (Old Coast Road) to the West, Brunswick River to the south and Wellesley River to the east and has a total land area of 7,605ha.

The site is located within the municipality of the Shire of Harvey. Figure 1A illustrates the site location. Figure 1B illustrates the site and its immediate surrounds.

A large proportion of the site is identified as being Bushfire Prone on the State Bushfire Prone Maps as shown in Figure 1E.

1.3 Development Description

The KISA was established in 1985 and it is proposed to further develop the site over a long term time period, consistent with future demand for industrial sites in the area. A Structure Plan has been prepared over the site to guide future development of the area.

The site comprises:

- 2052ha of Core Industry Area - Kemerton Strategic Industry Zone
- 284ha of Ancillary Industrial Area - Kemerton Ancillary Industrial Zone
- 5437ha of Buffer Area - Kemerton Industry Buffer

The Structure Plan is illustrated in Figure 1C.

As the development is expected to be staged over long periods, the bushfire protection criteria of the Guidelines are to be addressed during each stage of subdivision and/or development to ensure that each stage is able to comply.

1.4 Land Use

The KSIA is jointly owned by LandCorp (36.5%), The Department of Parks and Wildlife (DPaW) (35.0%) and Private/Other ownership (28.5%) (Figure 1D).

The current primary land uses are rural, industrial and conservation. It is expected that industrial land use will increase with the expansion of the KSIA. Major industries will operate within the centrally located Core Industry Area which is surrounded by the Buffer Area. The purpose of the Buffer Area is to ensure that activities within the Core Area do not adversely impact properties outside of the KSIA boundaries. Industries within the Ancillary Industry Area, located in the south east of the site, adjacent to the

Wellesley River, will operate to support major industries within the Core Area. Figure 1B and 1C illustrate the three industrial zones.

Existing industrial operations within the KSIA include:

- Kemerton Wastewater Treatment Plant
- Cristal Titanium Dioxide Pigment Plant
- Silicon Smelter Project
- Sand Quarry
- Kemerton Power Station
- Kemerton Silica Sand Mining Project

Existing and future industrial development within the site is considered to be consistent with high-risk land use as defined in *State Planning Policy 3.7* (SPP3.7):

"A land use which may lead to the potential ignition, prolonged duration and/ or increased intensity of a bushfire. Such uses may also expose the community, fire fighters and the surrounding environment to dangerous, uncontrolled substances during a bushfire event".

1.5 Environmental Considerations

Several biological surveys have been conducted within the area of the KSIA. The findings are summarised in the Overarching Environmental Management Plan (Eco Logical Australia, 2015b). Key figures from the Overarching Environmental Management Plan are included in Appendix 1.

Some of the main findings are summarised below:

- Around 40% of the site is identified as being in excellent condition whereas nearly a third is considered completely degraded. The remaining land is a combination of very good, good, degraded and plantation vegetation.
- Of particular note are areas within the Core which contain excellent quality bushland Threatened Flora, Threatened fauna habitat, Threatened Ecological Communities and Ecological Corridors.
- The Buffer Area is considered to be very important for conservation, containing rare vegetation communities supporting a range of habitat types suitable for native flora and fauna species. A total of five threatened and eight priority flora species are known to occur within the site. A total of 103 vertebrate fauna species are known to occur within the site, including 10 conservation significant and four priority fauna species. The Kemerton wetlands have strong hydrological groundwater connections such that the impacts on any wetland of any classification could have a significant impact upon other wetlands.
- The site contains a significant network of wetlands including Conservation Category Wetlands (CCWs), some of which are protected by state policy.

1.5.1 Bushfire Context

All future development within the site is to comply with policy measure 6.9 of SPP3.7 (WAPC, 2015a) by seeking advice and/or approval from the relevant agencies for environmental protection to ensure that bushfire management strategies do not have a significant adverse impact on the environment.

All future proponents that wish to develop within the KSIA are required to prepare individual site-specific Environmental Management Plans that align with the principles of the Over-arching Environmental Management Plan (Eco Logical Australia, 2015b) as well as this Bushfire Management Plan (RUIC Fire, 2016).

The Department of Parks and Wildlife (DPaW) will remain responsible for all bushfire related risk mitigation and management strategies within their own land holdings.

Future Bushfire Management Plans are to ensure that consideration has been made for the requirements of any Foreshore Management Plans (for Wellesley River) and Wetland Management Plans including consideration of their buffers from any high value natural assets.

1.6 Water Supply

The KSIA, as an entirety, is not currently serviced by reticulated scheme water.

A dedicated firefighting water tank and connection is proposed in the Lot 505 Treasure Road Transfield Power Station through mutual agreement between the Department of Parks and Wildlife and Transfield. The dedicated firefighting water tank is to comply with A4.2 of the Guidelines to ensure accessibility for both urban and bushfire firefighting appliances.

There are a range of water resources available to current and future industrial development within the KSIA, including:

- The Integrated Water Supply Scheme
- The Wellington Dam
- Groundwater Abstraction
- Recycled water from the Verve Pipeline, the Kemerton Wastewater Treatment Plant and the MIC Treatment Plant

Acceptable Solutions regarding water supply for future subdivision/ development are addressed in Section 4.4.

Each future industrial proponent at KISA will be responsible for preparing a Bushfire Management Plan and Emergency Response Plan which will coordinate access to a suitable water resource for fire fighting.

1.7 Previous Bushfire Assessments

A Bushfire Hazard Assessment and Management Plan was prepared for the site by Eco Logical Australia (2015a) in accordance with the now superseded *Planning for Bushfire Protection Guidelines 2nd Edition* (2010).

A Strategic Overarching Bushfire Management Plan (SOBMP) was prepared for the site by RUIC Fire (2015) in accordance with the now superseded *Planning for Bushfire Protection Guidelines 2nd Edition* with due regard for *draft State Planning Policy 3.7 Planning for Bushfire Risk Management*.

The current document has been prepared in accordance with *State Planning Policy 3.7* (SPP3.7) and *Guidelines for Planning in Bushfire Prone Areas* (the Guidelines). It replaces both of the former Bushfire Assessments.

