

29 MAY 2019

BUSHFIRE PLANNING ASSESSMENT

Greater Geelong Amendment C395 (part)

Prepared for City of Greater Geelong

Version Control

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Bushfire Planning

Bushfire Planning is a town planning service that works with public and private sector clients to understand and apply planning scheme bushfire policies and requirements. It is led by Kevin Hazell who is a qualified town planner with extensive experience working on bushfire planning at State and local levels in Victoria.

Bushfire Planning (KH Planning Services Pty Ltd)

ABN 67 617 747 841

PO Box 7132

Glen Iris

Vic 3146

www.bushfireplanning.com.au

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EXECUTIVE SUMMARY

The City of Greater Geelong (the 'Council') has prepared the *Northern and Western Geelong Growth Areas Framework Plan (CoGG, 2019) (the 'Framework Plan')* which was adopted by Council on 26 March 2019. The Framework Plan outlines principles and actions to achieve the development of the Northern and Western Growth Areas.

The Council is subsequently preparing Amendment C395 which seeks (in part) to implement the Framework Plan. This report has been commissioned by the Council to satisfy the requirements in *c13.02-1S Bushfire* in the Greater Geelong Planning Scheme (the 'planning scheme').

The study area and locality

The Northern Geelong Growth Area is identified for potential future development in the *G21 Regional Growth Plan (2013)*. A large portion of the Northern Geelong Growth Area was rezoned from Farming Zone to Urban Growth Zone in a Ministerial amendment by the Minister for Planning in November 2014 (Amendment C322). Much, though not all, of the balance portion of the Growth Area is proposed to be rezoned to Urban Growth Zone by Amendment C395.

The Western Geelong Growth Area was also identified for potential future development in the *G21 Regional Growth Plan (2013)*. Most of the Growth Area is proposed to be rezoned to Urban Growth Zone by Amendment C395.

Landscape bushfire considerations

The primary bushfire risk to the study area is from grassfire. There is no potential for extreme fire behaviour due to the lack of larger, non-grassland areas of vegetation and the relatively flat terrain.

Dog Rocks Flora and Fauna Sanctuary is a larger scale risk but has a limited extent of vegetation (at the landscape scale) and an inability for any bushfire in that area to develop and grow particularly large.

The landscape provides good access to locations where human life can be better protected from the harmful effects of bushfire, including good access to areas of BAL:Low in the surrounding developed areas of Geelong and Lara and immediate access to BAL:Low areas in the completed development as envisaged in the framework plan.

The methodology for a bushfire hazard landscape assessment set out in *Planning Permit Applications Bushfire Management Overlay Technical Guide (DELWP,2017)* identifies four landscape typologies to provide a framework for identifying landscape risk consistently across Victoria.

Landscape type one most closely aligns with the landscape around the study area. The characteristic of this are that the type and extent of vegetation is unlikely to result in neighbourhood scale destruction or extreme fire behaviour and immediate access is available to a place that provides shelter from bushfire. Landscape type one is the lowest risk landscape type arising under Victoria's planning system.

Landscape type 2 aligns with the landscape around Dog Rocks Flora and Fauna Sanctuary. The characteristics of this landscape are that the type and extent of vegetation may result in neighbourhood-scale destruction, bushfire (other than grasslands) can only approach from one aspect and access is available in any completed urban residential development that can provide shelter from bushfire. Landscape type 2 is at the lower end of bushfire risk arising under Victoria's planning system.

The landscape and strategic bushfire risk to the study area is low to moderate. There is no landscape bushfire feature that impacts on the principle of the Northern and Western Growth Areas as a location for growth. Areas of elevated landscape risk around Dog Rocks Flora and Fauna Sanctuary should be subject to risk avoidance strategies and interface treatments. These are further considered in later parts of this report.

Site based exposure

An assessment of site based exposure prepared as part of this report (Section 7) to ensure the framework plan satisfies the site-based exposure elements of c13.02-1S.

The site assessment considers the following areas separately:

- Grassland interfaces on study area edges.
- Dog Rocks Flora And Fauna Sanctuary.
- Barwon River interface.
- Hazards proposed within the study area.
- Interim hazards during the development phase.

The bushfire hazard site assessment confirm that the bushfire risk at the site scale is low to moderate based on the exposure benchmarks in planning schemes and the separation distances required. There is no site-scale bushfire feature that would make development as indicatively set out in the Framework Plan unacceptable.

Compliance with c13.02-1S Bushfire

In addition to landscape and site based considerations, the proposal is also consistent with the bushfire policies and directions contained in the planning scheme. There is no planning scheme bushfire factor that would warrant the proposal not proceeding subject to the recommendations in this report being implemented through precinct structure plans.

Biodiversity

It is beyond the scope of this report to assess the biodiversity conservation value of vegetation that may need to be removed or managed as a result of bushfire requirements. However, given the greenfield environment and the availability of land within the study area, it is reasonable to assume that development can accommodate the setbacks required from any vegetation that must be retained for biodiversity purposes.

At this stage, and recognising that more detailed work will occur at the precinct structure plan stage, is it reasonable to conclude that development can implement bushfire protection measures. However, if any part of the study area cannot accommodate bushfire requirements due to biodiversity factors, then development should not proceed.

Bushfire Management Overlay

(land on and adjoining the Dog Rocks Flora and Fauna Sanctuary)

At the time a precinct structure plan is prepared, the potential to avoid development in land subject to the Bushfire Management Overlay (effectively resulting in a 150m development setback) should be investigated. This should focus on whether it is sensible to avoid development on land subject to the Bushfire Management Overlay that will be most at risk from the permanent and on-going bushfire hazard in the Dog Rocks Flora and Fauna Sanctuary.

If development does proceed in any part of the Bushfire Management Overlay, the requirements of *c53.02 Bushfire* can be met as they relate to the relevant site-based approved measures.

Bushfire Prone Area

c13.02-1S Use and development control in a bushfire prone area

Most of the study area is currently within a Bushfire Prone Area.

The use and development control in a bushfire area will apply to future planning applications to subdivide the land into more than 10 lots. Implementing the recommendations in this report would address the use and development control in a bushfire prone area and their translation into precinct structure plans when prepared will ensure they are given effect to at the time planning permits are issued.

Overall conclusion

The proposal is consistent with the bushfire policies and directions contained in the planning scheme. There is no planning scheme bushfire factor that would warrant the proposal not proceeding subject to the recommendations in this report being implemented through the structure plan.

Recommendations

Based on the assessments contained in this report, the following recommendations should be considered when preparing precinct structure plans and before a subsequent planning scheme amendment is approved to introduce precinct structure plans into the planning scheme.

These recommendations, as set out in Section 9, address the following:

- Recommendation 1: All interfaces with a bushfire hazard
- Recommendation 2: Grassland interfaces on the edges of the study area
- Recommendation 3: Dog Rocks Flora and Fauna Sanctuary interface
- Recommendation 3: Barwon River Interface
- Recommendation 4: Hazards proposed within the study area
- Recommendation 5: Interim hazards during development phasing
- Recommendation 6: Biodiversity.

1.0 INTRODUCTION

The City of Greater Geelong (the 'Council') has prepared the *Northern and Western Geelong Growth Areas Framework Plan (CoGG, 2019) (the 'Framework Plan')* which was adopted by Council on 26 March 2019. The Framework Plan outlines principles and actions to achieve the development of the Northern and Western Growth Areas.

The Council is subsequently preparing Amendment C395 to the Greater Geelong Planning Scheme (the '*planning scheme*') which seeks (in part) to implement the Framework Plan by including it as a background document, introduce a new clause 21.20 on the Northern and Western Geelong Growth Areas into the City's Municipal Strategic Statement, and to rezone portions of the Northern and Western Geelong Growth Areas to Urban Growth Zone.