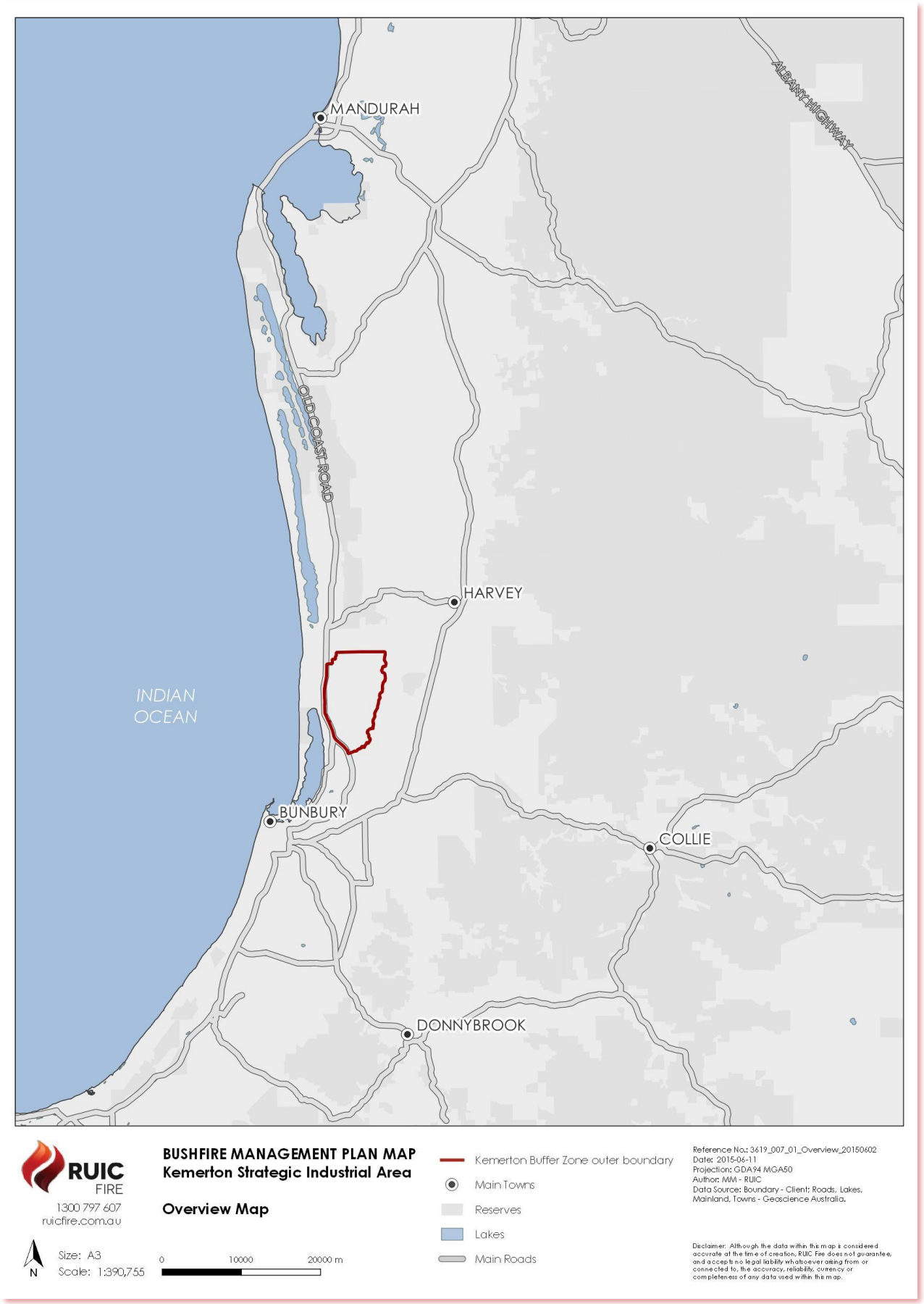


Figure 1A: *Site Location*

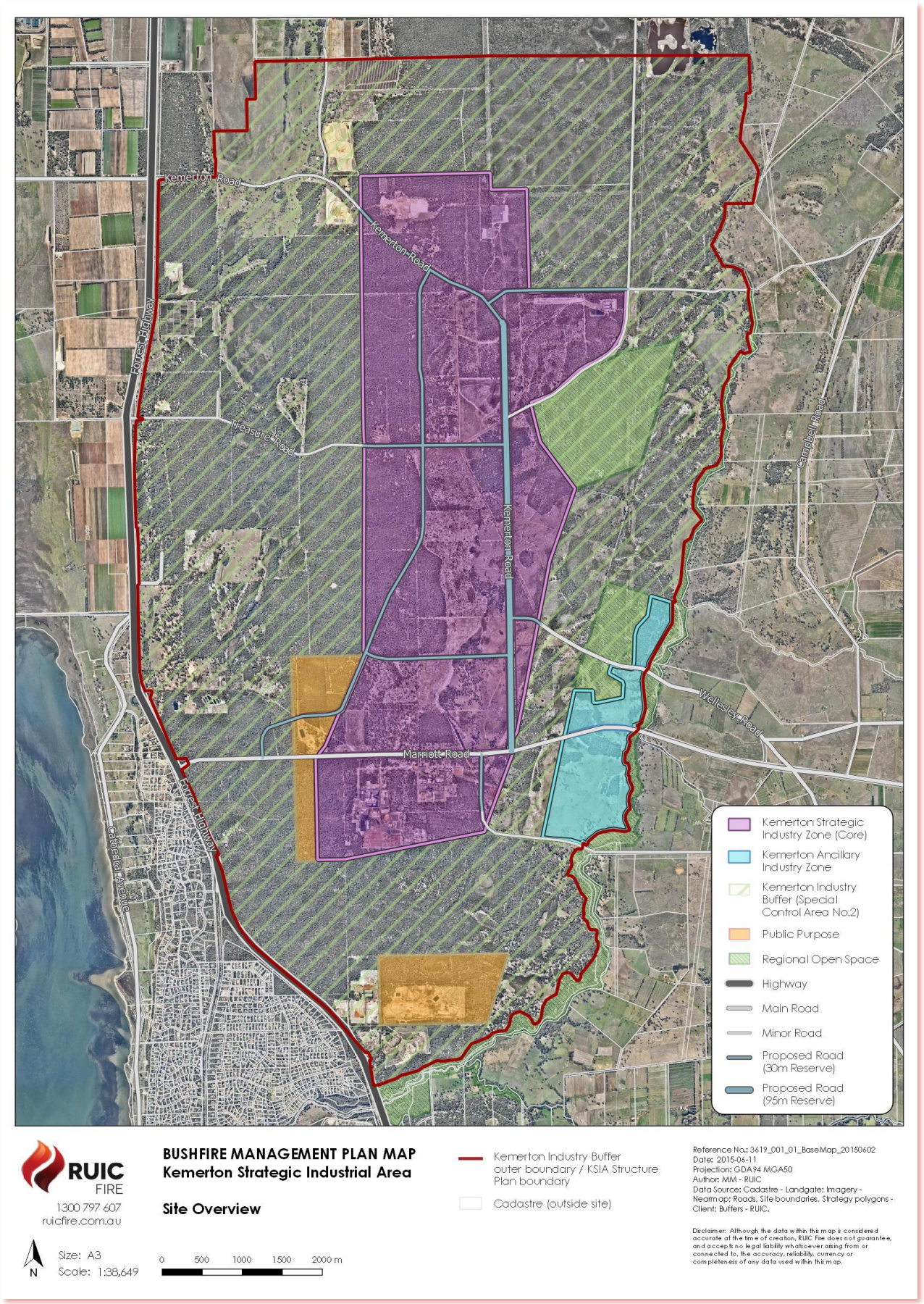


Figure 1B: *Site Overview*

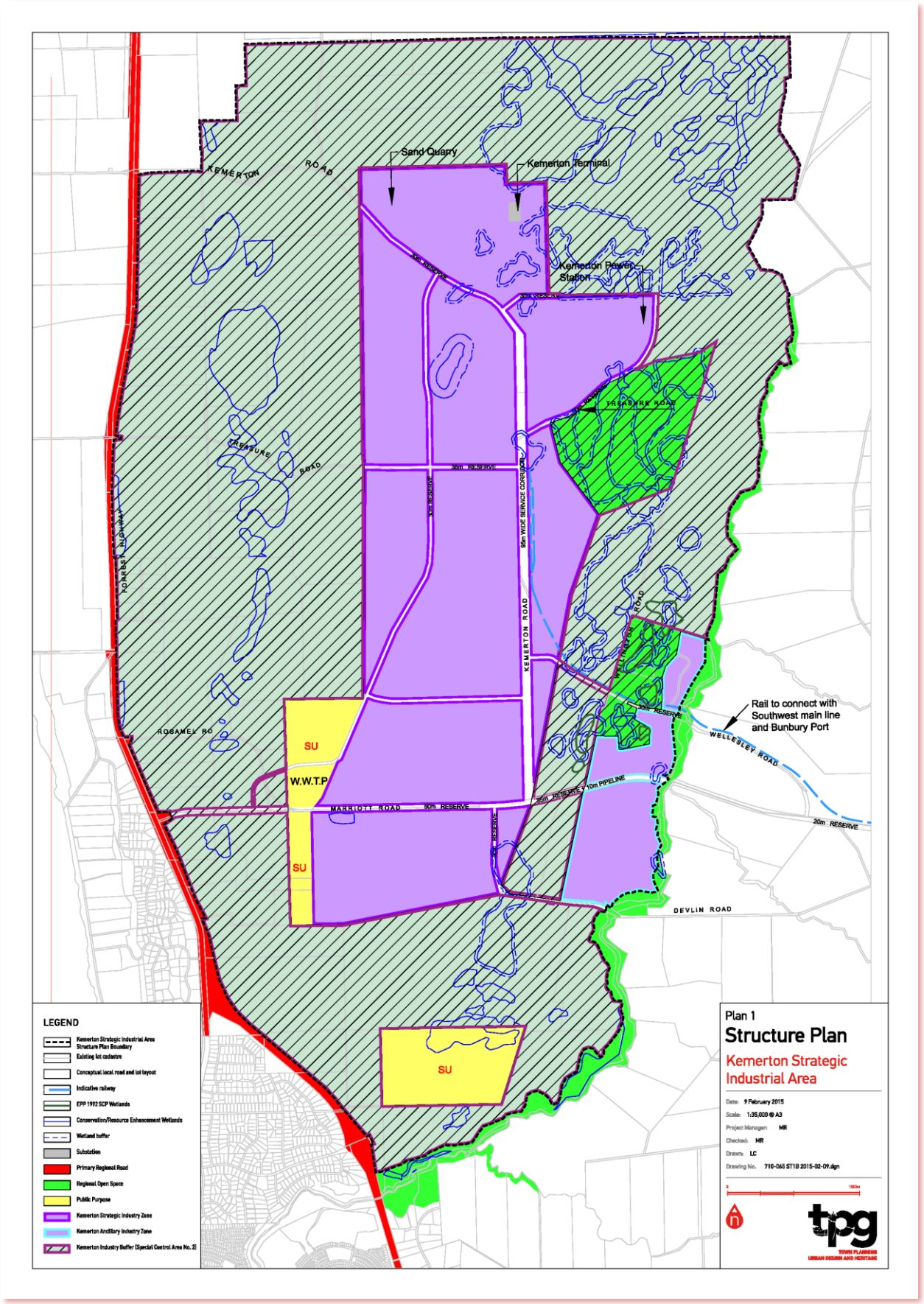


Figure 1C: *Structure Plan*

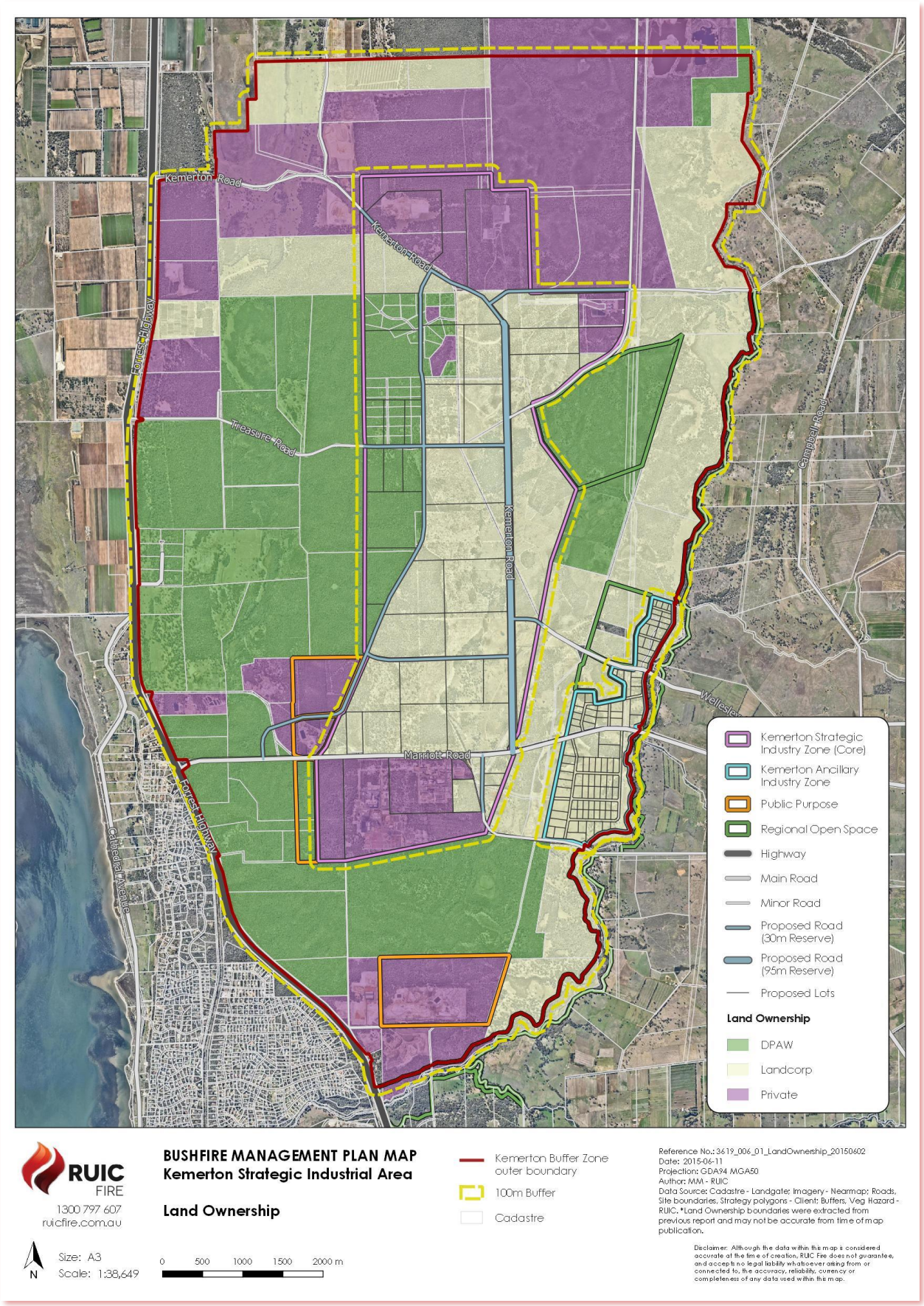


Figure 1D: *Land Ownership*

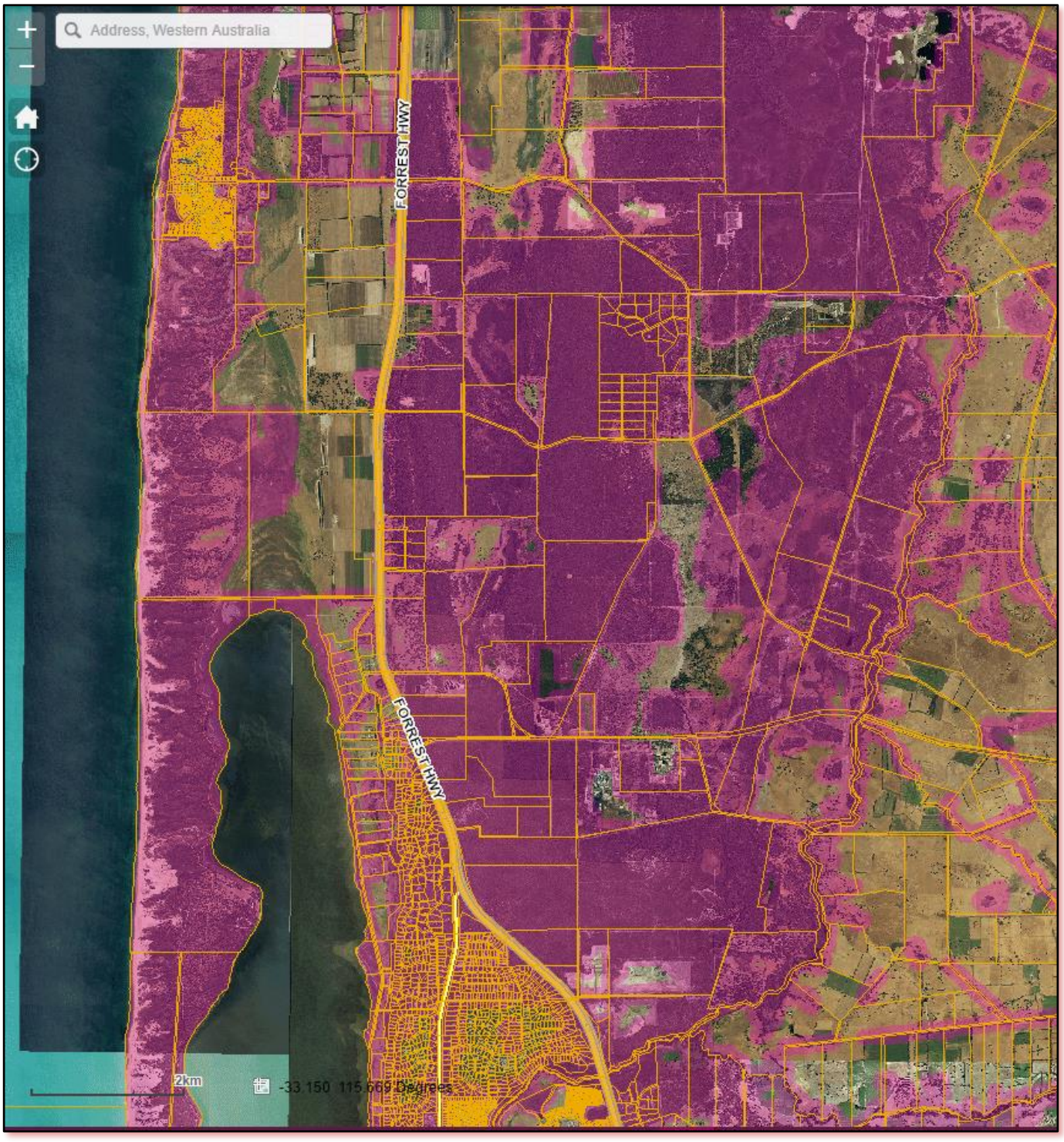


Figure 1E: *Map of Bush Fire Prone Areas 2016 (Department of Fire and Emergency Services, 2016)*

2.0 Spatial consideration of bushfire threat

2.1 Strategic Bushfire Hazard Level Assessment

2.1.1 Assessment Methodology

The Bushfire Hazard Level Assessment was undertaken within 100 metres of the proposed development area in accordance with *Guidelines for Planning in Bushfire Prone Areas* (the Guidelines) Appendix Two.

Table 2A details the vegetation characteristics and associated hazard levels identified in the Guidelines Appendix 2.

Table 2A: *Vegetation characteristics and associated hazard levels*

Vegetation characteristics	Hazard level
• devoid of standing vegetation (less than 0.25ha cumulative area); • areas which, due to climatic conditions or vegetation (e.g. rainforest), do not experience bushfires; • inner urban or suburban areas with maintained gardens and very limited standing vegetation (less than 0.25ha cumulative area); • low threat vegetation, including grassland managed in a minimal fuel condition (i.e. to a nominal height of 100mm), maintained lawns, vineyard and orchards; and • pasture or cropping areas with very limited standing vegetation that is shrubland, woodland or forest with an effective up slope*, on flat land or an effective down slope* of less than 10 degrees, for a distance greater than 100 metres.	**Low**
• areas containing pasture or cropping with an effective down slope* in excess of 10 degrees for a distance greater than 100 metres; • unmanaged grasslands; • open woodlands; • open shrublands; • low shrubs on areas with an effective up slope*, on flat land or an effective down slope* of less than 10 degrees, for a distance greater than 100 metres or flat land; • suburban areas with some tree cover; and • forest and woodlands with a permanent grass understorey or at most, a scrub understory structure consisting of multiple	**Moderate**

Vegetation characteristics	Hazard level
areas of <0.25ha and not within 20 metres of each other or single areas of <1ha and not within 100 metres of other scrub areas.	
• forests with a scrub understorey which is multi-tiered; • woodlands with a scrub understorey which is multi-tiered; • tall shrubs; and • any area of vegetation not otherwise categorised as low or moderate.	**Extreme**
*NOTE Effective slope refers to the slope under the classified vegetation in relation to the subject site. Distances less than 100 metres will be deemed to be undulating land, rather than a nominated slope.	

2.1.2 Vegetation and Hazard Level

A strategic pre-development Bushfire Hazard Level Assessment was undertaken for the proposed development area as well as all land within 100 metres of the external boundary of the subject site (the assessment area).

Due to the large area of the site, vegetation was assessed primarily using high definition satellite imagery (nearmap, 2016), cross-referenced with the Vegetation Community Map prepared by Eco Logical (2015b) in the Overarching Environmental Management Plan. This is provided in Appendix 1. Several site inspections were conducted to confirm vegetation classifications on site where possible.

Figures 2A to 2J illustrate the strategic Bushfire Hazard Level Assessment for the assessment area. The site contains **low**, **moderate** and **extreme** bushfire hazard level areas.

Table 2B lists each vegetation plot identified in the BHLA maps as well as the vegetation characteristics and corresponding bushfire hazard level. Photos of the vegetation types are included below in Section 2.1.3.

In accordance with Step Three of the methodology, areas with a low bushfire hazard level that are located within 100 metres of moderate or extreme bushfire hazard level areas have been identified as moderate hazard level areas, within that 100 metres. These areas are identified on the maps as "100m HSZ/ Moderate".

Figure 2J shows a post development Hazard Level Assessment based on the assumption that the Core of the Strategic Industrial Area will be cleared. The Kemerton SIA Structure Plan acknowledges that it is possible that some of the Core cannot be developed due to the environmental values present and corresponding bushfire hazard risk applicable to these areas. Future lot sizes, configuration and development 'footprints' are to be determined at the subdivision and development stage based upon further detailed assessment of a range of criteria including the Overarching Water Management Strategy, bushfire risk management, biodiversity measures (including wetland management and habitat protection) to the satisfaction of DOW, DPAW, DFES and the LG. Existing mapping should be used as a guide, with a case-by-case analysis of site specific constraints needed to support future proposals.

Table 2B: *Vegetation classes and bushfire hazard levels*

Plot No	In Map:	Vegetation class	Hazard Level
1	1	Pasture or cropping area	Low & Moderate*
2	1	Devoid of standing vegetation	Low
3	1	Open woodlands	Moderate
4	1	Unmanaged grassland	Moderate
5	1	Open woodlands	Moderate
6	1	Woodland with grassy understorey >0.25ha	Extreme
7	1	Devoid of standing vegetation	Moderate*
8	1	Woodland with grassy understorey >0.25ha	Extreme
9	1	Devoid of standing vegetation	Low & Moderate*
10	1-8	Forest	Extreme
11	1	Open woodlands	Moderate
12	1, 4	Open woodlands	Moderate
13	1	Devoid of standing vegetation	Low & Moderate*
14	1	Open shrublands	Moderate
15	1	Low Threat	Low & Moderate*
16	2	Open shrublands	Moderate
17	2	Devoid of standing vegetation	Low & Moderate*
18	2	Devoid of standing vegetation	Low & Moderate*
19	2	Open Woodlands	Moderate
20	2, 3, 6	Open shrublands	Moderate
21	3	Devoid of standing vegetation	Moderate*
22	3	Devoid of standing vegetation	Low & Moderate*
23	3	Open Woodlands	Moderate
24	3	Open Woodlands	Moderate
25	3	Forest	Extreme
26	4	Devoid of standing vegetation	Moderate*
27	4	Open woodlands	Moderate
28	4	Woodland with grassy understorey >0.25ha	Extreme
29	4	Devoid of standing vegetation	Low & Moderate*
30	4	Devoid of standing vegetation	Moderate*
31	4	Devoid of standing vegetation	Moderate*
32	5	Low Threat	Moderate*
33	5	Forest	Extreme
34	5	Forest	Extreme
35	5	Forest	Extreme
36	5	Forest	Extreme
37	5	Forest	Extreme
38	5	Low Threat	Moderate*
39	6	Open woodlands	Moderate
40	6	Open woodlands	Moderate
41	6	Open woodlands	Moderate
42	6	Open woodlands	Moderate
43	7	Devoid of standing vegetation	Low & Moderate*

Plot No	In Map:	Vegetation class	Hazard Level
44	7, 8	Devoid of standing vegetation	Low & Moderate*
45	7, 8	Devoid of standing vegetation	Low & Moderate*
46	7, 8	Devoid of standing vegetation	Low & Moderate*
47	8	Devoid of standing vegetation	Low & Moderate*
48	8	Devoid of standing vegetation	Moderate*
49	8	Forest	Extreme
50	8	Forest	Extreme
51	8	Low Threat	Moderate*
52	8	Low Threat	Moderate*
53	8	Low Threat	Moderate*
54	8	Low Threat	Moderate*
55	8	Low Threat	Moderate*
56	8	Low Threat	Moderate*
57	1	Devoid of standing vegetation	Low & Moderate*
58	8	Open Woodland	Moderate
59	6, 8	Forest	Extreme
* Areas of Low Bushfire Hazard Level mapped as a Moderate Bushfire Hazard Level as they are within 100 metres of Moderate or Extreme Hazard Level Areas			

2.1.3 Vegetation Photos

Class: Forest with scrub understorey

BHL: Extreme

Class: Forest with scrub understorey

BHL: Extreme

Class: Forest with scrub understorey

BHL: Extreme

Class: Forest with scrub understorey (recently burnt)

BHL: Extreme

Class: Forest (plantation)

BHL: Extreme

Class: Forest with scrub understorey

BHL: Extreme

Class: Forest with scrub understorey

BHL: Extreme

Class: Forest (plantation)

BHL: Extreme

Class: Woodland with scrub understorey

BHL: Extreme

Class: Forest with scrub understorey

BHL: Extreme

Class: Forest with scrub understorey

BHL: Extreme

Class: Forest with scrub understorey

BHL: Extreme

Class: Forest with scrub understorey

BHL: Extreme

Class: Woodland with grass understorey

BHL: Moderate/ Extreme

Class: Woodland with grass understorey

BHL: Moderate/ Extreme

Class: Woodland with grass understorey

BHL: Moderate/ Extreme

Class: Woodland with grass understorey

BHL: Moderate/ Extreme

Class: Open Woodland

BHL: Moderate

Class: Open Shrublands

BHL: Moderate

Class: Open Shrublands

BHL: Moderate

Class: Open Shrublands

BHL: Moderate

Class: Unmanaged Grassland

BHL: Moderate

Class: Unmanaged Grassland

BHL: Moderate

Class: Low threat vegetation

BHL: Low

Class: Low threat vegetation

BHL: Low

Class: Low threat vegetation

BHL: Low

2.2 Bushfire Hazard Issues

From the BHLA Maps, the following bushfire hazard issues have been identified.

- The site contains extreme bushfire hazard level areas. Future development is to occur on low or moderate bushfire hazard level land only. Site-specific BMPs will be required to demonstrate this is achievable. Permanent vegetation management and/ or clearing may be required to lower the threat level and will be subject to agreeance by the determining authority, DPAW, DER and DFES.
- Figure 4J shows the residual bushfire hazard levels within the Core Area assuming all vegetation is cleared within this area. Development to be avoided in these areas as the extreme bushfire hazard levels will remain even after bushfire management strategies have been implemented within the Core Area. Note - the actual amount of clearing within the Core Area will be subject to individual project requirements in consultation with DPAW, DER and DFES.

- Future development is expected to consist of high-risk land uses. High-risk land uses are to be avoided in extreme bushfire hazard level areas and in BAL-40 and BAL-FZ areas. Policy measure 6.6.2 of SPP3.7 states that subdivision and development applications for high-risk land uses in BAL-40 and BAL-FZ areas will not be supported unless they comply with Policy Measures 6.6.1 (i.e. they are to be located in a maximum BAL-29 area) and 6.7.2 (i.e. they are considered to be unavoidable development). Site-specific BMPs, with an emergency evacuation plan and/or risk management plan are to be prepared to the satisfaction of DFES for applications in areas of BAL-12.5 or above.
- Future residential BCA Class 1, 2, 3 and associated Class 10a buildings are to be constructed to the applicable construction standard of AS 3959.
- Future BCA Class 4 to 9 buildings are recommended to be voluntarily constructed to comply with the AS 3959 construction standards.
- During construction (staging of development), a separation of at least 100 metres is to be provided to any classifiable vegetation on site, or to an adequate distance to ensure that development is not exposed to a radiant heat impact exceeding 29kW/m^2.

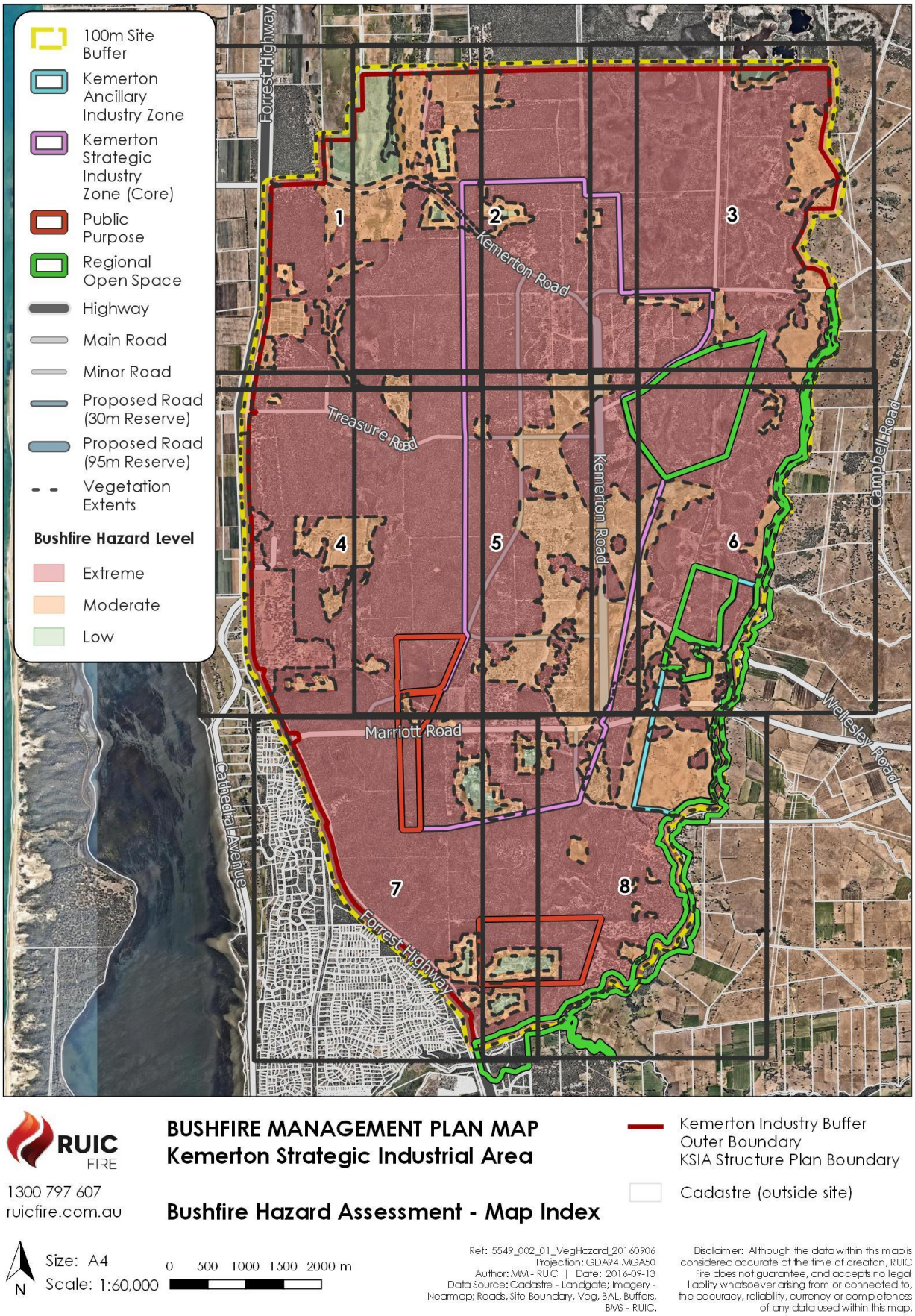


Figure 2A: *Bushfire Hazard Level Assessment – Map Index*

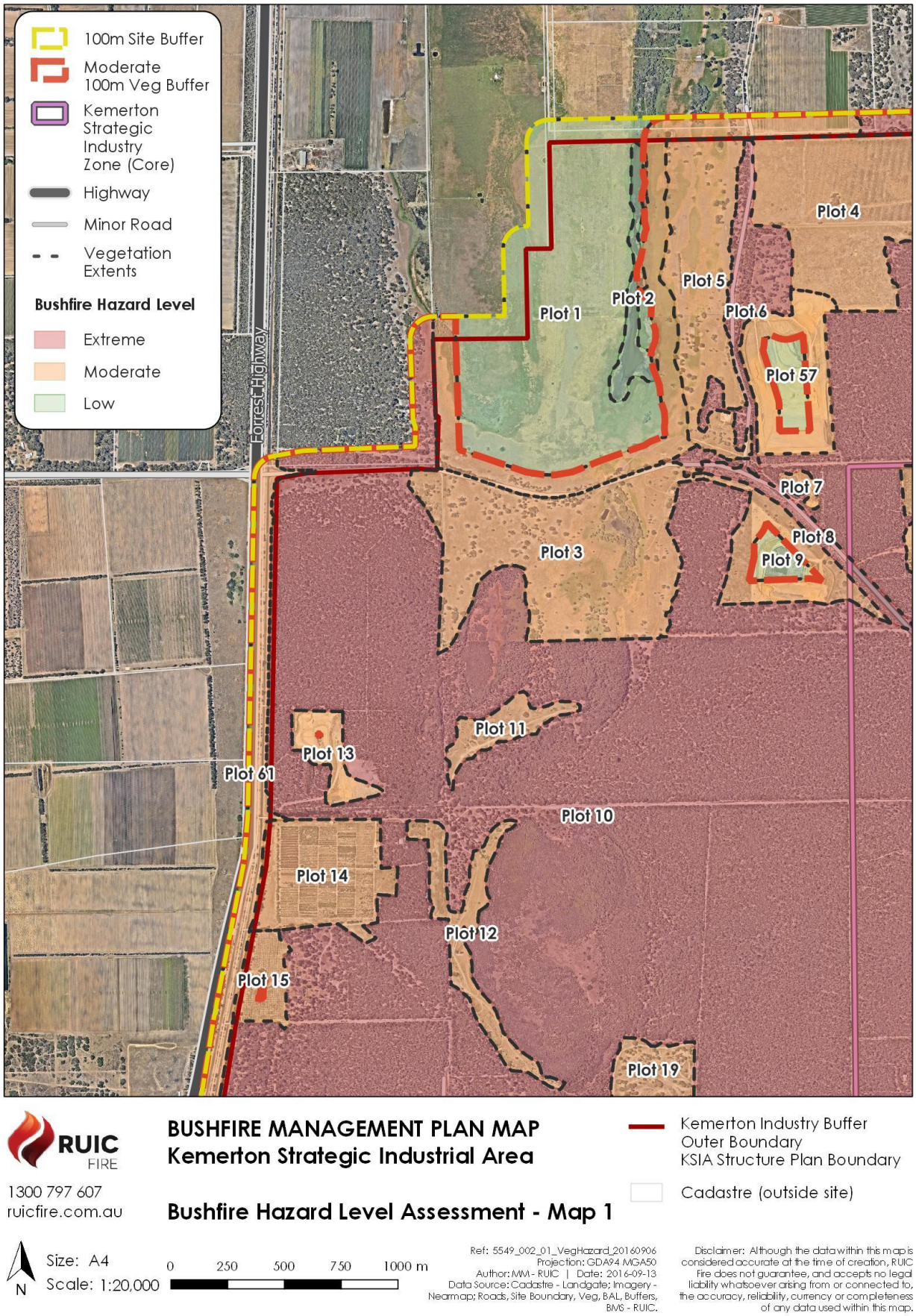


Figure 2B: *Bushfire Hazard Level Assessment – Map 1*

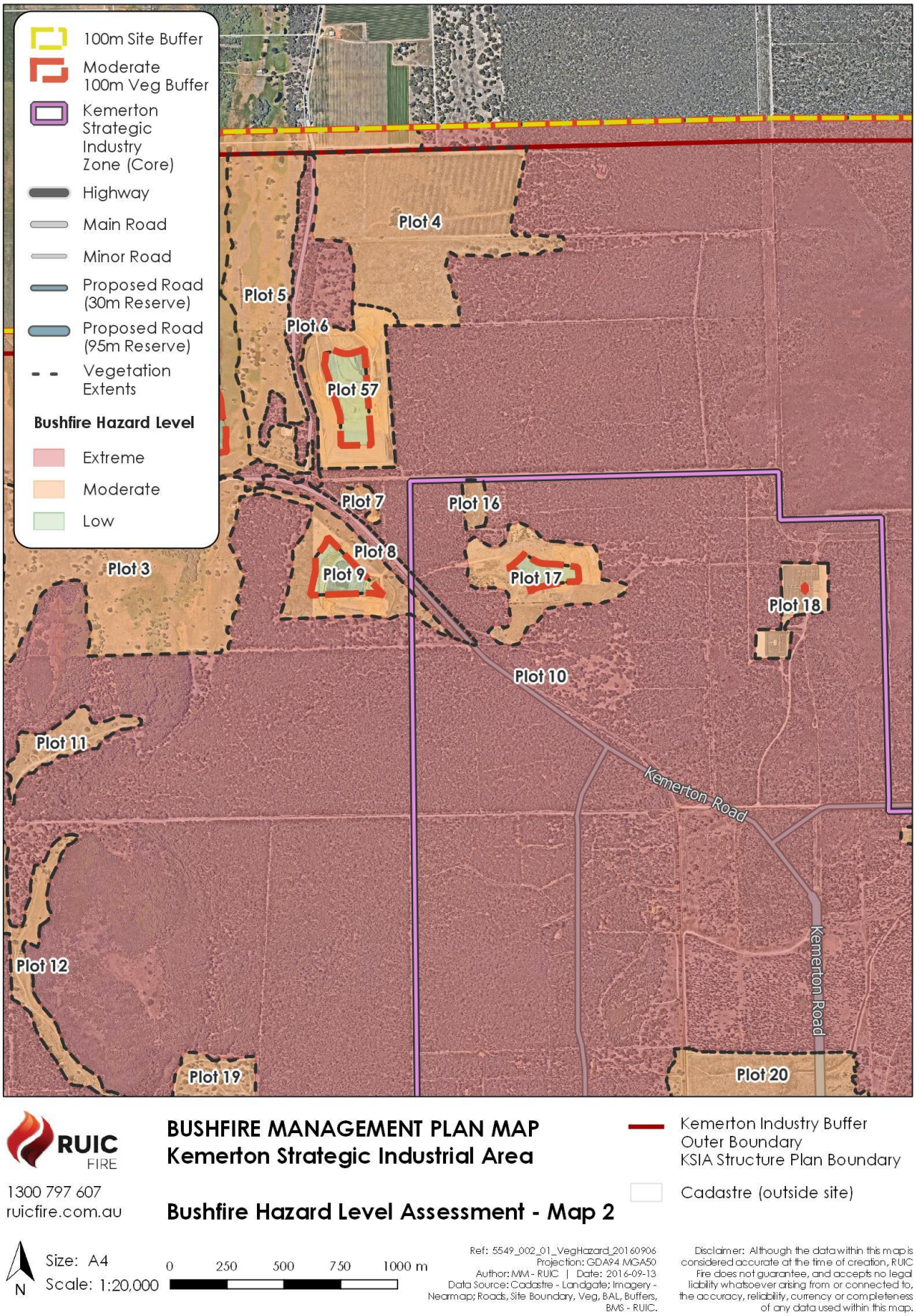


Figure 2C: *Bushfire Hazard Level Assessment – Map 2*

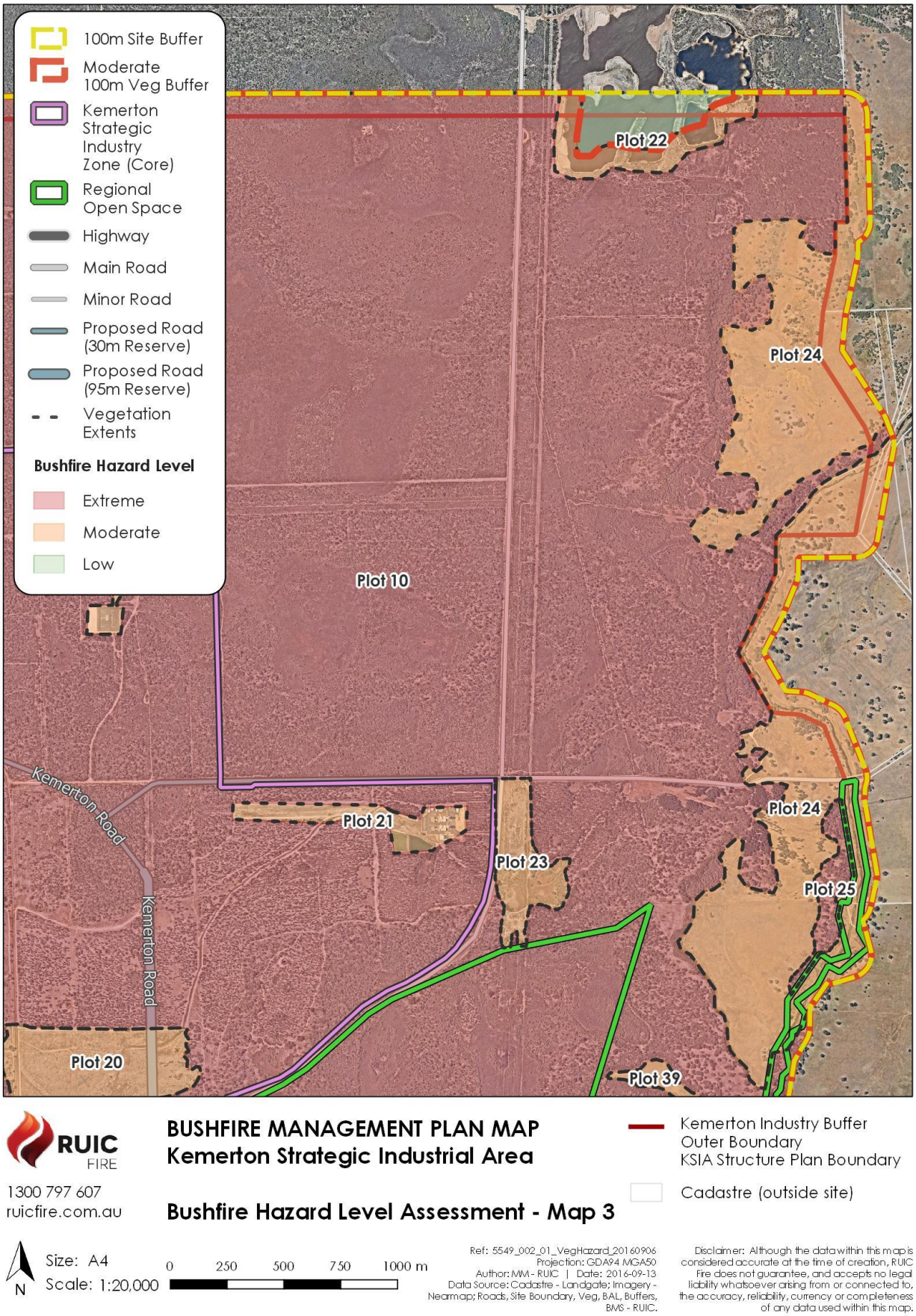


Figure 2D: *Bushfire Hazard Level Assessment – Map 3*

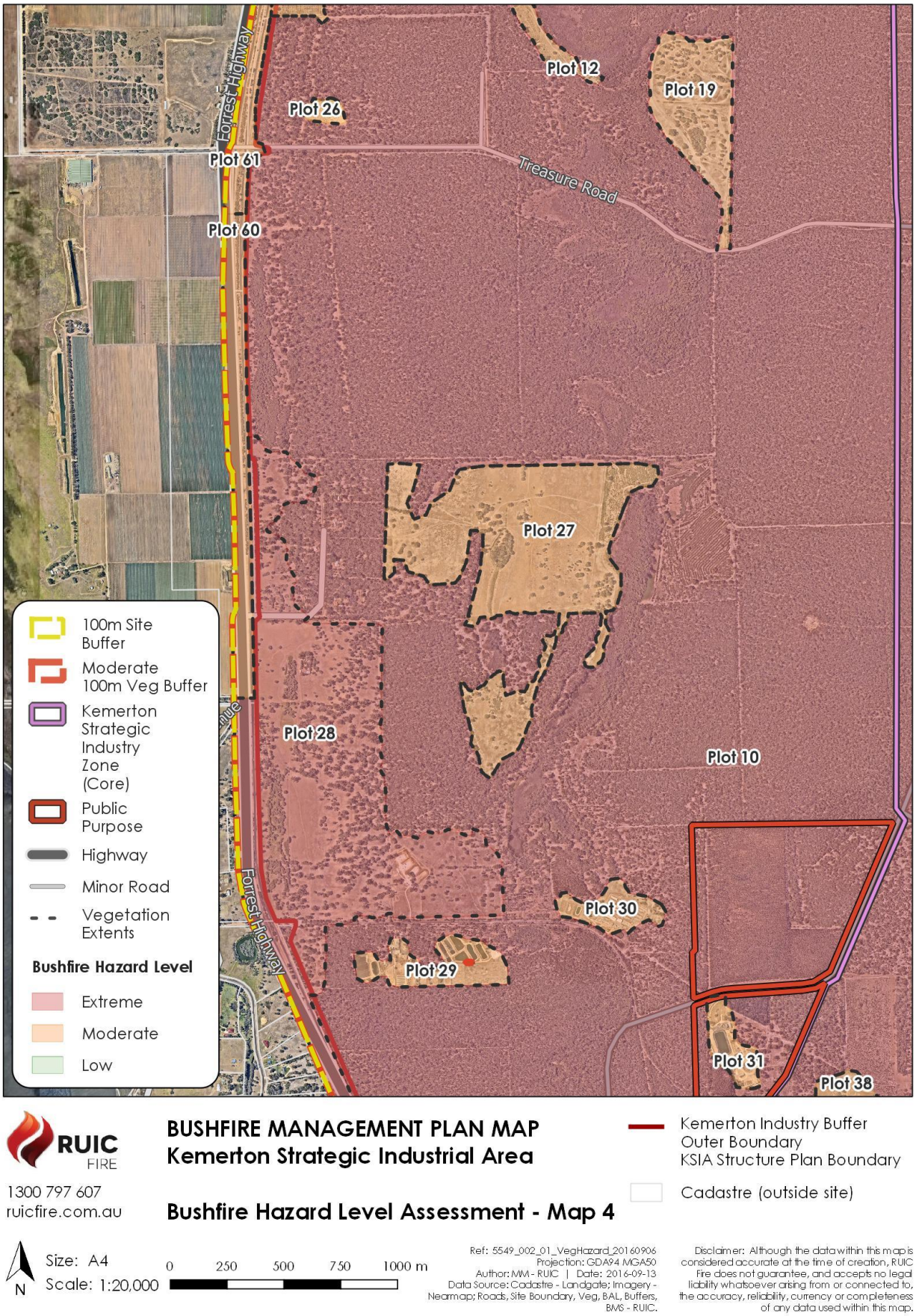


Figure 2E: *Bushfire Hazard Level Assessment – Map 4*

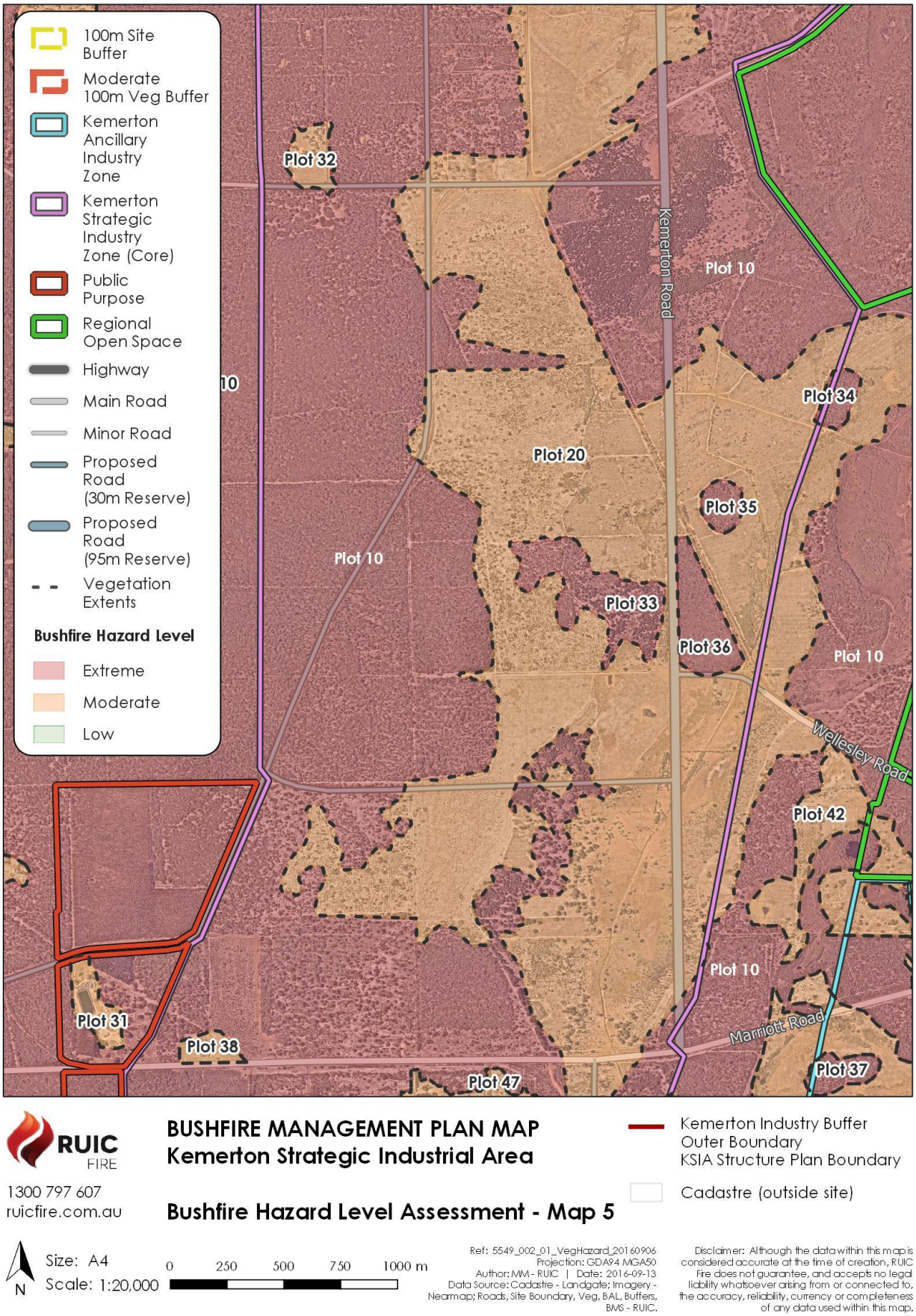


Figure 2F: *Bushfire Hazard Level Assessment – Map 5*