This report has been commissioned by the Council to satisfy the requirements in *c13.02-1S Bushfire* in the planning scheme. The project scope requires:

- A bushfire hazard landscape assessment, having regard to Planning Advisory Note 68 (Bushfire State Planning Policy – Amendment VC140).
- Assessment of Amendment C395 against the settlement planning section of *c13.02-1S Bushfire* and, in particular, to demonstrate that development will not result in exposure of more than 12.5kw of radiant heat as required by *c13.02-1S Bushfire* for development enabled by a planning scheme amendment.

To ensure bushfire planning scheme matters are considered in preparing Amendment C395, this report:

- Provides an overview of relevant bushfire planning provisions in the planning scheme.
- Provides planning scheme bushfire hazard assessments to better understand the risk to the study area (as defined by the planning scheme).
- Provides an assessment of the proposal against bushfire policy in *c13.02-1S Bushfire* of the planning scheme.

It is noted that Amendment C395 includes matters beyond the planning of the Northern and Western Growth Areas. These matters have not been considered in this report and references to Amendment C395 in this report only relate to the Northern and Western Growth Area elements of the amendment.

Engagement with the Country Fire Authority (CFA)

The Council has advised the following:

Council liaised with CFA in the preparation of future urban structure plans, which informed the preparation of the Northern and Western Geelong Growth Areas. CFA's advice at that stage was regarding the road network rather than any areas of bushfire risk.

In March 2019 Council officers met with CFA regarding the requirements of Clause 13.02-1S (Bushfire planning) of the Greater Geelong Planning Scheme. CFA officers indicated that it would accept a Bushfire Management Statement or similar document addressing and demonstrating compliance with Clause 13.02-1S being exhibited concurrently with Amendment C395 or its conclusions being incorporated within the Northern and Western Geelong Growth Areas Framework Plan.

Further planning scheme amendments

The Urban Growth Zone that Amendment C395 is seeking to apply requires that a precinct structure plan be incorporated into the planning scheme before planning permits can be issued. There is therefore a subsequent stage of strategic planning and a further planning scheme amendment is required before development planning permits could be issued.

The quarry in the Western Growth Area is not currently proposed to be included in the Urban Growth Zone. The Special Use Zone 7 will continue to apply. This land also will require a further planning scheme amendment before urban growth could proceed.

2.0 THE STUDY AREA AND LOCALITY

The strategic context of the study area

The project brief describes the context as follows:

The Northern and Western Geelong Growth Areas project is being prepared to address Geelong's long-term population growth, and constitutes the largest greenfield planning project in regional Victoria with the capacity to accommodate approximately 112,000 new Geelong residents.

The Northern Geelong Growth Area, in Lovely Banks and Lara, has an area of 2,090 hectares and is anticipated to deliver more than 17,000 new dwellings for a population of approximately 48,000 residents. Four Precinct Structure Plans will be prepared for the Northern Geelong Growth Area.

The Western Geelong Growth Area, in Batesford, Moorabool, Bell Post Hill, Hamlyn Heights and Fyansford has an area of 3,245 hectares and is anticipated to deliver up to 23,000 new dwellings for a population exceeding 64,000 residents. Five Precinct Structure Plans will be prepared for the Western Geelong Growth Area.

Northern Geelong Growth Area

The project brief describes this part of the study area as follows:

The Northern Geelong Growth Area was one of two growth areas identified for potential future development in the 2013 G21 Regional Growth Plan. A large portion of the Northern Geelong Growth Area was rezoned from Farming Zone to Urban Growth Zone in a Ministerial amendment by the then Minister for Planning in November 2014 (Amendment C322). Much, though not all, of the balance portion of the growth area is proposed to be rezoned to Urban Growth Zone by Amendment C395.

The Northern Geelong Growth Area consists of largely open, treeless agricultural land primarily used for grazing and cropping and activities, with substantial areas of rural living development in the southern and eastern portions of the growth area.

Land use to the north and west of the growth area is mostly agricultural. To the south and east of the growth area are rural living areas, the Geelong Ring Road Employment Precinct and the Geelong Ring Road with the Corio residential area beyond.

The Northern Geelong Growth Area is a designated bushfire prone area. No land in or adjacent to the growth area is affected by the Bushfire Management Overlay.

The majority of the Northern Geelong Growth Area is subject to ESO 4 – Schedule 4 to the Environmental Significance Overlay (Grasslands Within the Werribee Plains Hinterland). The implications of ESO 4 will be investigated and resolved during the precinct structure planning process; however, it is anticipated that some portion of the Northern Geelong Growth Area will accommodate the retention of existing grassland. The urban interface around/adjacent to such grassland will require appropriate management.

Western Geelong Growth Area

The project brief describes this part of the study area as follows:

The Western Geelong Growth Area was one of two growth areas identified for potential future development in the 2013 G21 Regional Growth Plan. Most of the growth area is proposed to be rezoned to Urban Growth Zone by Amendment C395.

Most of the Western Geelong Growth Area consists of agricultural land primarily used for grazing and cropping activities. The Batesford Quarry occupies a large area near the centre of the growth area. A portion of the Batesford Township is located in the northwest of the growth area. Small rural living areas are located adjacent to Batesford Township and in the northeast of the growth area. The Dog Rocks Flora and Fauna Sanctuary, an approximately 83 ha area of woodland, is located within the growth area.

The valleys and banks of the Moorabool River, Barwon River and Cowies Creek are dominant features in the landform of the area.

Land use to the north, west and south of the growth area is mostly agricultural, with rural living areas adjacent to the Batesford Township and to the northeast of the growth area. To the east of the growth area is the Geelong Ring Road with residential areas of Bell Post Hill, Hamlyn Heights and Fyansford and a small industrial area in Fyansford beyond.

The Western Geelong Growth Area, with the exception of the Batesford Quarry, is a designated bushfire prone area. The Dog Rocks Flora and Fauna Sanctuary, along with an immediately adjacent area, is affected by the Bushfire Management Overlay.