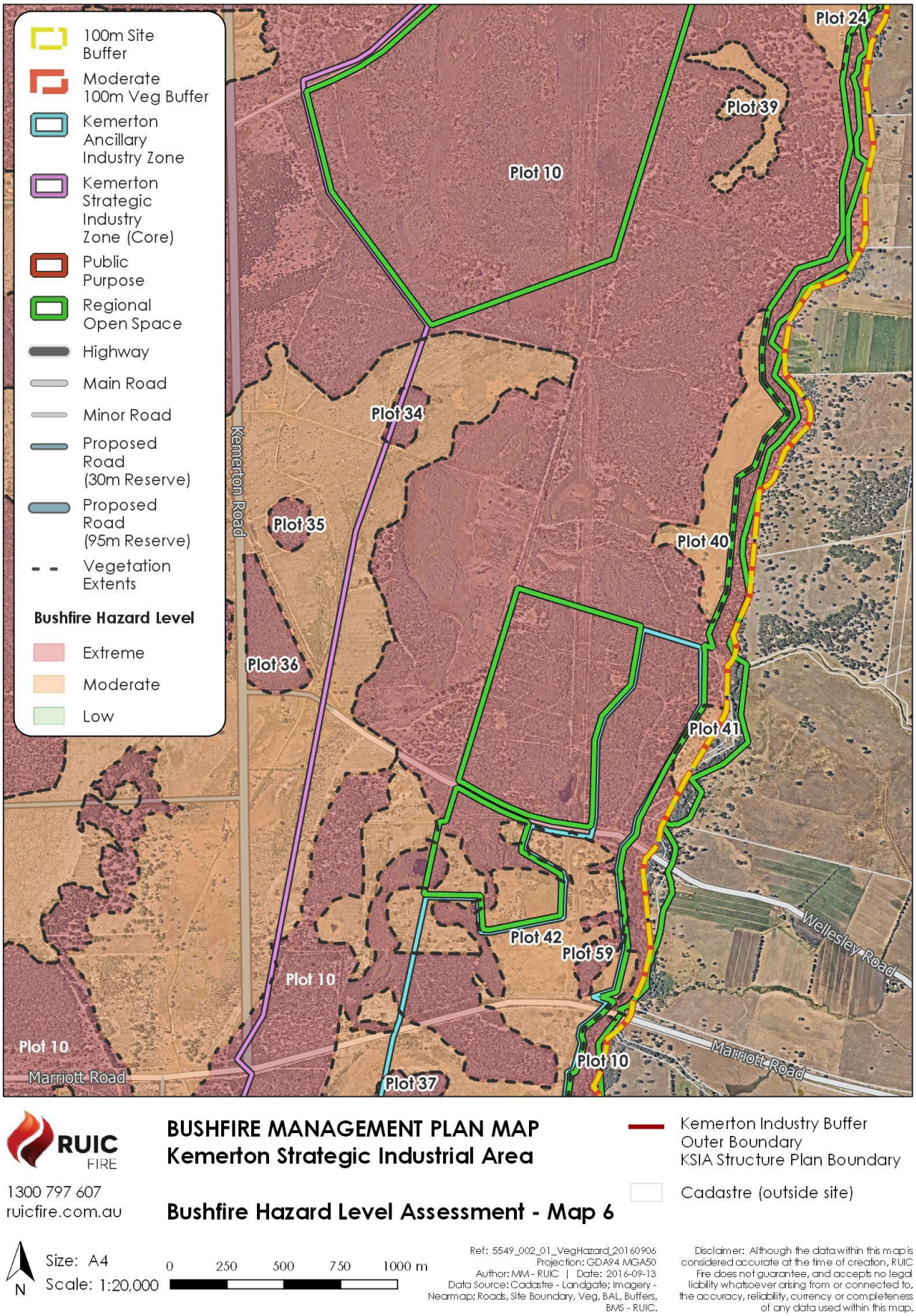


Figure 2G: *Bushfire Hazard Level Assessment – Map 6*

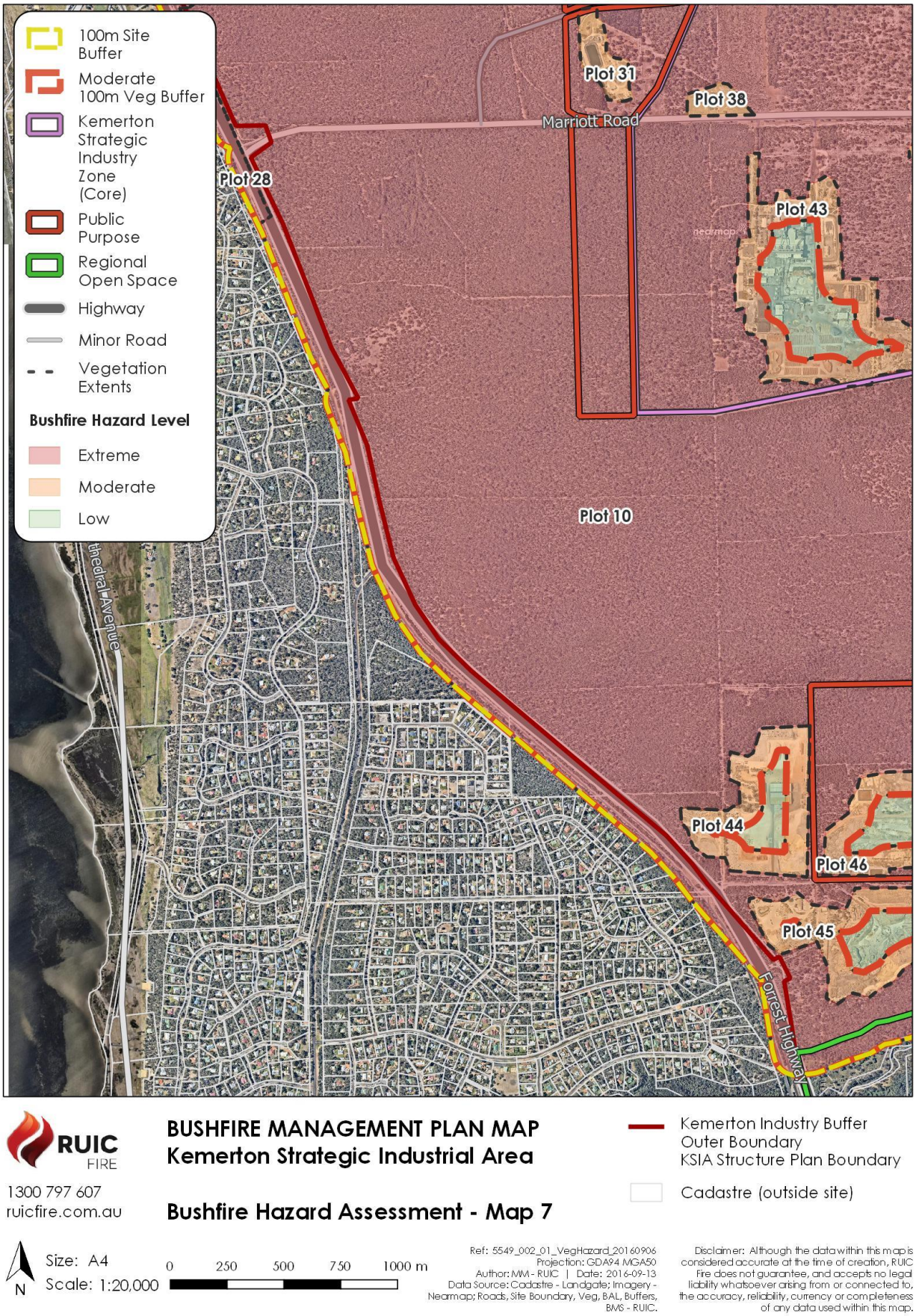


Figure 2H: *Bushfire Hazard Level Assessment – Map 7*

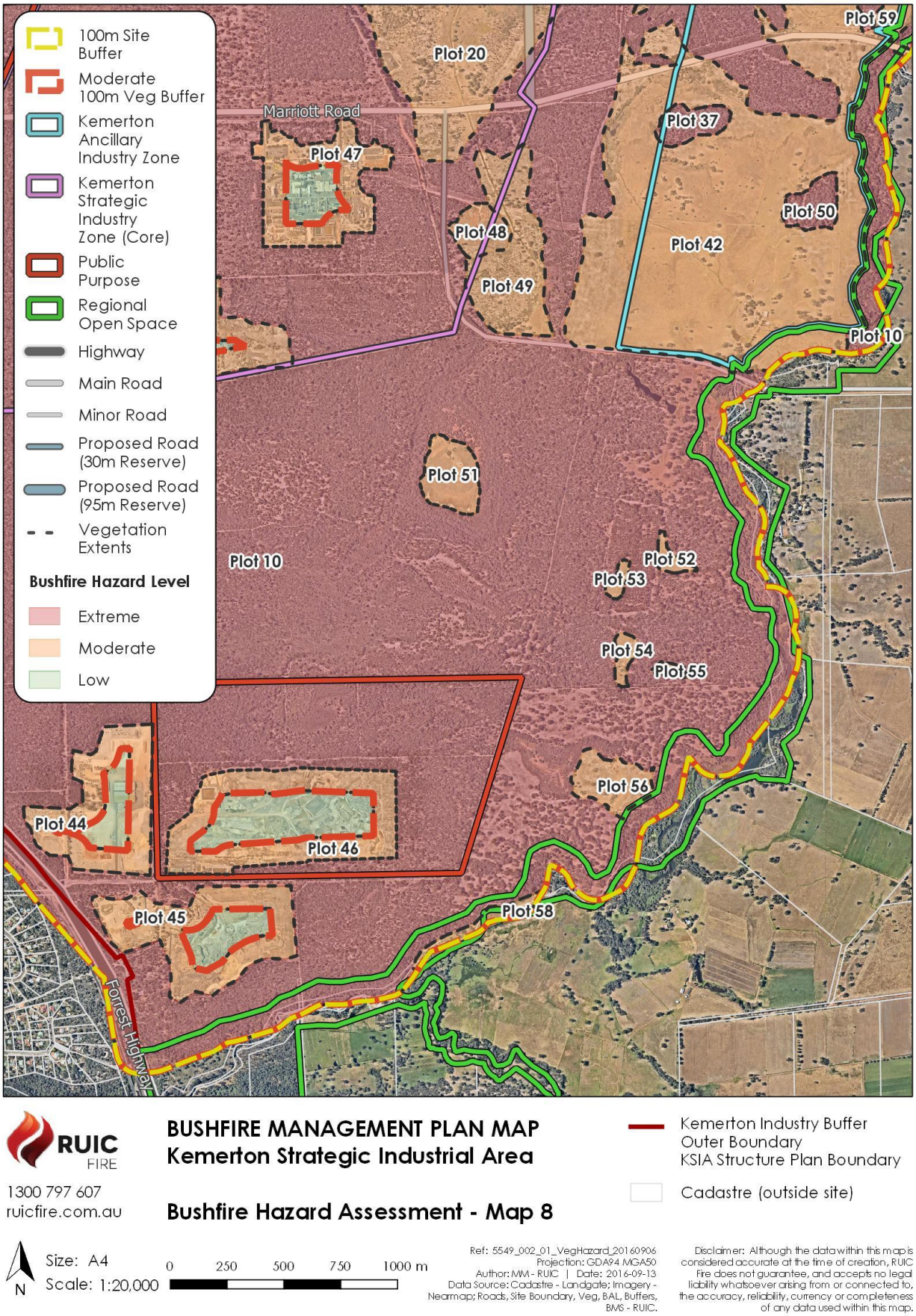


Figure 2I: *Bushfire Hazard Level Assessment – Map 8*

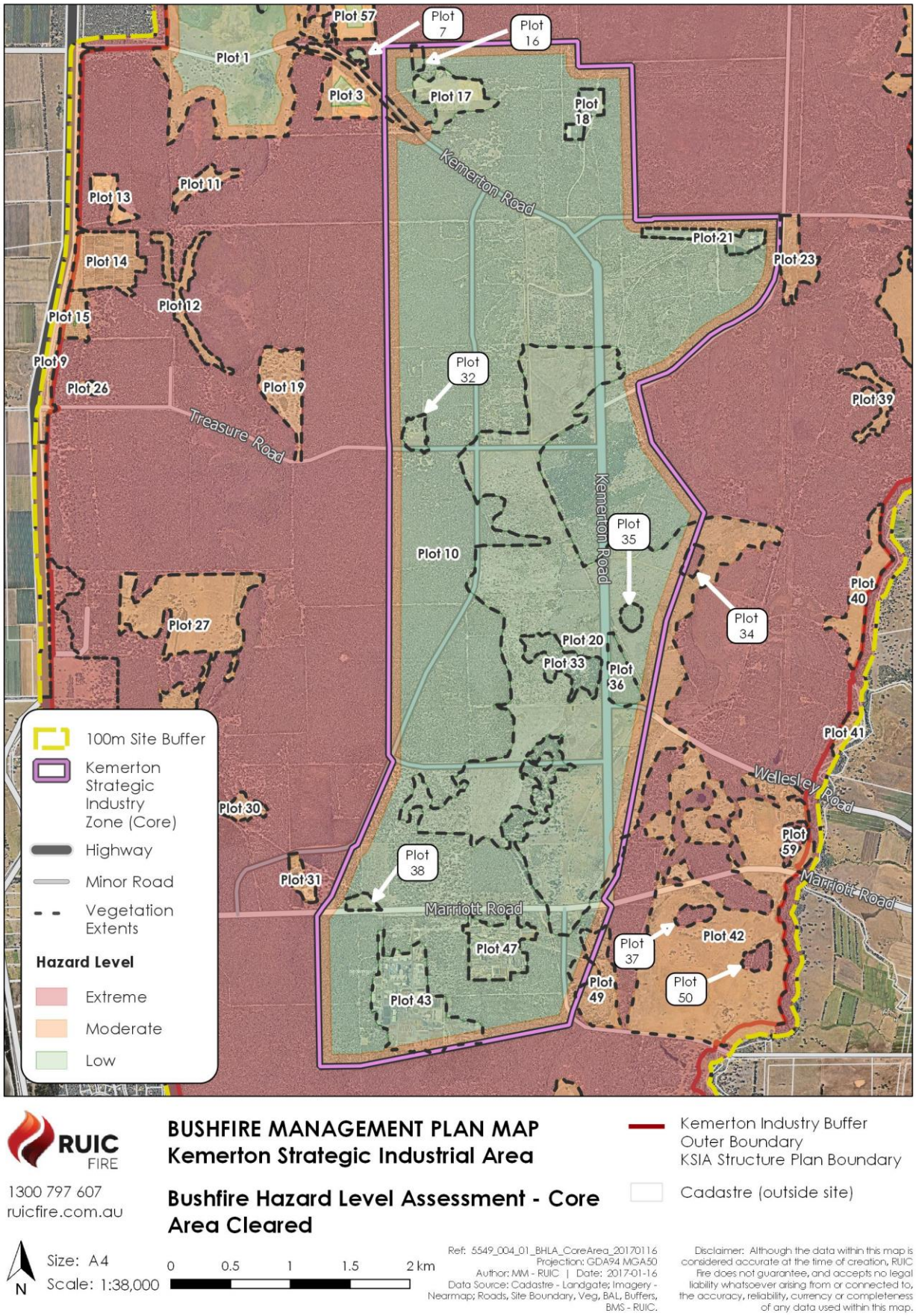


Figure 2J: *Bushfire Hazard Level Assessment – Core Area Fully Cleared*

3.0 Proposal compliance and justification

3.1 State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7)

SPP3.7 applies to all development applications in designated bushfire prone areas.

3.1.1 Objectives

Policy Measure 5 contains the objectives of SPP3.7. The following demonstrates how the proposed development meets each of the objectives.

Objective 1: ***Avoid any increase in the threat of bushfire to people, property and infrastructure. The preservation of life and the management of bushfire impact are paramount.***

Development Response

Objective 1 is satisfied through the compliance of the proposed development with all required Policy Principles as detailed below and all Performance Principles of the Guidelines as detailed in Section 4 of this report.

Objective 2: ***Reduce vulnerability to bushfire through the identification and consideration of bushfire risks in decision-making at all stages of the planning and development process.***

Development Response

Objective 2 is satisfied through the appropriate identification and assessment of all relevant bushfire hazards as detailed in Section 2 of this report, specifically the future BAL Contour Mapping undertaken to support future development.

Objective 3: ***Ensure that higher order strategic planning documents, strategic planning proposals, subdivision and development applications take into account bushfire protection requirements and include specified bushfire protection measures.***

Development Response

Objective 3 is satisfied through the compliance of the proposed development with all required Policy Principles as detailed below and all Performance Principles of the Guidelines as detailed in Section 4 of this report.

Objective 4: ***Achieve an appropriate balance between bushfire risk management measures and, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration of the potential impacts of climate change.***

Development Response

Objective 4 is satisfied through the appropriate consideration of all biodiversity and environmental assets as detailed in Section 1 of this report in the development of bushfire related risk mitigation strategies detailed in Section 4 of this report.

3.1.2 Policy Measures

3.1.2.1 Strategic Planning Proposals

Policy Measure 6.2 requires that strategic planning proposals within designated bushfire prone areas and that have a BAL above BAL-LOW are to comply with Policy Measure 6.3.

3.1.2.2 Information to Accompany Strategic Planning Proposals

Policy Measure 6.3 applies to Strategic Planning Proposals. It requires certain information to be provided with such applications. The following outlines where the required information has been provided.

Table 3A: *Compliance of the proposed development with the Policy Measures of SPP 3.7.*

Policy Measure	Description	Development Response
a	(i) the results of a BHL assessment determining the applicable hazard level(s) across the subject land, in accordance with the methodology set out in the Guidelines. BHL assessments should be prepared by an accredited Bushfire Planning Practitioner; or (ii) where the lot layout of the proposal is known, a BAL Contour Map to determine the indicative acceptable BAL ratings across the subject site, in accordance with the Guidelines. The BAL Contour Map should be prepared by an accredited Bushfire Planning Practitioner; and	Figures 2A-2I provide the BHL assessment maps.
b	The identification of any bushfire hazard issues arising from the relevant assessment; and	Section 2.2 addresses the bushfire hazard issues.
c	Clear demonstration that compliance with the bushfire protection criteria in the Guidelines can be achieved in subsequent planning stages.	Section 4 provides an assessment of the development against the bushfire protection criteria.

3.1.2.3 Vulnerable or High Risk Land Uses

The proposed development contains existing high risk land uses. It is expected that future land uses within the site will also constitute high risk land uses. This is to be addressed at the subdivision or development application stage.

The proposed development is not known, at this stage to contain any vulnerable land uses. This is to be addressed at the subdivision or development application stage.

3.1.2.4 Applications in BAL-40/BAL-FZ Areas

On completion of development, the developable land would not be subject to BAL-40 or BAL-FZ as outlined in Section 2.1. Future subdivision and development application stages are to ensure this requirement is met.

3.1.2.5 Advice of State/Relevant Authority/s for Emergency Services to be Sought

Future subdivision/ development:

- Is to comply with the SPP3.7 Policy measures;

- Does not propose any additional/alternative measures; and
- Contains unavoidable development, vulnerable or high risk land uses.

Therefore, the advice of State/Relevant Authorities for Emergency Services is required to be sought for this application and may be required for future applications.

3.1.2.6 Advice of State/Relevant Agencies/Authorities for Environmental Protection to be Sought

Future subdivision/ development:

- May propose clearing of vegetation within environmentally sensitive areas protected under State or Federal legislation;
- May propose clearing of locally significant native vegetation; and
- Has the potential to abut vegetated land managed by the Department of Parks and Wildlife.

Therefore, the advice of the Department of Parks and Wildlife may be required to be sought for this application and future applications.

3.2 Guidelines for Planning in Bushfire Prone Areas (Guidelines)

The Guidelines apply to development applications located within designated bushfire prone areas. The Guidelines provide supporting information for implementation of SPP3.7. Specifically, they provide the Bushfire Protection Criteria to be address for all applications.

This report has also been developed in order to comply with the requirements of all referenced and applicable documents. No non-compliances have been identified.

4.0 Bushfire Risk Management Measures

The bush fire risk mitigation strategies detailed in this report are designed to comply with the Bushfire Protection Criteria detailed in Guidelines for Planning in Bushfire Prone Areas (the Guidelines) Appendix 4 (2015).

- The notation (P3) refers to Performance Principle 3 of the Guidelines Appendix 4.
- The notation (A3.1) refers to Acceptable Solution 3.1 of the Guidelines Appendix 4.
- The notation (E3.1) refers to Explanatory Note 3.1 of the Guidelines Appendix 4.
- Where discrepancy occurs between State and Local bushfire planning provisions the higher standard of mitigation has been selected.

4.1 Element 1 - Location

Intent: To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.

> **Performance Principle (P1):** The strategic planning proposal, subdivision and development application is located in an area where the bushfire hazard assessment is or will, on completion, be moderate or low, or a BAL–29 or below, and the risk can be managed. For minor or unavoidable development in areas where BAL–40 or BAL–FZ applies, demonstrating that the risk can be managed to the satisfaction of the Department of Fire and Emergency Services and the decision-maker.

The following table outlines the Acceptable Solutions (AS) that are relevant to the proposal; identifies where a Performance Solution (PS) has been used instead of an AS; and states, where applicable, the reason why the AS is not relevant to the proposal.

Solution	AS	PS	N/A	Comment
A1.1 Development location	☒	☐	☐	

> **Acceptable Solution A1.1 Development location**
>
> The strategic planning proposal, subdivision and development application is located in an area that on completion will be subject to a moderate or low bushfire hazard level, or BAL–29 or below.

Development Response/Recommendations

Development is to be avoided in extreme bushfire hazard level areas. Figure 2J illustrates the residual extreme bushfire hazard level land that would remain if the Core Area was fully cleared. Development is to be avoided in these areas.

As outlined in A2.1 below, Asset Protection Zones are to be implemented at the commencement of the Subdivision and/ or Development Stage to ensure all future habitable buildings are, upon completion of development, located in an area subject to BAL-29 or lower.

4.2 Element 2 - Siting and design of Development

Intent: To ensure that the siting of development minimises the level of bushfire impact.

Performance Principle (P2): The siting and design of the strategic planning proposal, subdivision or development application, including roads, paths and landscaping, is appropriate to the level of bushfire threat that applies to the site. That it minimises the bushfire risk to people, property and infrastructure, including compliance with AS 3959 if appropriate.

The following table outlines the Acceptable Solutions (AS) that are relevant to the proposal; identifies where a Performance Solution (PS) has been used instead of an AS; and states, where applicable, the reason why the AS is not relevant to the proposal.

Solution	AS	PS	N/A	Comment
A2.1 Asset Protection Zone	☒	☐	☐	To be detailed during future planning stages
A2.2 Hazard Separation Zone	☒	☐	☐	To be detailed during future planning stages

Acceptable Solution A2.1 Asset Protection Zone (APZ)

Every building is surrounded by an Asset Protection Zone (APZ), depicted on submitted plans, which meets the following requirements:

a. Width: 20 metres measured from any external wall of future buildings. Where the slope increases above 10 degrees, the APZ should be increased to ensure the potential radiant heat impact of a fire does not exceed 29kW/m^2;

b. Location: within the boundaries of the lot on which the building is situated;

c. Fine fuel load: reduced to and maintained at 2 tonnes per hectare;

d. Trees (crowns) are a minimum distance of ten metres apart. A small group of trees within close proximity to one another may be treated as one crown provided the combined crowns do not exceed the area of a large or mature crown size for that species;

e. No tall shrubs or trees located within 2 metres of a building;

f. No tree crowns overhanging the building;

g. Fences and sheds within APZ are constructed using non-combustible materials (eg. iron, brick, limestone, metal post and wire); and

h. Sheds within the APZ should not contain flammable materials.

Development Response/Recommendations

All habitable buildings constructed within the site are to be surrounded by an Asset Protection Zone of 20 metres, or of a sufficient width to achieve BAL-29 for the building and/ or building envelope as applicable.

Implementation

i. APZs to be implemented at the commencement of the subdivision or development stage for any future buildings in accordance with provisions b-h above.

ii. It is the responsibility of the individual developer to ensure the APZ standard is established.

iii. It is the responsibility of the individual property owner to ensure the APZ standard continues to be achieved post completion of the construction

Acceptable Solution A2.2 Hazard Separation Zone (HSZ)

Every building and its contiguous APZ is surrounded by a Hazard Separation Zone (HSZ), depicted on submitted plans, that meets the following requirements:

a. Minimum width: 80 metres, measured from the outer edge of the APZ, for any vegetation classified in AS 3959 as forests, woodlands, closed shrub, open shrub, mallee/mulga and rainforest; OR 30 metres, measured from the outer edge of the APZ, for unmanaged grassland;

b. Location: within the boundaries of the lot on which the building is situated or, where this is not possible or desirable, within the boundaries of the development precinct in which the building is proposed to be located; and

c. Fine Fuel load (Dead Material <6mm diameter and <3mm for live material): reduced to and maintained at between five and eight tonnes per hectare for jarrah/marri dominated forest and woodlands, below 12-15 tonnes per hectare in mallee heath and below 15 tonnes per hectare in karri forest.

Note: A HSZ may not be required if the proposed construction meets the standard appropriate to the BAL for that location, and does not exceed BAL–29.

Development Response/Recommendations

BCA Class 1, 2, 3 and Associated Class 10a buildings - Acceptable Solution:

With the implementation of sufficient APZs, no BAL on site will exceed BAL-29. Construction standards will be applied to Class 1, 2, 3 and associated Class 10a buildings in accordance with AS 3959 as part of the Building Permit. In this regard a HSZ is not required for these classes of buildings.

BCA Class 4 - 9 buildings - Acceptable Solution:

Where buildings of BCA Class 4 – 9 are proposed, a HSZ will be required to be implemented and maintained during future stages of subdivision/ development, as far as is practicable. The maximum permissible BAL rating for development for BCA Class 4 – 9 buildings is BAL-29.

Alternatively, the buildings could be constructed to voluntarily comply with AS 3959 to the appropriate BAL. Should this occur, a HSZ would not be required.

Implementation

i. If required, HSZs to be implemented at the commencement of the subdivision or development stage for any future buildings in accordance with provisions a-c above.

ii. It is the responsibility of the individual developer to ensure the HSZ standard is established.

iii. It is the responsibility of the individual property owner to ensure the HSZ standard continues to be achieved post completion of the construction

4.3 Element 3 - Vehicular Access

Intent: To ensure that the vehicular access serving a subdivision/ development is safe in the event of a bush fire occurring.

Performance Principle (P3): The internal layout, design and construction of public and private vehicular access in the subdivision/development allows emergency and other vehicles to move through it easily and safely at all times.

The following table outlines the Acceptable Solutions (AS) that are relevant to the proposal; identifies where a Performance Solution (PS) has been used instead of an AS; and states, where applicable, the reason why the AS is not relevant to the proposal.

Solution	AS	PS	N/A	Comment
A3.1 Two access routes	☒	☐	☐	
A3.2 Public road	☒	☐	☐	
A3.3 Cul-de-sac (including a dead-end road)	☒	☐	☐	
A3.4 Battle-axe	☒	☐	☐	
A3.5 Private driveway longer than 50 metres	☒	☐	☐	
A3.6 Emergency access way	☒	☐	☐	
A3.7 Fire service access routes	☒	☐	☐	
A3.8 Firebreak width	☒	☐	☐	

Acceptable Solution A3.1 Two access routes

Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions.

Development Response/Recommendations

Access to the site:

Figure 4A illustrates access to the site on completion of construction of the roads proposed in the Structure Plan (Figure 1C). The site will be immediately accessed off Old Coast Road (Forrest Highway), which borders the western boundary of the KSIA, via Marriott Road in the south (the primary east-west link within the site) as well as Rosamel Road, Dunn Road, Treasure Road and the future Kemerton Road (currently Wellesley Road) (the primary north-south link within the site). Devlin Road, Marriott Road, Wellesley Road and Treasure Road all provide linkages to areas east of the KSIA. Therefore, the existing and proposed extensive public road network facilitates multiple access and egress routes to the site at all times and in all weather conditions.

Access for future development:

Access is to be specifically addressed at the Subdivision and/ or Development Application Stage for future development within the site. Each subdivision or development is to have at least two different vehicular access routes, both connecting to the public road network to provide egress to two different destinations at all times. Any staging of development is to ensure at least two access routes are provided at all times.

Additional Notes:

Design of future subdivisions within the site must satisfy the performance requirement of ensuring the internal layout, design and construction of all public and private access throughout the subject lot(s) ensures multiple evacuation routes away from all possible approaching bushfire fronts and safer destinations more than 100 metres away from the closest point of any potential bushfire front.

Unrestricted firefighting access should be provided within the perimeter of individual subdivision design to ensure safe fire appliance access and retreat is possible at all times and in all weather conditions. This may be achieved using a combination of public and private road networks in addition to dedicated strategic fire service access routes or firebreaks where required.

Site specific BMPs must ensure any access strategies are complementary to existing BMPs (If applicable) for previous subdivisions and should build upon them to ensure integrated access and egress throughout the development. Where individual subdivisions are planned in isolation, the design must ensure any access and egress designs satisfy the required performance requirement without relying on future development.

These requirements are to be addressed prior to the endorsement of each individual subdivision/ development application within the KSIA.

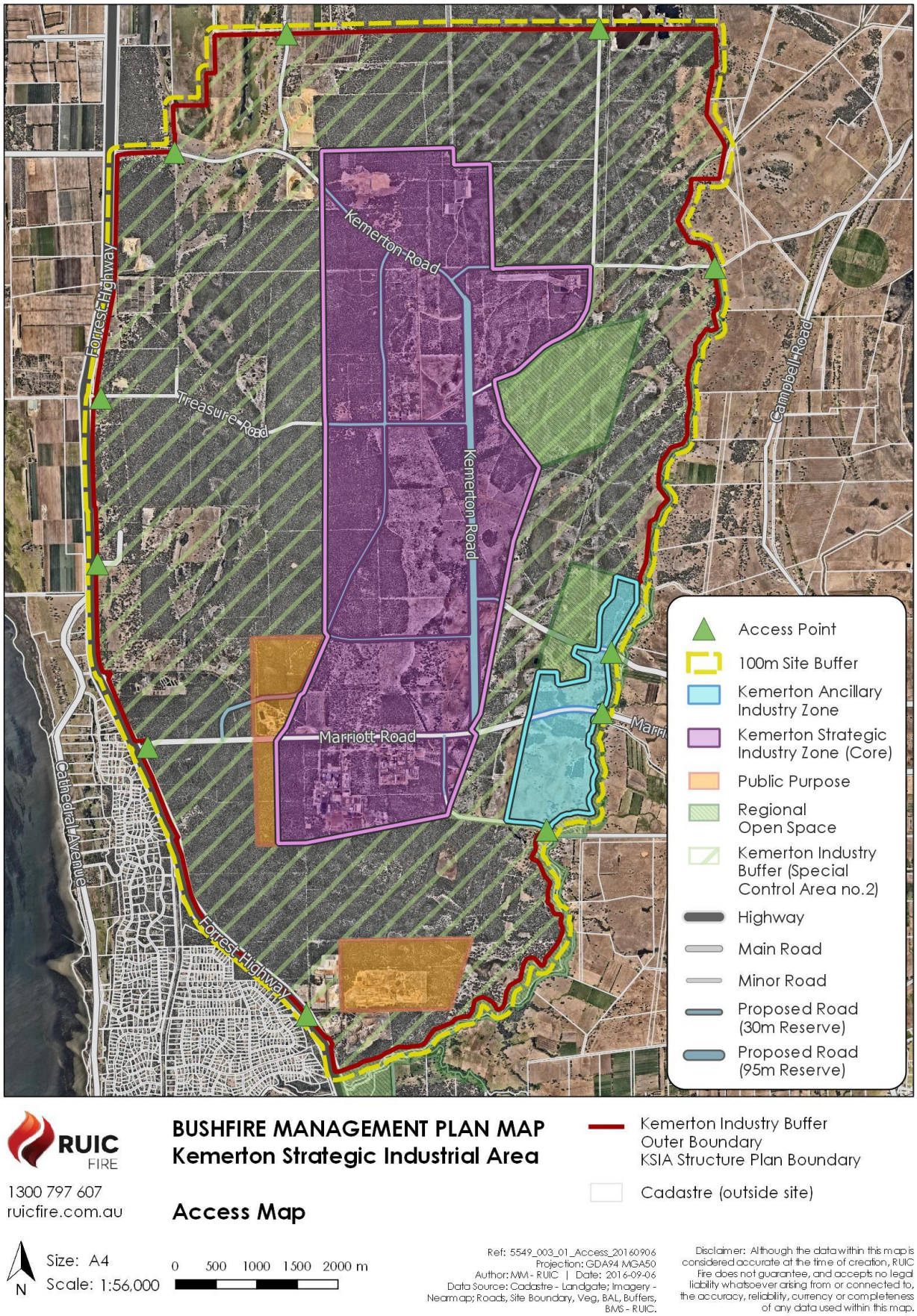


Figure 4A: *Site Access*

Acceptable Solution A3.2 Public roads

A public road is to meet the requirements in Table 4A, Column 1.