FIGURE 1: THE STUDY AREA



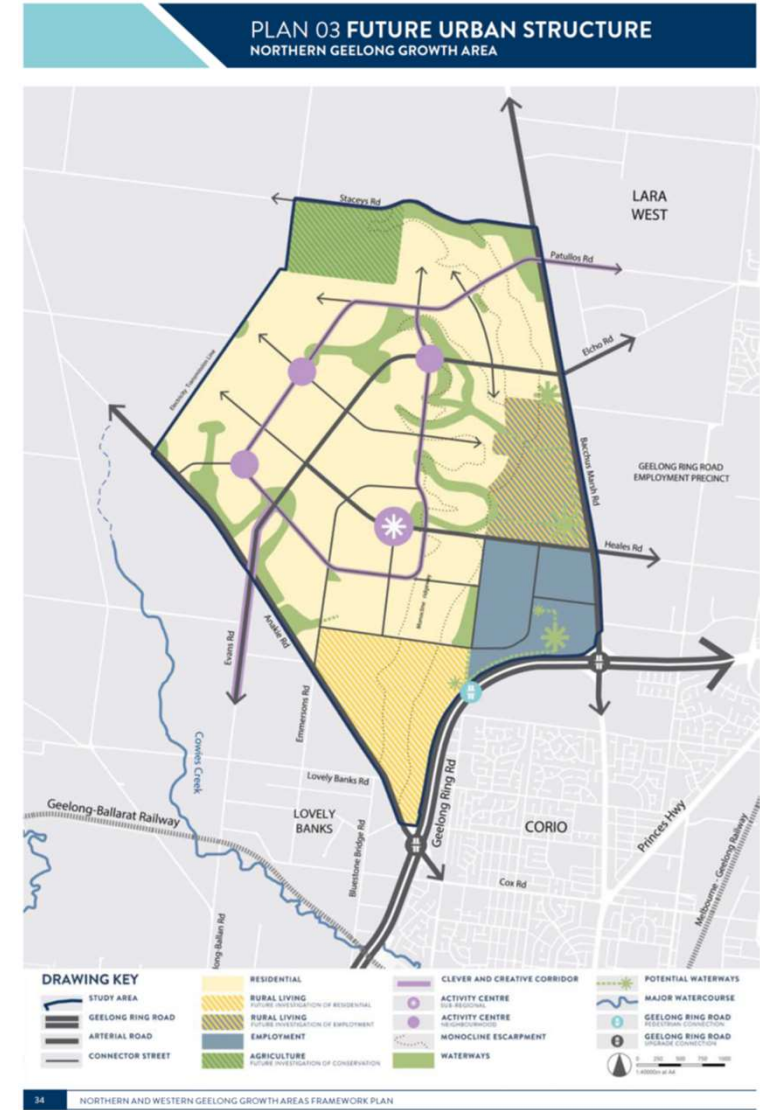
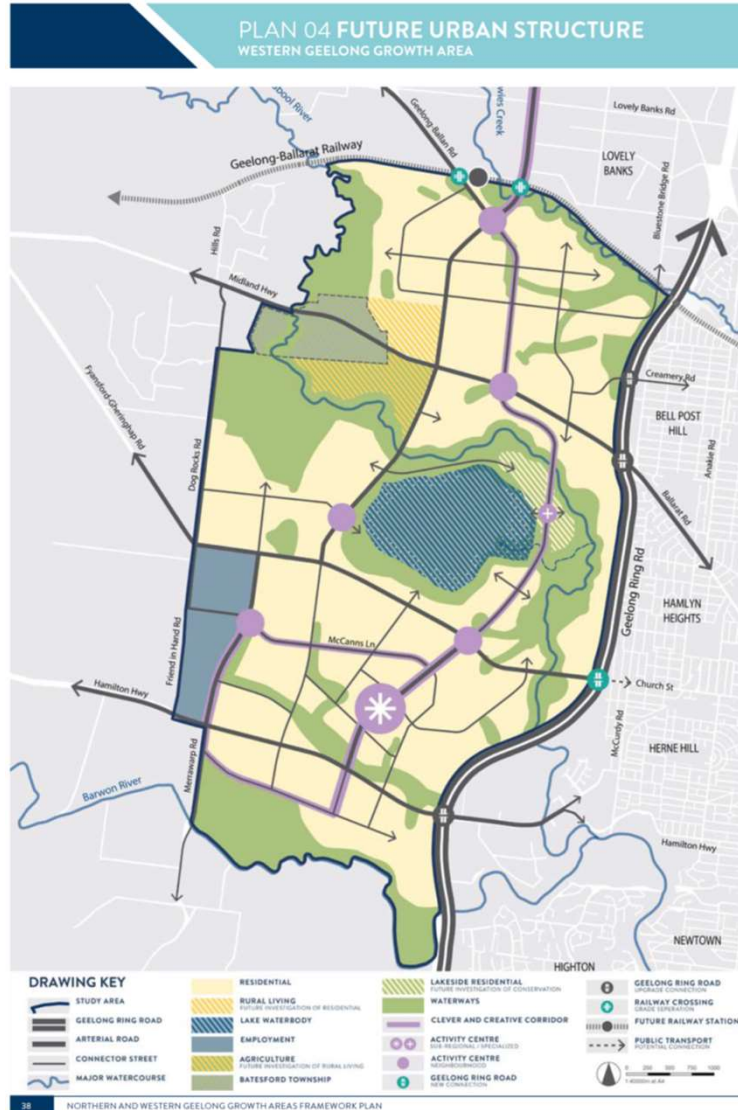
3.0 THE FRAMEWORK PLAN

The Framework Plan addresses six elements: Clever and Creative, Environment, Neighbourhood, Economy, Movement and Delivery.

The Framework Plan outlines principles and actions to achieve the development of the Growth Areas and specifies that the growth areas will be planned and developed in an orderly and sustainable sequence of nine short, medium and long term precincts.

The Framework Plan includes a future urban structure for the study area and a series of directions and proposals to be accommodated in future structure plans.

FIGURE 2: FRAMEWORK PLAN FUTURE URBAN STRUCTURE



4.0 PLANNING SCHEME BUSHFIRE CONTEXT

The planning scheme contains provisions that inform permit requirements, application requirements and policies & decision guidelines where the bushfire hazard could be an influence on future land use and development. This section provides an overview of these provisions. Figure 3 summarises the considerations.

Integrated decision making (Clause 71.02-3)

Clause 71.02-3 requires planning authorities, in bushfire areas:

[T]o prioritise the protection of human life over all other policy considerations.

Bushfire considerations are not to be balanced in favour of net-community benefit, as occurs for all other planning scheme matters. The bushfire emphasis in c71.02-3 was introduced through Amendment VC140 in December 2017. Such policy settings were recommended in 2011 by the *2009 Victorian Bushfires Royal Commission*.

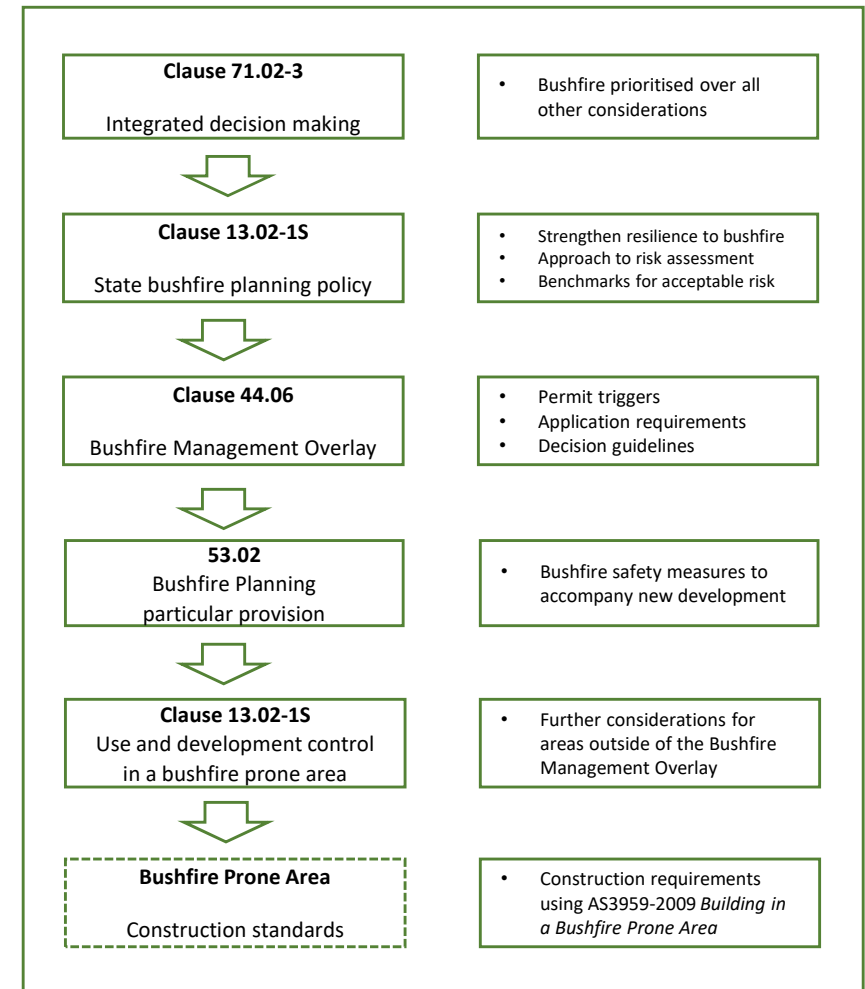
State planning policy for bushfire (Clause 13.02-1S)

The objective of the State planning policy for bushfire is:

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

Clause 13.02-1S contains a series of strategies to meet the above objective and these are summarised below.