Table 4A: Vehicular access technical requirements

Technical Requirement	Public road	Cul-de-sac	Private driveway	Emergency access way	Fire service access routes
Minimum trafficable surface (m)	6	6	4	6	6
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4	N/A	4.5	4.5	4.5
Maximum grade over <50m	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5	8.5	8.5

Development Response/Recommendations

All public roads are to be designed to meet the requirements of Table 4A.

Implementation

i. Public roads are to be constructed prior to clearance of subdivision (for Subdivision Applications) or occupation of habitable buildings (for Development Applications) serviced by the public road.

ii. It is the responsibility of the developer to ensure the public road standard is established in accordance with Table 4A.

iii. It is the responsibility of Local and State Government (as appropriate) to ensure the maintenance of public roads vested within their jurisdiction.

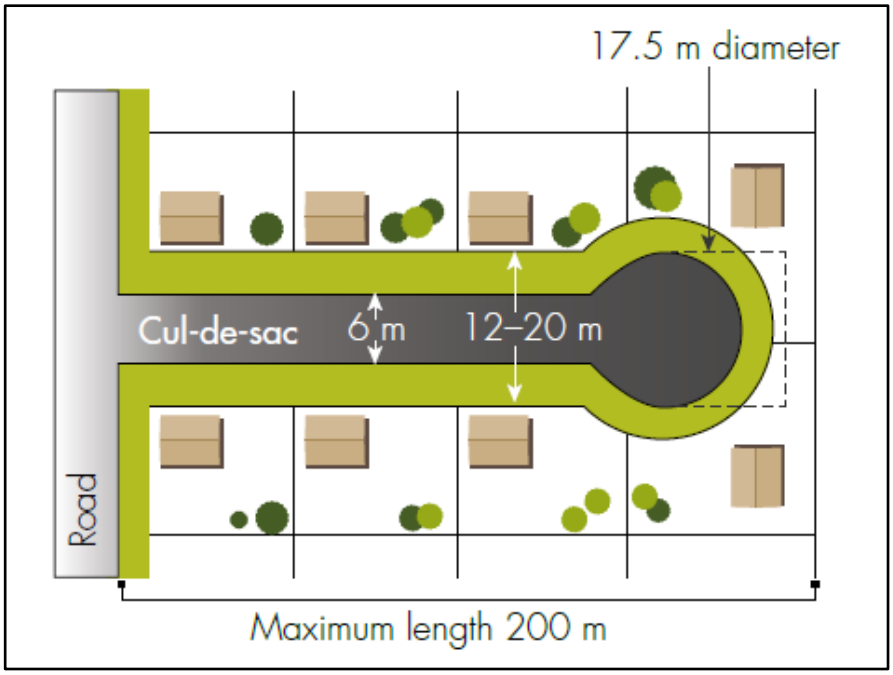
Acceptable Solution A3.3 Cul-de-sac (including a dead-end road)

A cul-de-sac and/or a dead end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/or will need to be demonstrated by the proponent), the following requirements are to be achieved:

a. Requirements in Table 4A, Column 2;

b. Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access way is no more than 600 metres); and

c. Turn-around area requirements, including a minimum 17.5 metre diameter head.



Source: Guidelines for Planning in Bushfire Prone Areas, Appendix 4, Fig. 18

Development Response/Recommendations

The site includes existing cul-de-sacs/ dead end roads that are not required to retrospectively comply with A3.3.

Should cul-de-sacs be included during future stages of development, they are to comply with A3.3 and it must be demonstrated that no alternative lot layout exists.

Implementation

i. To be implemented prior to the clearance of subdivision (for Subdivision Applications)/ occupation of habitable buildings (for Development Applications) for affected lots that the cul-de-sacs service.

ii. It is the responsibility of the developer to ensure the cul-de-sacs meets the required standard in accordance with Table 4A.

iii. It is the responsibility of the Local Government to ensure the cul-de-sacs continue to meet the required standard for any permanent cul-de-sacs.

Acceptable Solution A3.4 Battle-axe

Battle-axe access leg should be avoided in bushfire prone areas. Where no alternative exists, (this will need to be demonstrated by the proponent) all of the following requirements are to be achieved:

a. Requirements in Table 4A, Column 3;

b. Maximum length: 600 metres; and

c. Minimum width: six metres.

Development Response/Recommendations

The development, at this stage, does not include the creation of any new battle-axe lots.

Should battle-axes be included in future stages of subdivision/ development, they are to comply with A3.4 and it must be demonstrated that no alternative lot layout exists.

Implementation

i. To be constructed prior to clearance of subdivision (Subdivision Applications) or occupation of habitable buildings within the battle-axe lot (Development Applications).

ii. It is the responsibility of the developer to ensure the battle-axe meets the required standard in accordance with Table 4A.

iii. It is the responsibility of the individual land owner to ensure the battle-axe continues to meet the required standard.

Acceptable Solution 3.5 Private driveway longer than 50 metres

A private driveway is to meet all of the following requirements:

a. Requirements in Table 4A, Column 3;

b. Required where a house site is more than 50 metres from a public road;

c. Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres);

d. Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house; and

e. Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes.

f. All-weather surface (i.e. compacted gravel, limestone or sealed).

Development Response/Recommendations

Should private driveways longer than 50 metres be included in future subdivision/ development stages they are to comply with A3.5.

Implementation

i. To be constructed prior to occupation of habitable buildings serviced by the private driveway.

ii. It is the responsibility of the individual land owner to ensure the private driveway meets the required standard in accordance with Table 4A.

iii. It is the responsibility of the individual land owner to ensure the private driveway continues to meet the required standard.

Acceptable Solution 3.6 Emergency Access Way

An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet all of the following requirements:

a. Requirements in Table 4, Column 4;

b. No further than 600 metres from a public road;

c. Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency; and

d. Must be signposted.

Development Response/Recommendations

Where emergency access ways are included to provide alternative access between public roads during future subdivision/ development stages, they are to comply with A3.6.

Implementation

i. To be constructed prior to the clearance of subdivision (for Subdivision Applications) or occupation of habitable buildings (for Development Applications) for lots serviced by the emergency access way.

ii. It is the responsibility of the developer to ensure the emergency access way meets the required standard in accordance with Table 4A.

iii. It is the responsibility of the individual land owner to ensure the emergency access way continues to meet the required standard.

Acceptable Solution 3.7 Fire Service Access Routes (Perimeter Roads)

Fire service access routes are to be established to provide access within and around the edge of the subdivision and related development to provide direct access to bushfire prone areas for fire fighters and link between public road networks for firefighting purposes. Fire service access routes are to meet the following requirements:

a. Requirements Table 4, Column 5;

b. Provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency;

c. Surface: all-weather (i.e. compacted gravel, limestone or sealed)

d. Dead end roads are not permitted;

e. Turn-around areas designed to accommodate type 3.4 appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres);

f. No further than 600 metres from a public road;

g. Allow for two-way traffic and;

h. Must be signposted.

Development Response/Recommendations

Where fire service access routes are included in the design of future subdivision/ development, they are to comply with A3.7.

Implementation

i. To be constructed prior to the clearance of subdivision (for Subdivision Applications) or occupation of habitable buildings (for Development Applications) for lots serviced by the fire service access route.

ii. It is the responsibility of the developer to ensure the fire service access route meets the required standard in accordance with Table 4A.

iii. It is the responsibility of the individual land owner to ensure the fire service access route continues to meet the required standard.

Acceptable Solution A3.8 Firebreak width

Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three metres or to the level as prescribed in the local firebreak notice issued by the local government.

Development Response/Recommendations

Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three metres or to the level as prescribed in the local firebreak notice issued by the local government as amended.

The Shire of Harvey *Firebreak Order 2016-17* is included at Appendix 2 as an example. The firebreak notice is subject to annual review by the Shire of Harvey.

Implementation

i. To be implemented prior to the date specified in the Local Government's Firebreak Notice as amended.

ii. It is the responsibility of the individual land owner to ensure the firebreaks meet the required standard in accordance A3.8 and the annual firebreak notice issued by the Local Government.

iii. It is the responsibility of the individual landowner to ensure the firebreaks continue to meet the required standard.

4.4 Element 4 – Water

Intent: To ensure that water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.

Performance Principle (P4): The subdivision, development or land use is provided with a permanent and secure water supply that is sufficient for firefighting purposes.

The following table outlines the Acceptable Solutions (AS) that are relevant to the proposal; identifies where a Performance Solution (PS) has been used instead of an AS; and states, where applicable, the reason why the AS is not relevant to the proposal.

Solution	AS	PS	N/A	Comment
A4.1 Reticulated Areas	☒	☐	☐	
A4.2 Non-reticulated Areas	☒	☐	☐	
A4.3 Individual lots within non-reticulated areas	☒	☐	☐	

Acceptable Solution A4.1 Reticulated areas

The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services.

Development Response/Recommendations

Water supply is to be specifically addressed during future stages of development to ensure a permanent and secure firefighting water supply that is sufficient for the scale of the development and proposed land use.

Where future development is to be serviced by reticulated scheme water and firefighting hydrants, they are to comply with the Water Corporation's Design Standard No.63.

Acceptable Solution A4.2 Non-reticulated areas

Water tanks for fire fighting purposes with a hydrant or standpipe are provided and meet the following requirements:

a. Volume: minimum 50,000 litres per tank;

b. Ratio of tanks to lots: minimum one tank per 25 lots (or part thereof);

c. Tank location: no more than two kilometres to the further most house site within the residential development to allow a 2.4 fire appliance to achieve a 20 minute turnaround time at legal road speeds;

d. Hardstand and turn-around areas suitable for a type 3.4 fire appliance (i.e. kerb to kerb 17.5 metres) are provided within three metres of each water tank; and

e. Water tanks and associated facilities are vested in the relevant local government.

Development Response/Recommendations

Subdivisions in non-reticulated areas that involve creation of more than one additional lot are to comply with A4.2.

Water supply is to be specifically addressed during future stages of development to ensure a permanent and secure firefighting water supply that is sufficient for the scale of the development and proposed land use.

Water tanks are to be strategically sited so that they are located no more than 2km from a house site at a ratio of one (1) 50,000L tank per 25 lots (or part thereof) to should achieve a maximum 20 minute turnaround time for firefighting appliances. The locations of the water tanks will be determined by the developer during future development stages in consultation with DFES, the local government and the Estate Manager.

<u>Implementation</u>

i. To be installed prior to the sale of the stage where any lot within that stage is to be serviced by the subject tank.

ii. It is the responsibility of the developer to ensure the water tank meets the required standard.

iii. It is the responsibility of the Local Government to ensure the tank continues to meet the required construction standard.

Acceptable Solution A4.3 Individual lots within non-reticulated areas

Single lots above 500 square metres need a dedicated static water supply on the lot that has the effective capacity of 10,000 litres.

Note - Only for use if creating one additional lot and cannot be applied cumulatively.

Development Response/Recommendations

Water supply is to be specifically addressed during future stages of development to ensure a permanent and secure firefighting water supply that is sufficient for the scale of the development and proposed land use.

The locations of the water tanks will be determined by the developer during future development stages in consultation with DFES, the local government and the Estate Manager.

Where A4.3 is considered to be applicable, the following standard is to be complied with:

Standard

i. Volume: minimum 10,000L dedicated firefighting reserve per tank;
ii. 50mm camlock coupling with full flow valve suitable for local firefighting Appliances in accordance with relevant standards from the Department of Fire and Emergency Services;
iii. Above ground tanks are constructed of concrete or metal and the stands of raised tanks are constructed using non-combustible materials and heat shielding where appropriate (ie heat shielding will be required in the case of metal tank stands);
iv. Incorporate an externally visible heat resistant float gauge; and
v. Hardstand and turn around area suitable for a 3.4 appliance are provided within 3 metres of each water tank

Implementation

i. All new tanks are required to meet the standard at the time of construction.
ii. The minimum 10,000L dedicated firefighting reserve is to be placed in the tank at the time of construction.
iii. It is the responsibility of the individual land owner to ensure the tank meets the required construction standards on installation
iv. It is the responsibility of the individual land owner to ensure that the tank and firefighting valves are operational at all times.

5.0 Implementation and Enforcement

Table 5A: *Schedule of Works – Future Development Stages*
(Note: implementation and maintenance to be confirmed within BMPs specific to each stage of subdivision/ development)

Strategy	Implementation		Maintenance	
	Responsible	Time Frame	Responsible	Time Frame
Amendments to BMP	Any amendments to this BMP shall be approved by the relevant Jurisdiction Having Authority			
Asset Protection Zone	Developer	At the commencement of the subdivision or development stage	Individual land owner	Ongoing
Hazard Separation Zone – Class 1, 2, 3 buildings	N/A	N/A	N/A	N/A
Hazard Separation Zone – Other Classes of buildings not constructed to AS 3959	Developer	At the commencement of the subdivision or development stage	Individual land owner	Ongoing
Hazard separation zone – Industrial buildings not constructed to AS 3959	Developer	At the commencement of the subdivision or development stage	Individual land owner	Ongoing
Construction to AS 3959	Individual land owner & Local Government	On construction of all applicable habitable buildings	Individual land owner	Ongoing
Public roads	Developer	Prior to clearance of subdivision/ occupation of all buildings	State and/ or Local Government	Ongoing
Cul-de-sacs	Developer	Prior to clearance of subdivision/ occupation of all buildings	Local Government	Ongoing
Battle-axes	Developer	Prior to clearance of subdivision/ occupation of all buildings	Individual land owner	Ongoing
Private driveways longer than 50m	Individual land owner	Prior to occupation of all buildings	Individual land owner	Ongoing
Emergency access ways	Developer	Prior to clearance of subdivision/ occupation of all buildings	Individual land owner	Ongoing
Fire service access routes	Developer	Prior to clearance of subdivision/	Individual land owner	Ongoing

Strategy	Implementation		Maintenance	
	Responsible	Time Frame	Responsible	Time Frame
		occupation of all buildings		
Firebreaks	Individual landowner	In accordance with firebreak notice	Individual land owner	Ongoing
Firefighting water (hydrants)	Developer	Prior to sale of stage that hydrants service	Water Corporation	Ongoing
Firefighting water (community tanks)	Developer	Prior to sale of stage that tank services	Local Government	Ongoing
Firefighting water (private tanks)	Individual landowner	Prior to occupation of all buildings	Individual landowner	Ongoing
Firefighting services and response	DFES and Local Government	Ongoing	DFES and Local Government	Ongoing
Fuel load reduction and firebreak notice works	Local Government	In accordance with firebreak notice	Local Government	In accordance with firebreak notice
Inspection and issue of works orders or fines	Local Government	Ongoing	Local Government	Ongoing

6.0 References

Department of Fire and Emergency Services. (2016). Map of Bush Fire Prone Areas. Accessed: 7th September 2016. URL: *https://maps.slip.wa.gov.au/landgate/bushfireprone2016/*.

Eco Logical Australia. (2015a). Bushfire Hazard Assessment and Management Plan Kemerton Strategic Industrial Area. Eco Logical Australia.

Eco Logical Australia. (2015b). Kemerton Strategic Industrial Area Over-arching Environmental Management Plan. Eco Logical Australia.

nearmap. (2016). nearmap. Accessed: 7th September 2016. URL: *http://maps.au.nearmap.com/*.

RUIC Fire. (2015). Strategic Overarching Bushfire Management Plan Version 1.1. RUIC Fire, WA.

Standards Australia. (2009). AS 3959:2009 Construction of buildings in bushfire prone areas: SAI Global.

WAPC. (2015a). State Planning Policy 3.7 Planning in Bushfire Prone Areas. Western Australian Planning Commission & Department of Planning.

WAPC. (2015b). Guidelines for Planning in Bushfire Prone Areas. Western Australian Planning Commission, Department of Planning & Department of Fire and Emergency Services.

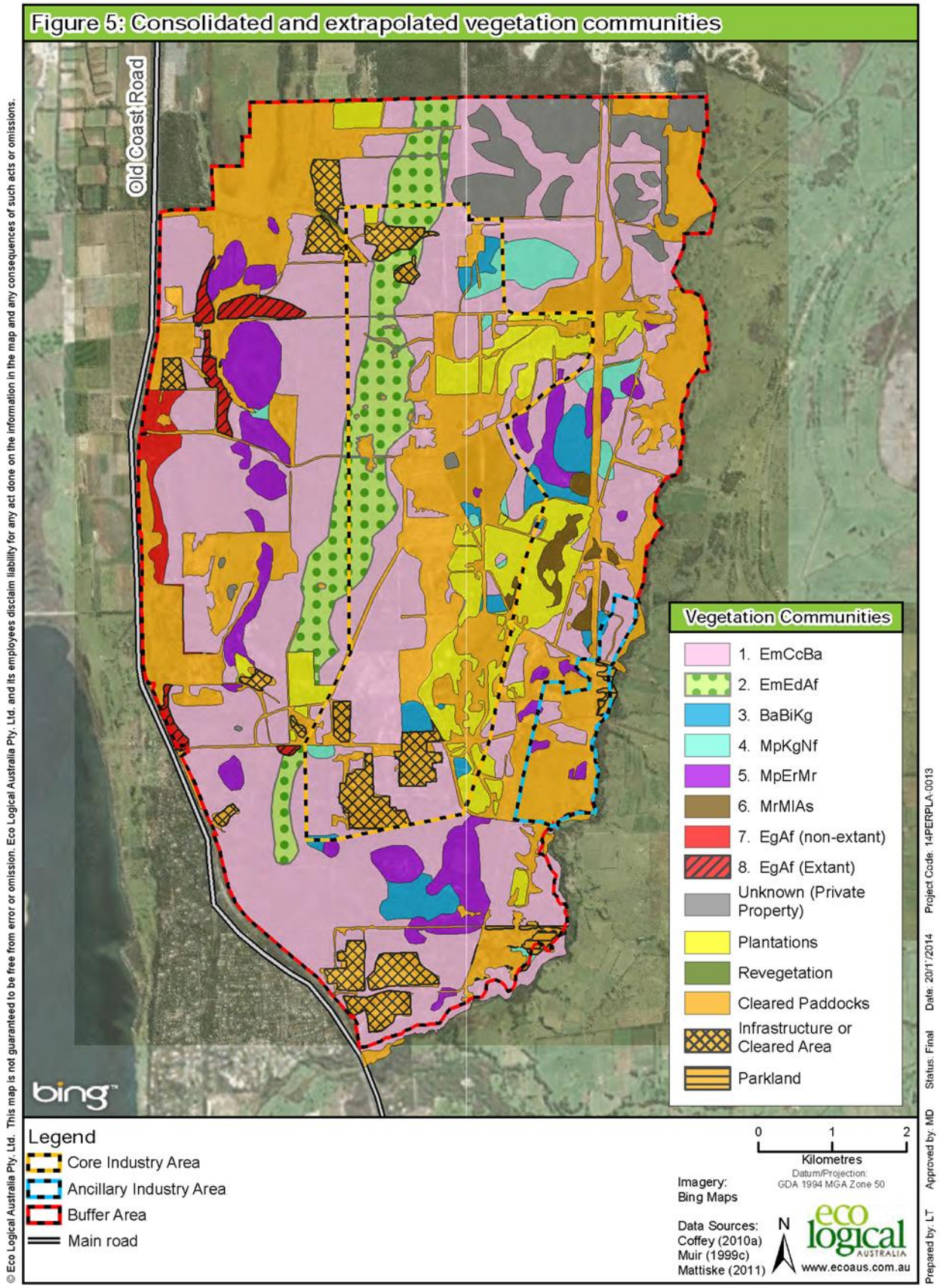
WAPC. (2015c). Guidelines for Planning in Bushfire Prone Areas Appendices. Western Australian Planning Commission, Department of Planning & Department of Fire and Emergency Services.