FIGURE 3: PLANNING SCHEME BUSHFIRE PROVISIONS



Landscape bushfire considerations

Clause 13.02-1S requires a tiered approach to assessing the hazard:

- *Considering and assessing the bushfire hazard on the basis of [...] landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site;*
- *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.*

Alternative locations for development

Clause 13.02-1S includes two strategies that seek to direct new development:

- *Give priority to the protection of human life by [...] directing population growth and development to low risk locations [.]*
- *Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.*

Availability and safe access to area of enhanced protection

Clause 13.02-1S requires a location in easy reach that provides better protection for life from the harmful effects of bushfire:

- *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.*
- *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.*

The views of the relevant fire authority

Clause 13.02-1S identifies that a key element of a risk assessment is to:

- *Consult [...] with [...] the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.*

Site based exposure

Clause 13.02-1S provides policy directions for planning authorities about the level of acceptable exposure for new development enabled by a planning scheme amendment:

- *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).*
- *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.*

Areas of high biodiversity conservation value

Clause 13.02-1S provides directions on situations where a high bushfire risk and high biodiversity conservation values are both present:

- *Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that are of high biodiversity conservation value.*

No increase in risk

Clause 13.02-1S provides an overall view of acceptable risk:

- *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 reduce bushfire risk overall.*

Bushfire Management Overlay (Clause 44.06)

The purpose of the Bushfire Management Overlay is:

- *To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.*
- *To identify areas where the bushfire hazard warrants bushfire protection measures to be implemented.*
- *To ensure development is only permitted where the risk to life and property from bushfire can be reduced to an acceptable level.*

The Bushfire Management Overlay is generally applied to patches of vegetation (except grasslands) that are larger than 4 hectares in size. Where such a patch of vegetation exists, a 150 metre ember protection buffer is added and this land is also included in the Bushfire Management Overlay. Areas of extreme hazard are also included in the Bushfire Management Overlay.

Planning Advisory Note 46: Bushfire Management Overlay Methodology and Criteria (2013, DPTLI) provides more information on where the Bushfire Management Overlay is applied.

Bushfire Planning particular provision (Clause 53.02)

Clause 52.03 Bushfire specifies the requirements that apply to a planning application under *Clause 44.06 Bushfire Management Overlay*. The purpose of this provision is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.*
- *To ensure that the location, design and construction of development appropriately responds to the bushfire hazard.*
- *To ensure development is only permitted where the risk to life, property and community infrastructure from bushfire can be reduced to an acceptable level.*
- *To specify location, design and construction measures for a single dwelling that reduces the bushfire risk to life and property to an acceptable level.*

Bushfire prone area (Clause 13.02-1S and building regulations)

Bushfire Prone Areas are areas that are subject to or likely to be subject to bushfire. The Minister for Planning, under the Building Regulations 2018, determines that specific areas are designated Bushfire Prone Areas for the purposes of the building control system. Bushfire Prone Areas include all areas subject to the Bushfire Management Overlay. Bushfire Prone Areas also include grassland areas and, occasionally, smaller patches of non-grassland vegetation.

Specific bushfire construction standards apply in these areas and these are implemented by the relevant building surveyor as part of the building permit. These construction standards are referred to as bushfire attack levels (BAL).

Where land included in the Bushfire Prone Area is also included in the Bushfire Management Overlay, the requirements of the Bushfire Management Overlay take precedence.

Use and development control in Bushfire Prone Areas (Clause 13.02-1S)

Clause 13.02-1S of the planning scheme includes planning requirements for Bushfire Prone Areas. These are in the form a 'use and development control' that applies to certain uses that are in a Bushfire Prone Area but not subject to the Bushfire Management Overlay.

The use and development control applies to Subdivisions of more than 10 lots, Accommodation, Child care centre, Education centre, Emergency services facility, Hospital, Indoor recreation facility, Major sports and recreation facility, Place of assembly, and any application for development that will result in people congregating in large numbers.

The use and development control requires that when assessing a planning permit application:

- *Consider the risk of bushfire to people, property and community infrastructure.*
- *Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.*
- *Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts.*

5.0 PLANNING SCHEME BUSHFIRE REQUIREMENTS

The planning scheme contains policy directions in *c13.02-1S Bushfire*, permit triggers for bushfire in *c44.06 Bushfire Management Overlay* and permit considerations in *c13.02-1S Bushfire*. These are discussed in this section.

C13.02-1S Bushfire

The study area is an area that may be affected by bushfire. *C13.02-1S Bushfire* is therefore relevant to the planning of future growth in the study area.

c44.06 Bushfire Management Overlay

Dog Rocks Flora and Fauna Sanctuary and surrounding land is within a Bushfire Management Overlay. For this area, the requirements of the Bushfire Management Overlay are relevant for future development.

c13.02-1S Use and development control in a bushfire prone area

The study area except for the part of the quarry in the Western Growth Area is entirely within a declared bushfire prone area. *C13.02-1S Bushfire* includes planning scheme requirements for these areas in the form of a use and development control.




The use and development control applies to uses listed in the clause. Subdivision of land for more than 10 lots, which applies to the development of the study area for urban purposes, is listed. Planning consideration is therefore required under *c13.02-1S Use and development control in a bushfire prone area*.

Whilst the consideration is to be made at the time of a planning permit application, considerations are known now (because of this report) and can be included into the bushfire assessment of Amendment C395 to future proof subsequent planning processes, including precinct structure plans.

The use and development control also applies to any application for development that will result in people congregating in large numbers. It is not necessary to consider whether the proposal results in large numbers of people congregating as the use and development control is triggered in any event by subdivision for more than 10 lots.

FIGURE 4: BUSHFIRE MANAGEMENT OVERLAY AND BUSHFIRE PRONE AREA EXTENT



-  Study area
-  Bushfire Management Overlay
-  Bushfire Prone Area

6.0 BUSHFIRE HAZARD STRATEGIC AND LANDSCAPE ASSESSMENT

A bushfire hazard landscape assessment provides information on the bushfire hazard more than 150 metres from the study area. Considering bushfire from a landscape perspective is important as it affects the likelihood of a bushfire threatening the site, its potential intensity and the level of bushfire risk a site may be exposed to.

The methodology for a bushfire hazard landscape assessment is set out in *Planning Permit Applications Bushfire Management Overlay Technical Guide* (DELWP, 2017).

The bushfire hazard landscape assessment is ordinarily used to respond to the objectives and approved measures in *c53.02-2.1 Bushfire Planning*. This requires that the risk from the surrounding landscape is mitigated to an acceptable level for development to proceed. The bushfire hazard landscape assessment is also used to consider how site-based safety measures should be applied so as to be responsive to the landscape risk.

The bushfire hazard landscape assessment in this report has been prepared to support a broader understanding of bushfire risk as defined by the planning scheme to inform the bushfire assessment in Section 8 of this report.

The written commentary in this section should be read in conjunction with **Figure 5: Bushfire Hazard Landscape Assessment Diagram**.

The bushfire hazard and fire runs

Forested areas

Over 6km to the north-east is the You Yangs Regional Park and over 11km to the west is the Bannockburn Recreational Reserve. These are the only areas containing non-grassland hazards and more significant areas of vegetation.

The extensive separation distances means that they are not a bushfire risk to the study area. There is no potential for them to impact on the study area through a moving fire front. The potential for embers from these areas to impact on the study area is low.

Dog Rocks Flora and Fauna Sanctuary

The Dog Rocks Flora and Fauna Sanctuary is located within the Western Growth Area. It is approximately 80ha in size and has the potential for a fire run of up to 1.3km within the vegetated area. The area adjoins the Moorabool River which contains more heavily treed area and to the south there is connectivity with an area of scattered trees.

River corridors

The Western Growth Area is affected by the Barwon River and the Moorabool River. These river corridors often sit in an escarpment considerably lower than surrounding land and sometimes there are areas of flood prone land adjoining the corridors. They mostly comprise grassland vegetation although in some places scattered and more contiguous areas of trees arise, especially where the Moorabool River adjoins the Dog Rocks Flora and Fauna Sanctuary.

Grassland areas around the study area

The dominant landscape characteristics is grasslands. Extensive grassland areas arise on the north, west, and south aspects of the study area. The grasslands areas are extensive and there is potential that a moving grassfire can impact on the edges of study area.

Grassland areas are sometimes fragmented by agricultural uses (where grasslands can often be managed), roads & infrastructure, and from houses and their surrounds.

Potential for ember attack

All bushfire hazards have the potential to generate ember attack.

From grasslands, ember attack may be likely up to 50m from the edge of unmanaged grasslands. This is consistent with the application of the Bushfire Prone Area which generally provides a 50m ember protection buffer around grassland areas.

Ember attack may also be generated from the Dog Rocks Flora and Fauna Sanctuary. The extent of fire run may indicate that embers would be most intense immediately adjoining the forested areas.

Fire management planning

The *City of Greater Geelong Municipal Fire Management Plan (2015-18)* identifies two areas of interest for human settlement in the landscape:

- Lovely Banks low-density residential area within the Northern Growth Area is identified as a medium risk and a priority 4 action (on a spectrum of 1 to 4).

- The settlement of Batesford is identified as a medium risk and a priority 4 action.

There are no specific interventions occurring around the study area that are material to the assessment of bushfire for planning scheme purposes.

The project brief includes commentary from the Councils Municipal Fire Prevention Officer, as follows:

Northern growth Area

There are no significant concerns with the growth area. The topography and vegetation of the surrounding area, including the distance to the Brisbane Ranges, is such that it is not anticipated that a very dangerous bushfire running across the landscape would impact the growth area. However, the area could be impacted by grass fires and the urban/non-urban interface will need to be managed accordingly.

Western Growth Area

There are no significant concerns with the growth area. The topography and vegetation of the surrounding area, including the distance to the Brisbane Ranges, is such that it is not anticipated that a very dangerous bushfire running across the landscape would impact the growth area. The area could be impacted by grass fires and the urban/non-urban interface will need to be managed accordingly.

Due to the vegetation in the Dog Rocks Flora and Fauna Sanctuary and in the vicinity of the Moorabool River, a localised bushfire could impact the adjacent perimeter of the growth area; the urban interface to the sanctuary will need to be managed accordingly.

Joint Fuel Management Program

The Joint Fuel Management Program outlines where both Forest Fire Management Victoria and the CFA intend to carry out fire management operations on Victoria's public and private land over the next three years.

There is no fuel management activities occurring in the study area arising from the Joint Fuel Management Program.

Availability of locations where human life can be better protected from a bushfire

The landscape provides good proximity and access to locations that are low fuel where human life can be better protected from the harmful effects of bushfire. The planning scheme defines such areas as BAL:Low, which are areas where hazardous vegetation is more than 100m away. Such locations will experience no flame contact from a moving fire front and lower levels of radiant heat.

Whilst the Geelong Ring Road forms a strong barrier to movement to the east, the road network does provide a series of connections where the study area connects with urban areas of Geelong that are capable of being assessed as BAL:Low. For the Northern Growth Area, travel to Lara which is capable of containing an area of BAL:Low is available along a 3km journey through grassland areas.

The study area itself, once developed, will provide extensive areas of BAL:Low. The availability of these areas to future occupants of the study areas provides for immediate access to them in the event of a bushfire.

There may be limitations in an emergency for the movement of large numbers of people in the study area to areas east of the Geelong Ring Road. However, the urban typology of anticipated development in the study area means that areas of BAL:Low will arise well in advance of a significant population emerging. On this basis, it is reasonable to assume that the need to move east of the Ring Road is avoided.

Neighbourhood Safer Places and Bushfire Place of Last Resort are terms given to locations designated by Councils (after consulting with the CFA) that can be used as a place of last resort when all other bushfire plans have failed. There are no such locations designated in the immediate landscape. This is expected given the lower landscape risk and the available of low-fuel areas as part of urban developed areas.

The potential that occupants of the study area will move east of the Geelong Ring Road rather than sheltering in urban areas within the study area during a bushfire may need to be managed. To provide a focus for an orderly response in an emergency, the Council could consider whether there is merit in designating a Neighbourhood Safer Place within the study area. This could be investigated in partnership with the CFA at the time precinct structure plans are prepared.

Bushfire History

Bushfire history data shows minimal fire activity in the landscape. Where fire has occurred, it has been grassfires as would be expected given the extensive grassland hazard areas. This is consistent with grassfires which did arise in the 2018/2019 bushfire season to the north of Lara.

Bushfire risk at the landscape scale

The primary bushfire risk to the study area is from grassfire. There is no potential for extreme fire behaviour due to the lack of larger, non-grassland areas of vegetation and the relatively flat terrain.

Dog Rocks Flora and Fauna Sanctuary is a larger scale risk but has a limited extent of vegetation (at the landscape scale) and an inability for any bushfire in that area to develop and grow particularly large. At a local and site scale, risk avoidance strategies and interface treatments should still be considered.

The landscape provides good access to locations where human life can be better protected from the harmful effects of bushfire, including good access to areas of BAL:Low in the surrounding developed areas of Geelong and Lara and immediate access to BAL:Low areas in the completed development as envisaged in the framework plan.

Landscape types

The methodology for a bushfire hazard landscape assessment set out in *Planning Permit Applications Bushfire Management Overlay Technical Guide* (DELWP,2017) identifies four landscape typologies to provide a framework for identifying landscape risk consistently across Victoria.

Landscape type one most closely aligns with the landscape around the study area. The characteristic of this are that the type and extent of vegetation is unlikely to result in neighbourhood scale destruction or extreme fire behaviour and immediate access is available to a place that provides shelter from bushfire. Landscape type one is the lowest risk landscape type arising under Victoria's planning system.

Landscape type 2 aligns with the landscape around Dog Rocks Flora and Fauna Sanctuary. The characteristics of this landscape are that the type and extent of vegetation may result in neighbourhood-scale destruction, bushfire (other than grasslands) can only approach from one aspect and access is available in any completed urban residential development that can provide shelter from bushfire. Landscape type 2 is at the lower end of bushfire risk arising under Victoria's planning system.

Landscape scale conclusion

The landscape and strategic bushfire risk to the study area is low to moderate. There is no landscape bushfire feature that impacts on the principle of the Northern and Western Growth Areas as a location for growth. Areas of elevated landscape risk around Dog Rocks Flora and Fauna Sanctuary should be subject to risk avoidance strategies and interface treatments. These are further considered in later parts of this report.