WAPC. (2015d). Planning Bulletin 111/2015 Planning in Bushfire Prone Areas. Western Australian Planning Commission.

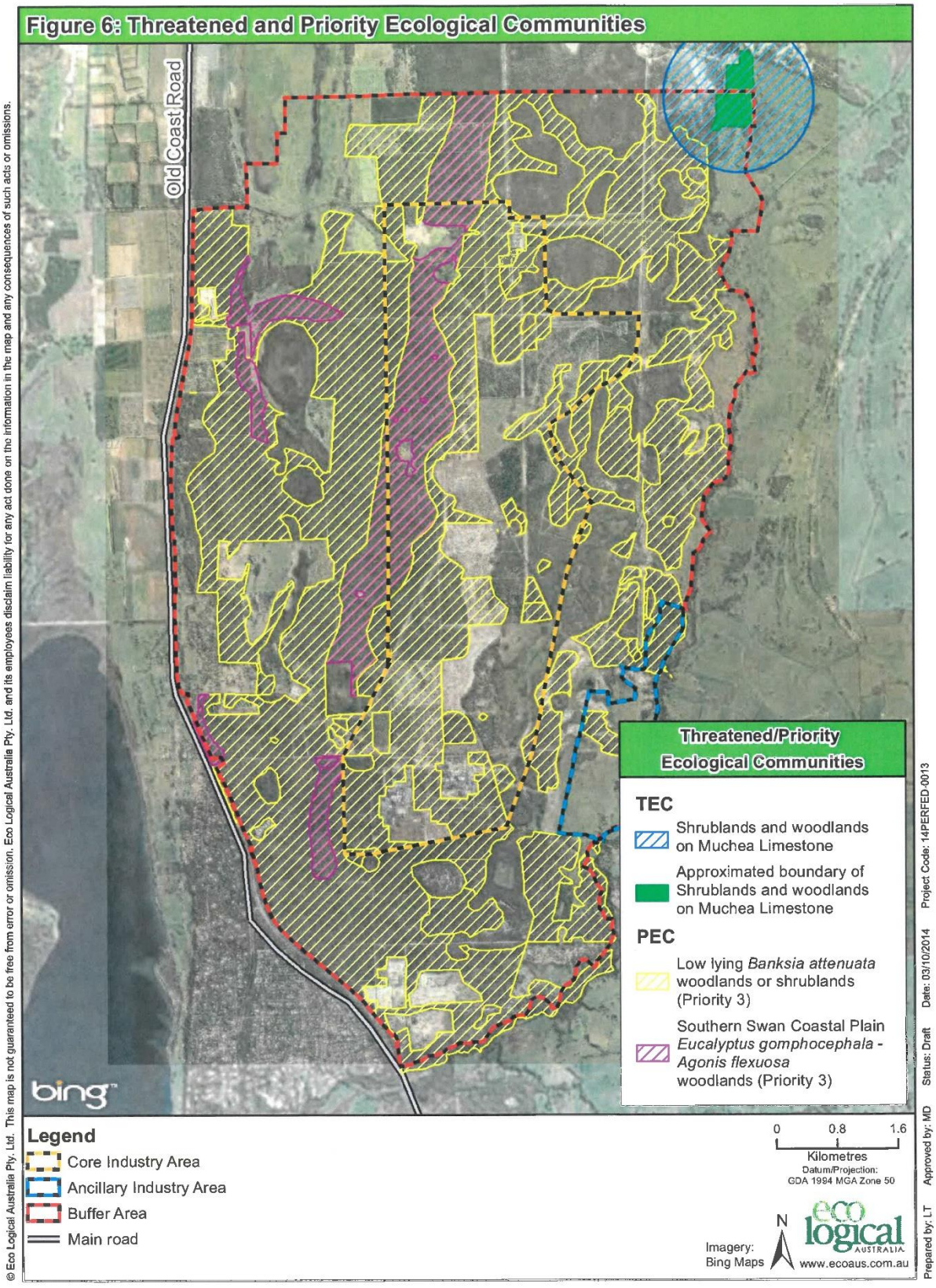
7.0 Appendix 1

Key figures from the Over-arching Environmental Management Plan (EcoLogical, 2015)

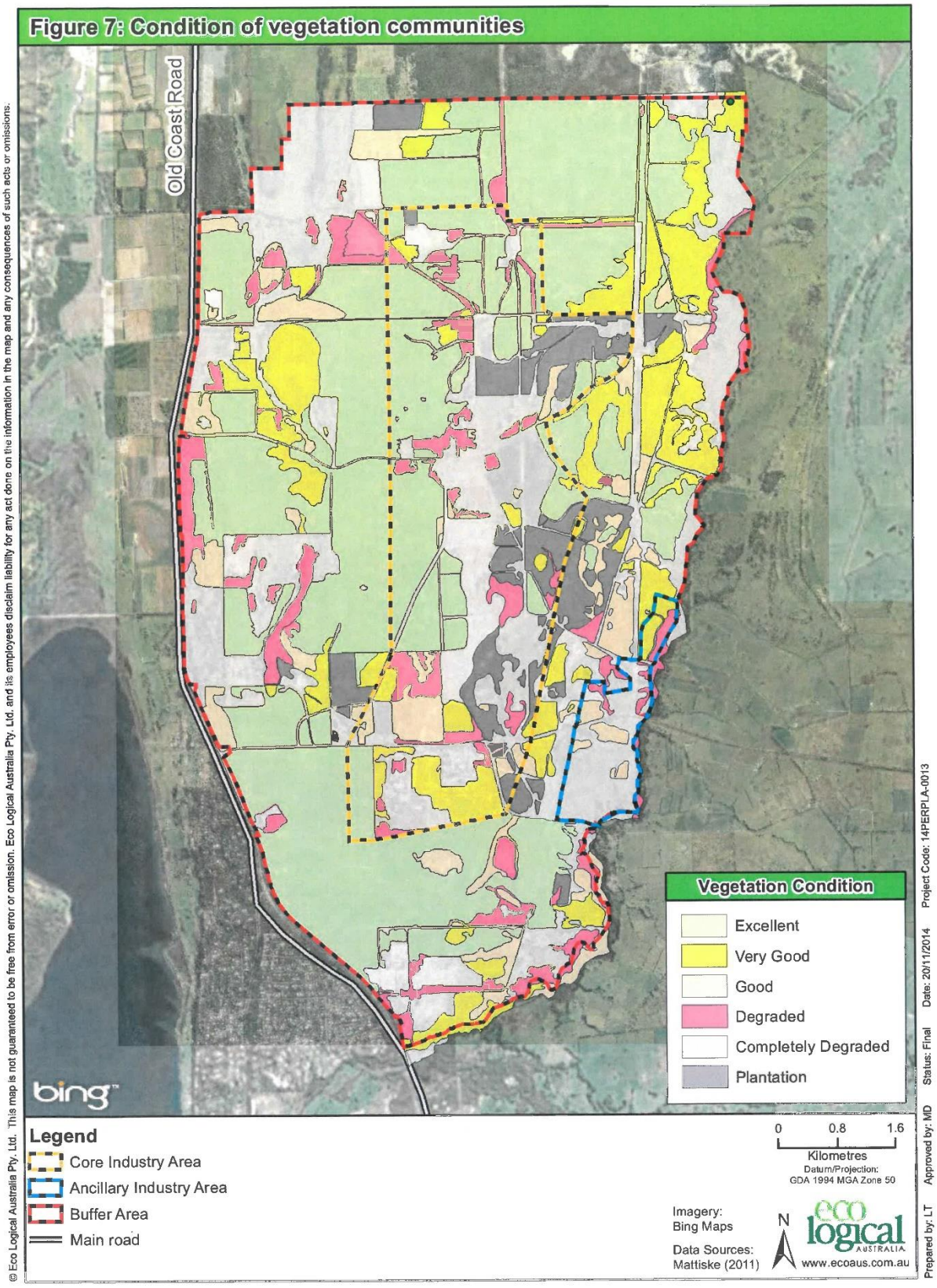
7.1 Figure 5: Consolidated and extrapolated vegetation communities



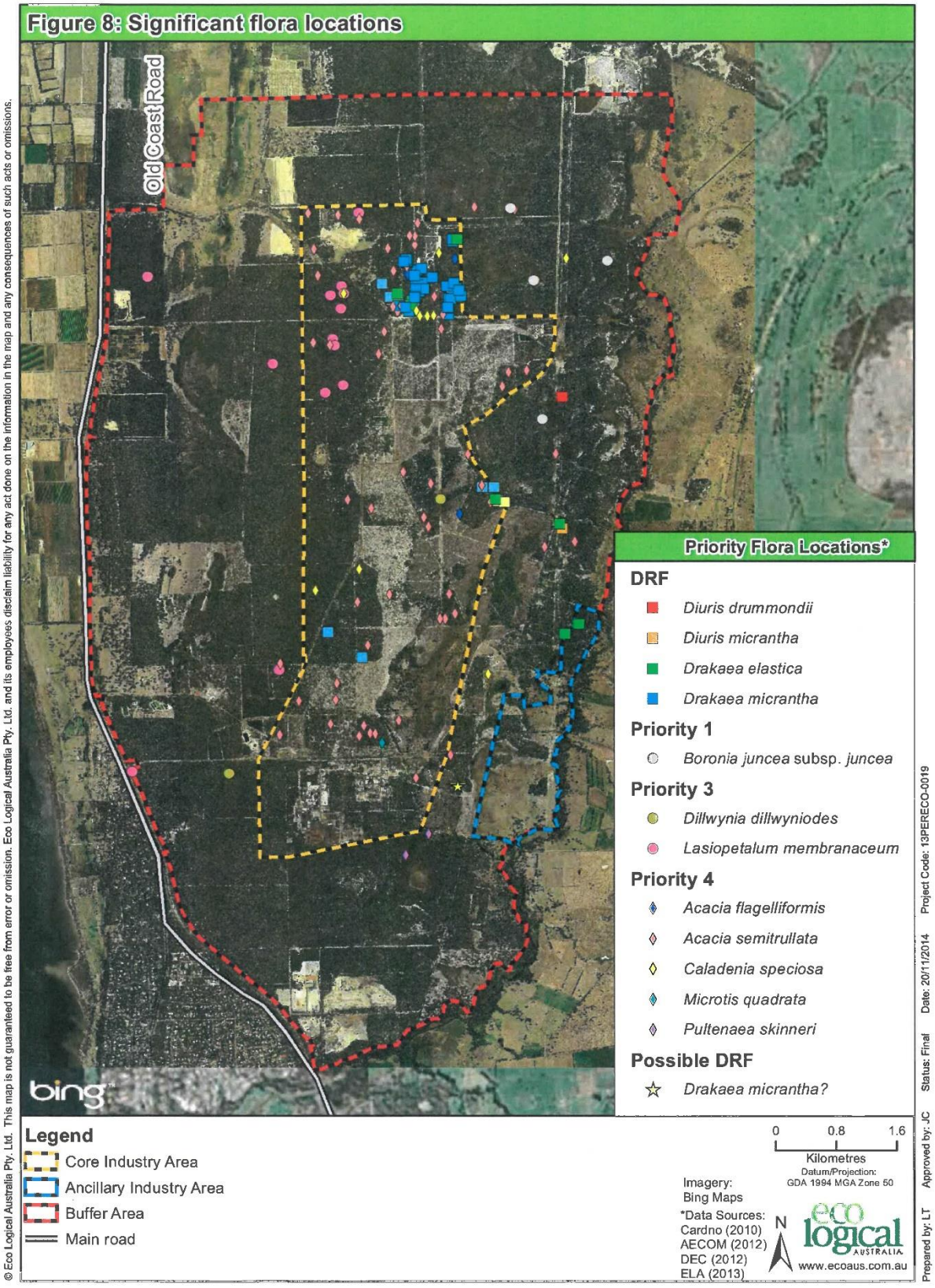
7.2 Figure 6: Threatened and Priority Ecological Communities



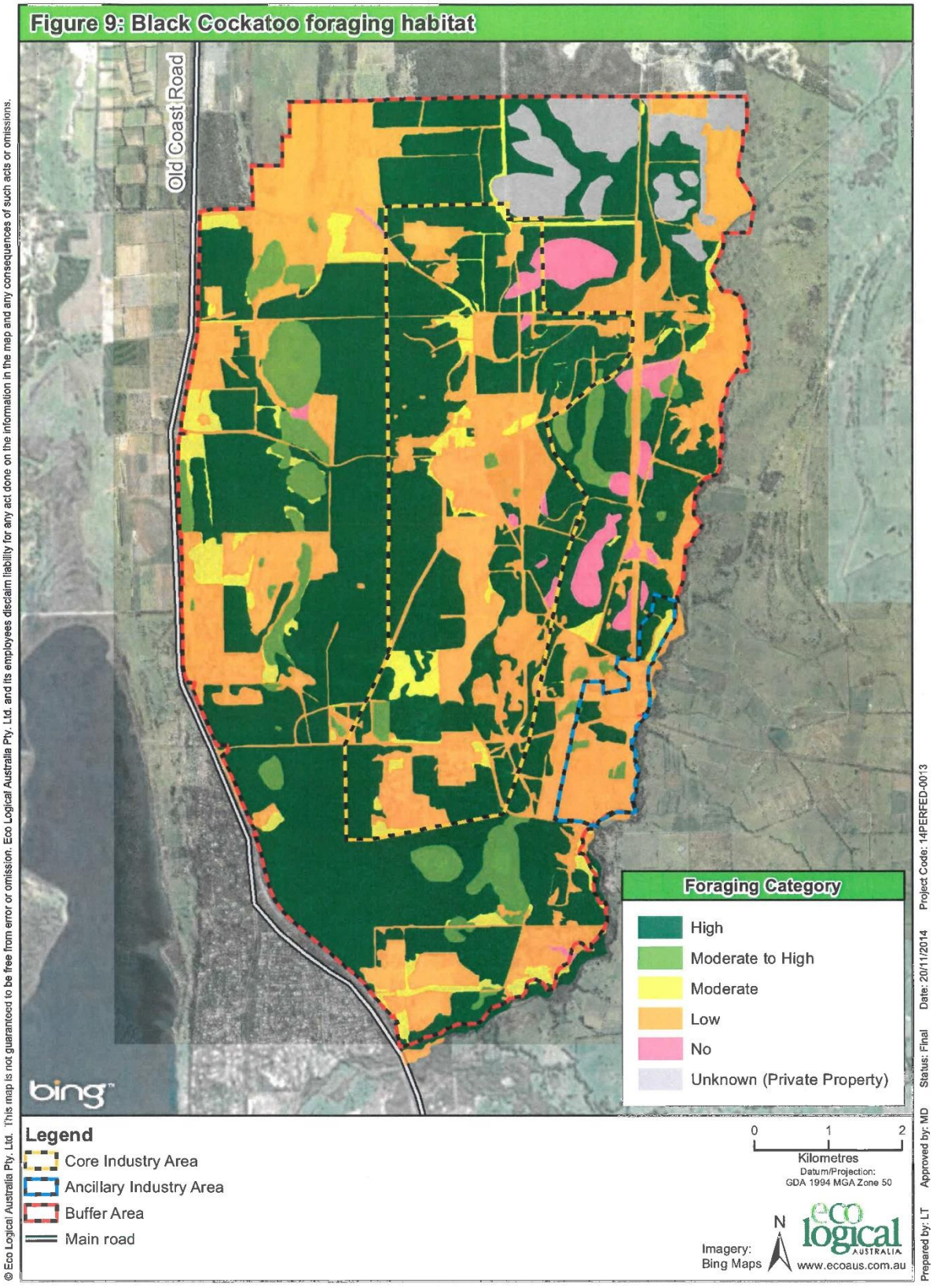
7.3 Figure 7: Condition of vegetation communities