FIGURE 5: BUSHFIRE HAZARD LANDSCAPE ASSESSMENT DIAGRAM

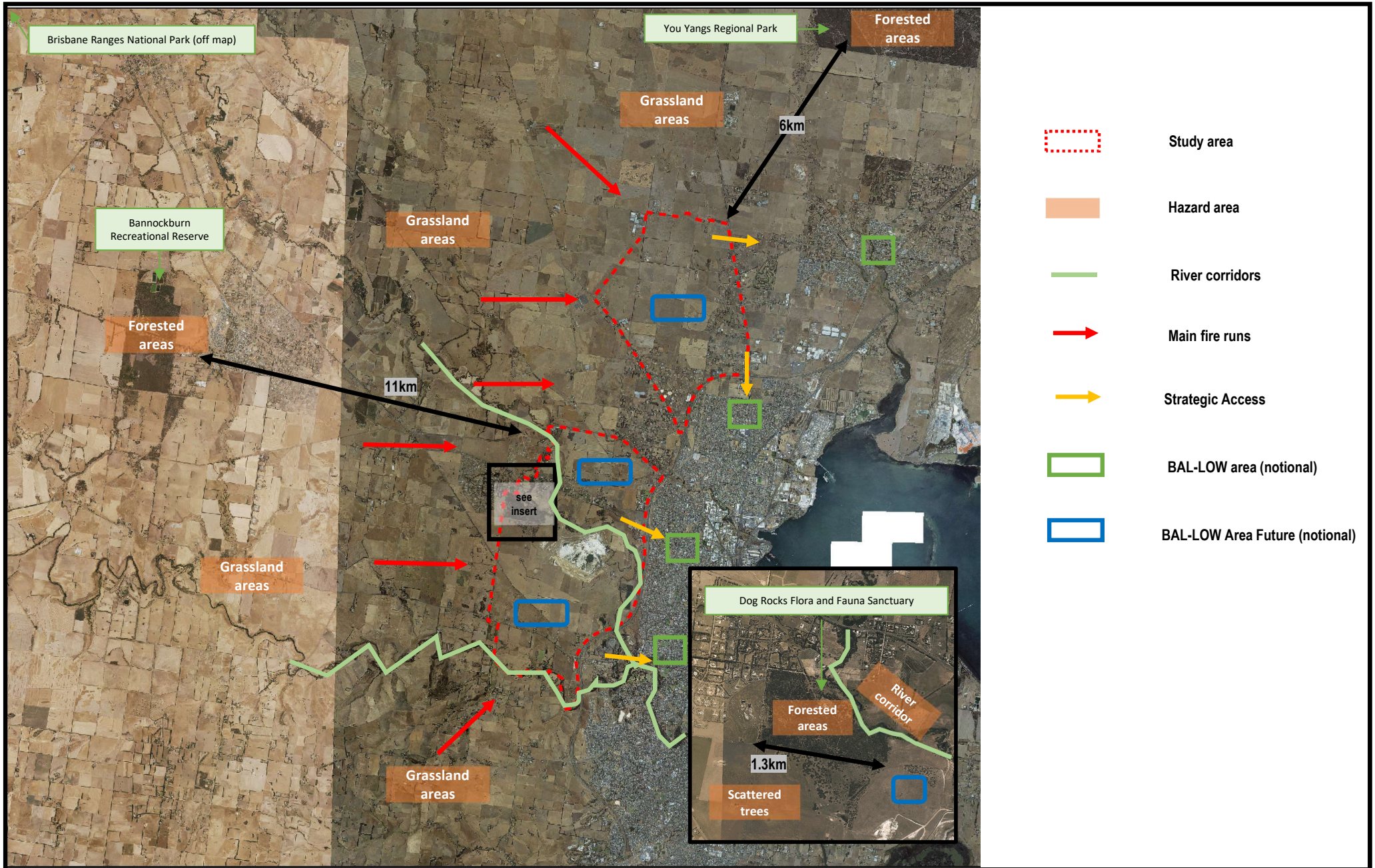


FIGURE 6: BUSHFIRE HISTORY



7.0 BUSHFIRE HAZARD SITE ASSESSMENT

Assessing bushfire at the site scale considers the hazard within 150 metres of a proposed development area or site. At the site scale, the exposure of future development to bushfire is determined by the amount of separation between the bushfire hazard and a proposed structure(s) (i.e. dwellings) or where people will be located.

The site assessment is undertaken in accordance with *c53.02 Bushfire Planning* and Sections 2.2.3 to 2.2.5 of *Australian Standard AS3959:2009 Construction of buildings in bushfire prone areas* (Standards Australia) (referred to as 'AS3959-2009'). The simplified procedure (Method 1) set out in Clause 2.2 in AS3929-2009 is used in this report.

Using the AS3959:2009 methodology, vegetation and slope is assessed to determine different levels of exposure to a bushfire based on a range of assumptions built into planning scheme bushfire provisions, including a Fire Danger Rating of 100 and a flame temperature of 1080°C.

Table 2 to *c53.02 Bushfire Planning* is used as part of the site assessment to determine the likely exposure based on what separation from the hazard is available or may be made available in conjunction with development. Exposure using this methodology relates to radiant heat and flame contact. Ember attack is assumed in all bushfire areas and the severity of ember attack is not separately assessed at the site level (for example, the different ember generating potential within a fuel type is not assessed or considered through the site assessment).

Locations subject to a bushfire hazard site assessment

The site assessment considers the following five areas separately:

- Grassland interfaces on study area edges.
- Dog Rocks Flora And Fauna Sanctuary.
- Barwon River interface.
- Hazards proposed within the study area.
- Interim hazards during the development phase.

Each of these areas is assessed in the following pages.

Conclusion to the bushfire hazard site assessment

The bushfire hazard site assessment confirms that the bushfire risk at the site scale is low to moderate based on the exposure benchmarks in planning schemes and the separation distances required between development and bushfire hazards. There is no site-scale bushfire feature that would make development as indicatively set out in the Framework Plan unacceptable.

The site assessment concludes that exposure of future development to no more than 12.5kw of radiant heat can be achieved, as required by *c13.02-1S Bushfire*. Precinct structure plans should give effect to this in the more detailed design of various precincts in the study area.

7.1 BUSHFIRE HAZARD SITE ASSESSMENT – GRASSLAND INTERFACES ON STUDY AREA EDGES

Framework Plan influences

The Framework Plan shows (indicatively) that most external boundaries that adjoin a bushfire hazard are roads.

Slope

The grassland hazard is mostly flat across the study area.

EVC

EVC data does not identify grassland areas.

Assessment of vegetation for bushfire purposes

Grassland areas are assessed as grasslands.

Setback from assessed vegetation

Development will be required to be set back from assessed vegetation for a distance no less than that required to ensure exposure is no more than 12.5kw of radiant heat. This equates to Column A in Table 2 to *c53.02 Bushfire* in the planning scheme.

On the basis of grassland vegetation that is flat, development will need to be set back at least 19m from assessed vegetation. Even taking a very cautious approach if there is some variability in the slope in a local area, the setback would be no more than 31m (downslope 15-20 degrees) in a very conservative slope scenario.

Achieving the setback

Due to the greenfield environment and the road interfaces with grassland areas, a setback of 19m but, being cautious, up to 31m, is readily achievable and exposure of future development to no more than 12.5kw of radiant heat can be demonstrated.

Other influences on the setback

Due to the relatively low landscape-scale risk, there is no need to increase setbacks further in grassland environments. Boundary roads are already in place to enable an effective interface with grassland areas.

Refining the set backs required

At the time a precinct structure plan is prepared, a revised bushfire hazard site assessment should be prepared. The revised assessment should:

- Re-assess vegetation so that the assessment is contemporary (recognising that development could be many years away) and reflects local slope assessments.
- Ensure that there is no continuity of fuel paths from grassland areas into urban developed areas.

FIGURE 7: SLOPE- WESTERN GROWTH AREA



FIGURE 8: SLOPE- EASTERN GROWTH AREA



FIGURE 9: EXPECTED INDICATIVE TREATMENT ON GRASSLAND INTERFACES

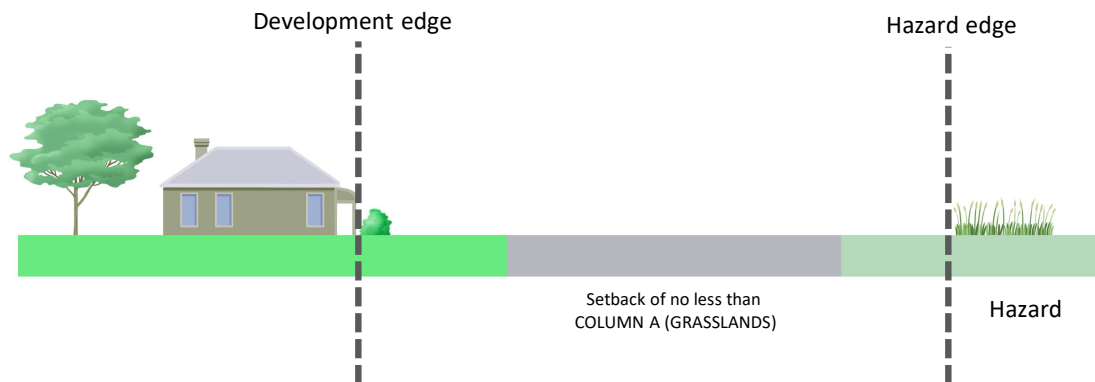


FIGURE 10: SITE ASSESSMENT PICTURES OF GRASSLAND INTERFACES

Dog Rocks Road, north of Fyansford Gheringhap Road, looking north



Western Growth Area, Northern boundary (railway line), looking east



Sample grassland environs throughout the study area



7.2 BUSHFIRE HAZARD SITE ASSESSMENT - DOG ROCKS FLORA AND FAUNA SANCTUARY AND SURROUNDS

Framework Plan influences

The Framework Plan shows (indicatively) that Dog Rocks Flora and Fauna Sanctuary and the treed area to the south (generally land currently within the Rural Conservation Zone) as being for conservation. It is assumed it will remain a permanent bushfire hazard.

Slope

The hazard in the Dog Rocks Flora and Fauna Sanctuary is mostly downslope (up to 10-15 degrees) because the vegetation falls away towards the Moorabool River. East of the sanctuary the hazard presents as flat and areas of flat arise in the southern areas.

EVC

EVC data indicates that grassy woodland is the dominant vegetation type. Areas of stream bank shrubland is present along Moorabool River and plains grassy woodland extends to the south of the main sanctuary area.

Assessment of vegetation for bushfire purposes

The vegetation is relatively mixed and shows variations of woodland and forest. The dominant vegetation is assessed as woodland. However, to take a precautionary approach the vegetation is assessed as **forest** for the purpose of this assessment.

Setback from assessed vegetation

Development will be required to be set back from assessed vegetation for a distance no less than that required to ensure exposure is no more than 12.5kw of radiant heat. This equates to Column A in Table 2 to *c53.02 Bushfire* in the planning scheme.

On the basis of a worst-case scenario (forest vegetation, downslope 10-15 degrees), development will need to be set back at least 82m from assessed vegetation.

Achieving the setback

Due to the greenfield environment around the Dog Rocks Flora and Fauna Sanctuary, a setback of 82m is readily achievable and exposure of future development to no more than 12.5kw of radiant heat can be demonstrated.

Other influences on the setback

Separating development to ensure exposure of future development to no more than 12.5kw of radiant heat is the minimum setback that should be provided. The setback should also be based on landscape bushfire factors and policy considerations and these are discussed separately in this report.

7.2 BUSHFIRE HAZARD SITE ASSESSMENT - DOG ROCKS FLORA AND FAUNA SANCTUARY AND SURROUNDS

Refining the set backs required

At the time a precinct structure plan is prepared, a revised bushfire hazard site assessment should be prepared. The revised assessment should:

- Re-assess vegetation so that the assessment is contemporary (recognising that development could be many years away).
- Factor in the end-state treatment of the Dog Rocks Flora and Fauna Sanctuary and surrounds, as articulated in a precinct structure plan and the impact this may have on fuel loads.
- Consider the end-state treatment of woodland / treed areas to the south and whether, in combination with the main area of hazard, they would warrant inclusion into the Bushfire Management Overlay.