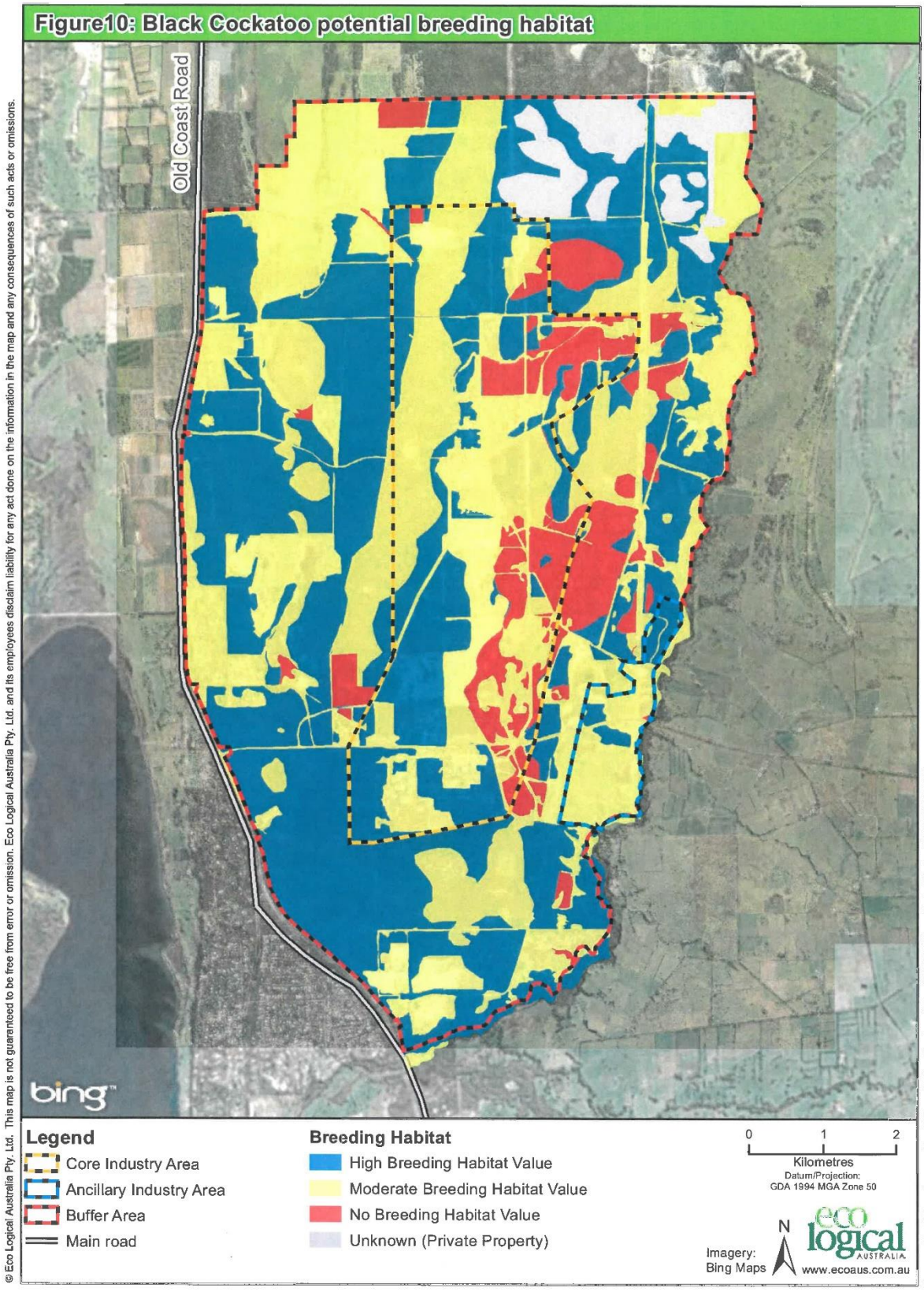
7.4 Figure 8: Significant flora locations



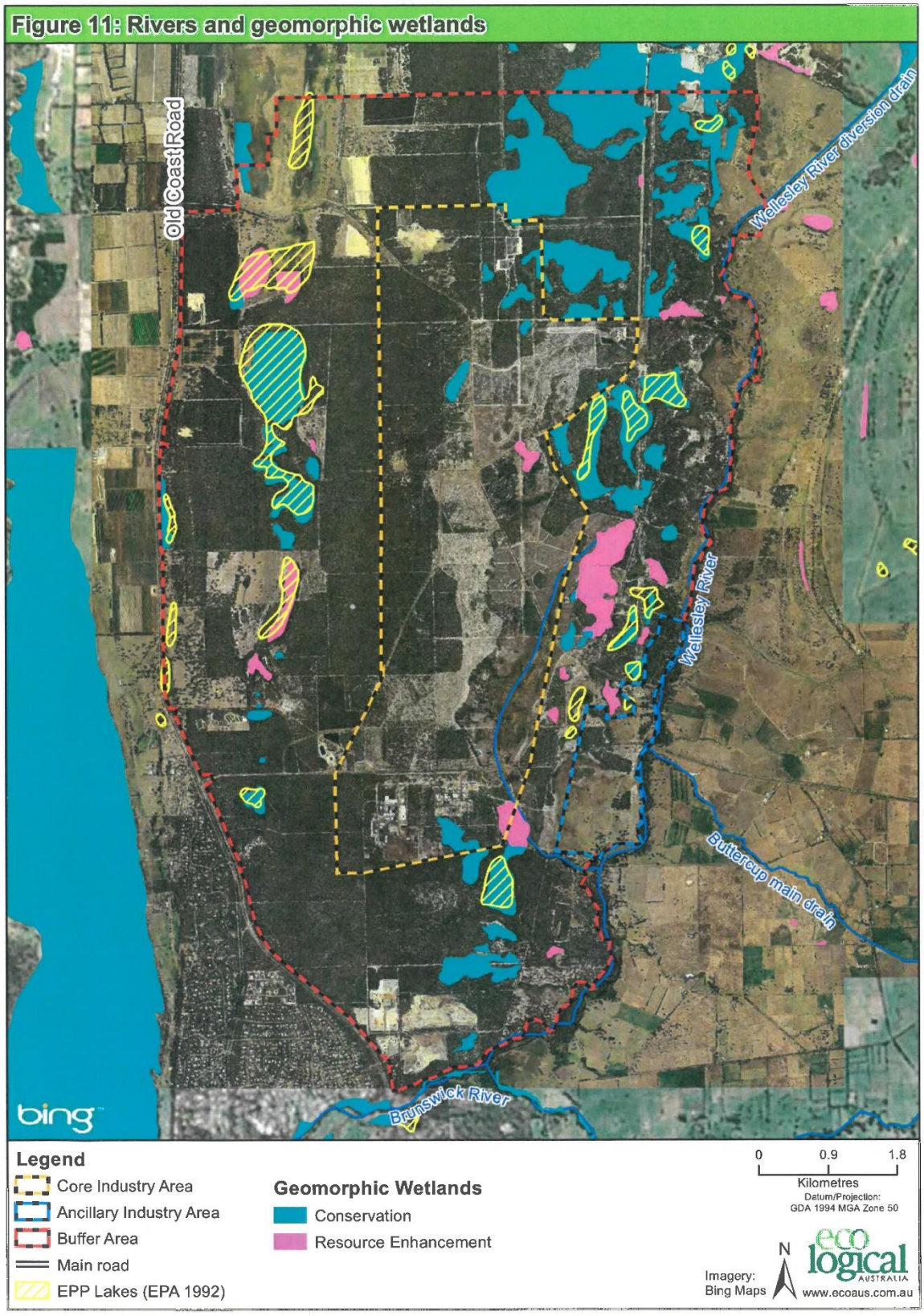
7.5 Figure 9: Black Cockatoo foraging habitat



7.6 Figure 10: Black Cockatoo potential breeding habitat



7.7 Figure 11: Rivers and geomorphic wetlands



8.0 Appendix 2

Shire of Harvey Firebreak Order 2016/2017

PERMITS TO BURN

1. Permits to burn are required for the whole of the Restricted Periods and must be obtained from the Area Fire Control Officer listed overleaf. NOTE: The Area Fire Control Officer has the right not to issue a permit.

2. Any special conditions imposed by the Area Fire Control Officer when issuing permits must be strictly adhered to.

3. The permit holder shall give notice of his intention to burn to:

   (a) the Shire Office no later than 24 hours prior to the day when the burning is to take place. Weekend burning must be notified by Friday at 4.00 p.m.
   (b) the owner or occupier of adjoining land.
   (c) the nearest Department of Parks and Wildlife, if the land is situated within 3 kms of State Forest land, National Parks, Nature Reserve and other DPAW lands.

4. PERIOD OF NOTICE to neighbours prior to burning cannot be more than 28 days or less than 4 days, although lesser notice may be determined by the mutual agreement of all neighbours.

5. Burning under permit is permitted during the Restricted Burning period on Sundays and Public Holidays.

6. All landowners and occupiers who suffer a bush fire have an obligation to assist each Area Fire Control Officer to compile a Fire Report form.

7. GARDEN REFUSE burnt on the ground (up to 1 cubic metre) may be lit only between 6.00p.m. and 11.00 p.m. and must be completely extinguished with water or earth by midnight. All flammable materials are to be cleared from within 3 metres of all points of the site of the fire and a person must be in attendance at all times until the fire is completely extinguished.

NOTE: Burning of garden refuse is not permitted within the prohibited burning period.

8. Any INCINERATOR used to burn rubbish must be properly constructed – an open drum with or without a lid, is not an appropriate incinerator.

9. With reference to Items 7 and 8 of this summary, burning may not take place if the Fire Weather Warning for the day is "Very High" or "Extreme".

NAME	AREA	TELEPHONE
CHIEF BUSH FIRE CONTROL OFFICER P.Penny		0447 980 790 (08) 9733 4053
DEPUTY CHIEF BUSH FIRE CONTROL OFFICER (STH) M.Papalia		0439 922 606
DEPUTY CHIEF BUSH FIRE CONTROL OFFICER (NTH) V.Byrd		0404 800 302

FIRE CONTROL OFFICERS

Contact Fire Control Officer between the hours of 9a.m. and 5p.m.
Monday to Friday only and 48 hours notice is required prior to burning.

P.Simpson	Leschenault	0419 989 660
M.Adams	Binningup	0447 000 834
D. Swadling	Myalup	0409 201 160
D.Wilson	Yarloop	0409 406 393
P.Penny	Yarloop West	0447 980 790
K.Prowse	Uduc	0418 921 811
R.George	Brunswick Town, Roelands and Olive Hill	08 9726 1132 0417 173 553
V.Byrd	Harvey Hills	0404 800 302
M. Hooper	Cookernup	0435 224 912
V. Byrd	Benger only	0404 800 302
Council Staff	Harvey Town	08 9729 0350
Council Staff	Australind Town	08 9729 0350

COUNCIL OFFICERS

Administrator Law and Safety Services	(08) 9729 0350

PERMIT ISSUING ONLY

M.McSweeney (Ranger)	0419 047 528
B.Steers (Ranger)	0438 944 259
J. Scotland (Ranger)	0418 934 942

CONTRACTORS

The following is a list of contractors who are available to clear firebreaks, remove flammable material or slashing.

Bunbury Rotary Hoeing Services PO Box 108, Waroona 6215	Fax: 08 9754 1141 Mob: 0427 445 739 Mob: 0427 040 200
Australind Contracting PO Box 2652, Bunbury 6231	Mob: 0427 947 260
P & T Contractors Firebreaks and slashing	Mob: 0409 884 016
Mantrac Mulching, slashing, rotary hoeing, firebreaks	Mob: 0408 093 353 Phone/fax: 08 9726 3032
Kevin McDonald Yarloop	Mob: 0417 905 261 Phone: 08 9733 5157

VOLUNTEER BRIGADES (Burning)

BRIGADES	CONTACT	
Binningup Volunteer Bush Fire Brigade	M.Adams	0447 000 834
Brunswick Fire and Rescue Service	F. Burgoyne	0414 246 760
Cookernup Volunteer Bush Fire Brigade	M. Hooper	0435 224 912
Eaton/Australind Fire and Rescue Service	M. Stoltenbarg	0417 957 281
Harvey Fire and Rescue Service	J. Britza	0414 525 821
Harvey Hills Volunteer Bush Fire Brigade	V. Byrd	0404 800 302
Leschenault Volunteer Bush Fire Brigade	P. Simpson	0419 989 660
Myalup Volunteer Bush Fire Brigade	D.Swadling	0409 201 160
Olive Hills/Roelands Volunteer Bush Fire Brigade	R.George	08 9726 1132 0417 173 553
Uduc Volunteer Bush Fire Brigade	K. Prowse	0418 921 811
Yarloop Volunteer Bush Fire Brigade	P. Penny	0447 980 790

2016/2017 Bush Fire Season

As a landowner you have a responsibility to manage your property to reduce the risk of bush fire.

This brochure tells you what actions you must take to manage your property and the dates by when those actions must be carried out.

With reference to Section 33 of the Bush Fires Act 1954, you are required to carry out fire prevention work on land owned or occupied by you, in accordance with the provisions of this order.

Details of work required to be completed are detailed in this pamphlet. WORK MUST BE COMPLETED BY THE 30TH NOVEMBER, 2016, AND MAINTAINED UNTIL 26TH APRIL, 2017.

PERSONS WHO FAIL TO COMPLY WITH THE REQUIREMENTS OF THE ORDER MAY BE ISSUED WITH AN INFRINGEMENT NOTICE (PENALTY $250) OR PROSECUTED WITH AN INCREASED PENALTY, AND ADDITIONALLY, COUNCIL MAY CARRY OUT THE REQUIRED WORK AT COST TO THE OWNER OR OCCUPIER.

ALL LANDOWNERS, INCLUDING IRRIGATED LANDOWNERS, PLEASE NOTE:

If it is considered to be impractical to clear firebreaks or remove flammable materials as required by this notice, or where;

(a) compliance with this order may aggravate soil erosion; or
(b) you consider a more effective system of fire protection can be obtained; or
(c) natural features render firebreaks unnecessary

You must apply to the Council in writing no later than the 1st of November, for permission to provide firebreaks in alternative positions or to take alternative action to abate fire hazards on the land.

If permission is not granted by the Council you shall comply with the requirements of this notice. If the requirements of this notice are carried out by burning, such burning must be in accordance with the relevant provisions of the Bush Fires Act, 1954.

A. RURAL LAND/SPECIAL RURAL LAND

Firebreaks not less than 3 metres wide must be provided in the following positions:

(a) within 10 metres inside and along all boundaries of all land.

(b) so as to divide the land into areas of not more than 120 ha (300 acres).

(c) around all groups of buildings, haystacks (includes two or more round bales placed in a paddock for storage purposes) and fuel installations but not closer than 6 metres.

(d) Irrigation Areas - Owners or occupiers may be exempted from all or part of the requirements of the above. Contact Council's Law and Safety Services.

IRRIGATED LAND DEFINITION

IRRIGATED LAND IS DEFINED AS LAND THAT IS WATERED, KEPT FULLY WATERED AND IS MAINTAINED IN A NON FLAMMABLE STATE FOR THE WHOLE OF THE RESTRICTED AND PROHIBITED BURNING PERIODS.

B. URBAN LAND/SPECIAL RESIDENTIAL

(Residential, Commercial and Industrial land within a townsite or any other area subdivided for residential purposes)

(a) where the area of land is 2,024m2 (approx. ½ acre) or less, remove all flammable material on the land except live standing trees, shrubs and plants, from the whole of the land;

(b) where the area of land exceeds 2,024m2 (approx. ½ acre) provide firebreaks of at least 2 metres wide and within 6 metres of the inside of all external boundaries of the land, cleared hardstand areas and reticulated grassed areas maintained in a green state maybe considered acceptable as an adequate firebreak.

Note: Myalup and Binningup - The following are accepted in lieu of item (a) of the above requirements. Firebreaks 2 metres wide inside and around all boundaries of land are accepted in lieu of item (a) of the above requirements.

1. Firebreaks 2 metres wide inside and around all boundaries of land.
2. Slashing of the entire block to remove flammable materials.
3. Removal of isolated fire flammable materials on the block.

C. FUEL AND/OR GAS DEPOTS

In respect of any land used for the above purposes, you shall maintain the land clear of all flammable materials.

D. PLANTATIONS

(a) Definitions

(i) A plantation is any area of planted pines or eucalyptus species exceeding 3 hectares in area.
(ii) A windbreak is a planted area a maximum of 15 metres wide but with no defined length.

(b) Boundary Firebreaks - On the horizontal plane, a firebreak shall be provided 15 metres wide and immediately adjoining all external boundaries of the planted area. The outer 10 metres will be cleared of all flammable material while the inner 5 metres, i.e. that portion closest to the trees, may be kept in a reduced fuel state, i.e. by slashing or grazing grass provided that the height of the grass does not exceed eight centimetres. On the vertical plane, a clear space of 10 metres high will be maintained above outer 10 metres of the firebreak.

(c) Internal Firebreaks - Plantations shall be subdivided into areas not exceeding 30 hectares by firebreaks 6 metres wide and shall be cleared of all flammable material. In the vertical plane, a clearance of a minimum height of 4 metres from ground level will be maintained above the firebreak.

(d) Special Risks

(i) Public Roads and Railway Reserves Firebreaks 15 metres wide shall be maintained where the planted area adjoins public roads and railway reserves. The specification will be as for "boundary firebreaks" on planted areas.
(ii) Power Lines- Firebreaks shall be provided along power lines where they pass through or lie adjacent to planted areas.

The specification of the width and the height of clearing shall be in accordance with Western Power specifications.

E. ROTARY SLASHERS

The possibility of fires started by rotary slashers being operated in bush or grassland during the summer months, is brought to the attention of landowners. They are asked to take care to avoid fires when slashing in dry or hot conditions.

FIREBREAK DEFINITION

FIREBREAK MEANS AN AREA OF LAND WHICH MUST BE MAINTAINED TOTALLY CLEAR OF ALL FLAMMABLE MATERIAL (LIVING OR DEAD) AND ANYOVERHANGINGTREESOROTHERVEGETATION (UP TO A HEIGHT OF FOUR (4) METRES FROM GROUND LEVEL AT ANY POINT) FOR THE WHOLE OF THE COMPLIANCE PERIOD, 1ST DECEMBER TO 26TH APRIL.

SPECIAL WORK ORDERS

Whilst the requirements of this Fire Break Order are considered to be the minimum standard for fire prevention work not only to protect individual properties but the district in general, Council retains the ability to issue Special Work Orders pursuant to Section 33 of the Bush Fire Act, 1954, to individual landowners should additional works be necessary for a potential fire hazard that may exist on a property.

PROHIBITED AND RESTRICTED BURNING TIMES

The prohibited (total ban) and restricted (permits required) burning times applying with the Shire are:

IRRIGATION LAND:

RESTRICTED	PROHIBITED	RESTRICTED
9th November 2016 to 22nd December 2016	23rd December 2016 to 14th February 2017	15th February 2017 to 29th March 2017

BALANCE OF SHIRE:

RESTRICTED	PROHIBITED	RESTRICTED
2nd November 2016 to 15th December 2016	16th December 2016 to 14th March 2017	15th March 2017 to 26th April 2017

Note: These dates are subject to slight variation according to seasonal conditions, but any alterations will be advertised locally.

MICHAEL PARKER
CHIEF EXECUTIVE OFFICER

RUIC FIRE