FIGURE 11: EVC DATA - DOG ROCKS FLORA AND FAUNA SANCTUARY AND SURROUNDS

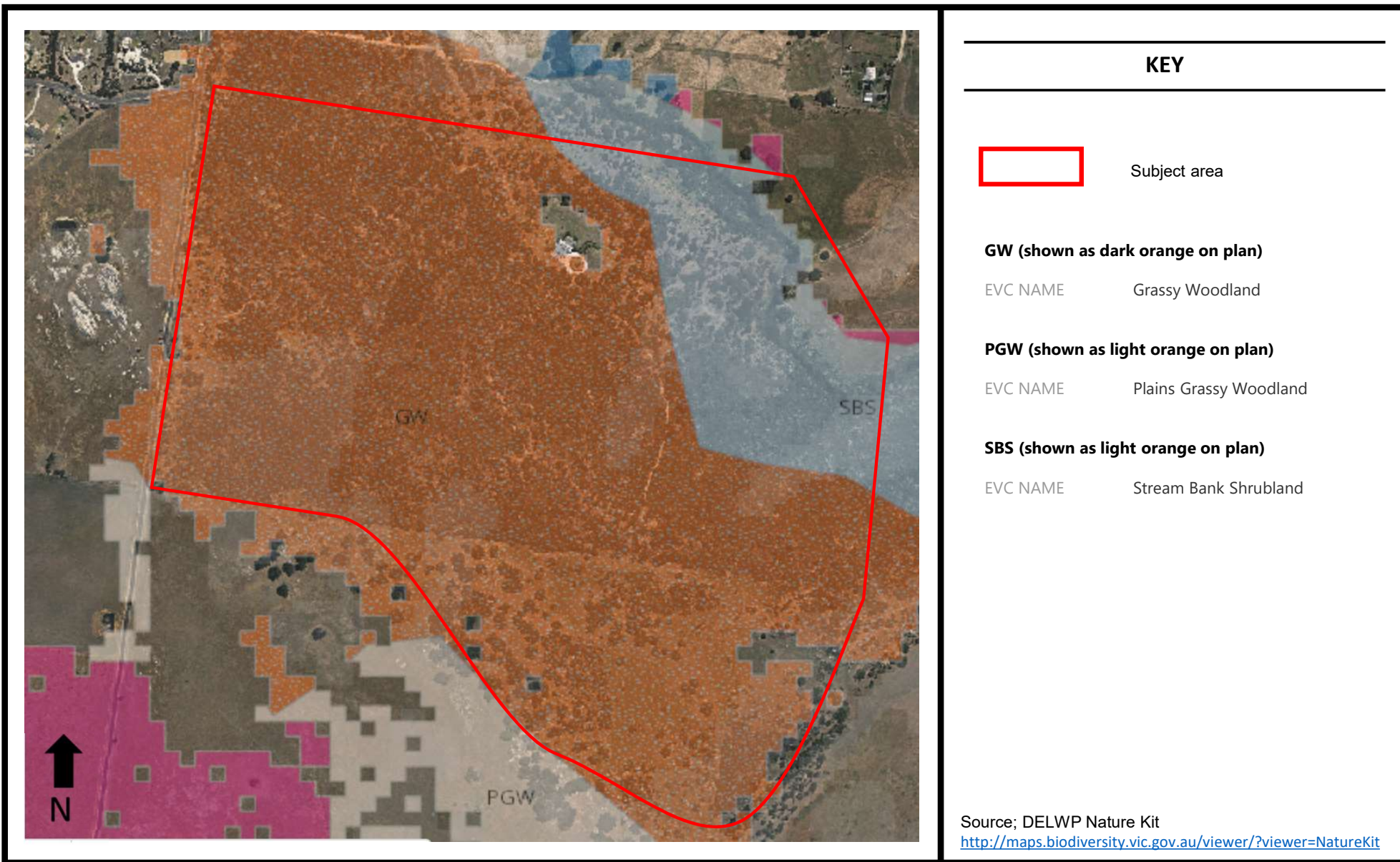


FIGURE 12: BUSHFIRE HAZARD SITE ASSESSMENT DIAGRAM – DOG ROCKS FLORA AND FAUNA SANCTUARY



FIGURE 13: SITE ASSESSMENT PICTURES OF DOG ROCKS FLORA AND FAUNA SANCTUARY

Dog Rocks Flora and Fauna Sanctuary from Dog Rocks Road (looking east)



Dog Rocks Flora and Fauna Sanctuary near Moorabool River interface



7.3 BUSHFIRE HAZARD SITE ASSESSMENT – BARWON RIVER INTERFACE

Slope

The slope is mostly flat, but areas immediately adjoining the watercourse can be steeper.

EVC

EVC data indicates that floodplain riparian woodland is present in some areas of the river corridor.

Assessment of vegetation for bushfire purposes

The river corridor is mostly grassland. However, there are areas of woodland in small pockets.

Setback from assessed vegetation

Development will be required to be set back from assessed vegetation for a distance no less than that required to ensure exposure is no more than 12.5kw of radiant heat. This equates to Column A in Table 2 to *c53.02 Bushfire* in the planning scheme.

On the basis of grassland vegetation that is flat, development will need to be set back at least 19m from assessed vegetation. Taking a very cautious approach if there is steeper areas heading into the water course, the setback would be no more than 31m (downslope 15-20 degrees) in any event.

On the basis of woodland, the configuration of the woodland (small patches, narrow strips along the water course) would be a significant factor to be assessed at the local and site scale. However, at a worst case scenario the setback would be no more than 73m (downslope 15-20 degrees) in any event.

Achieving the setback

Due to the greenfield environment adjoining the river corridor, a setback of up to 73m is readily achievable and exposure of future development to no more than 12.5kw of radiant heat can be demonstrated.

Other influences on the setback

The main influence on the final setback will be the expected end-state interface proposed in the precinct structure plan. For example, it is likely that flood considerations will also be a factor in the final setback of development.

At the time a precinct structure plan is prepared, the potential to provide a perimeter road adjoining development should be investigated to create a permanent, effective interface and minimise the rear of properties abutting hazards (including revegetated areas, if proposed) in the river corridor.

Refining the set backs required

At the time a precinct structure plan is prepared, a revised bushfire hazard site assessment should be prepared. The revised assessment should:

- Re-assess vegetation so that the assessment is contemporary (recognising that development could be many years away).
- Site-base slope assessments to more accurately define the slope.
- Factor in the end-state treatment of the river corridor, as articulated in a precinct structure plan (i.e. revegetation, recreation) and the impact this may have on fuel loads.

FIGURE 14: EVC DATA - BARWON RIVER INTERFACE

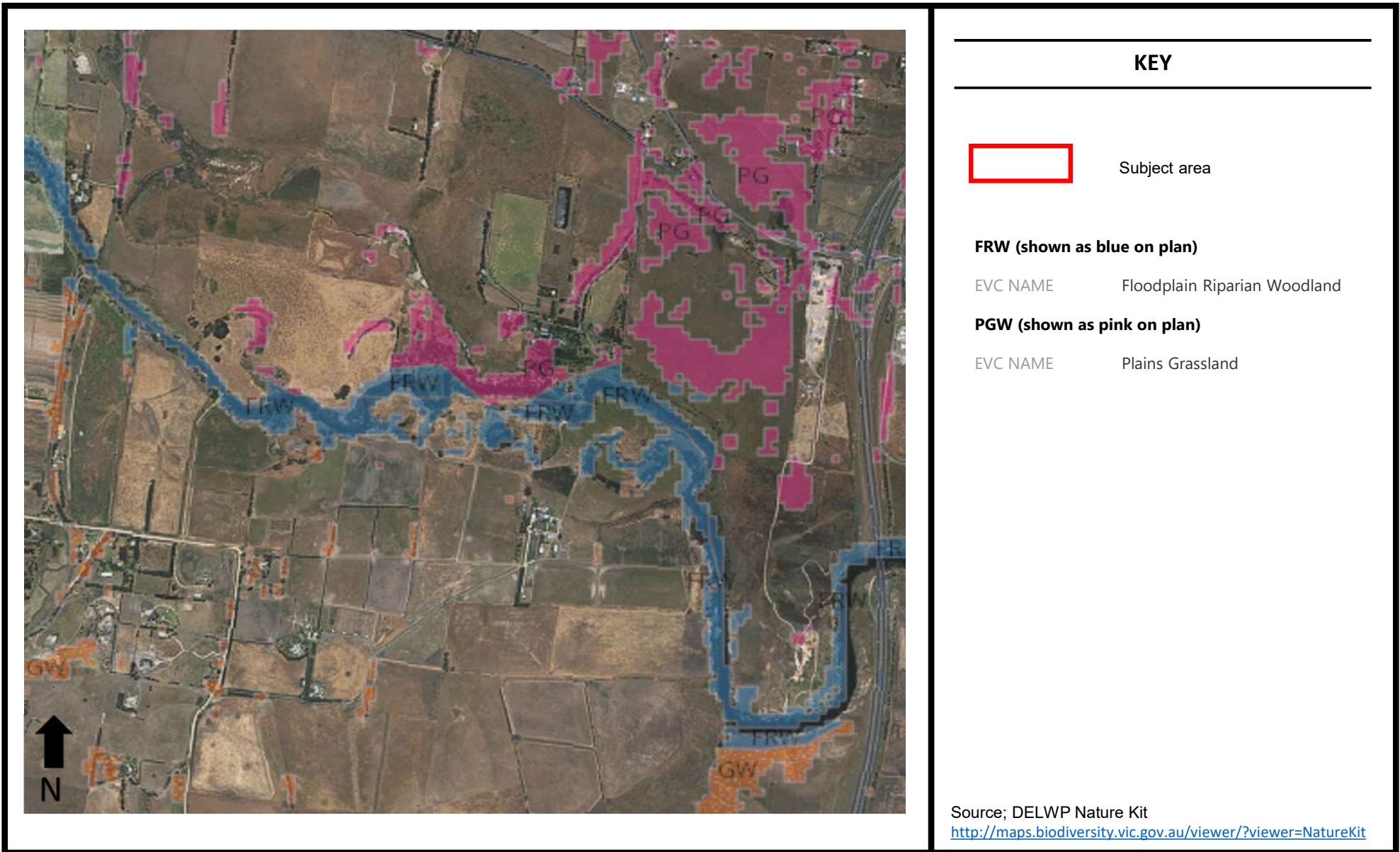


FIGURE 15: SLOPE- BARWON RIVER INTERFACE

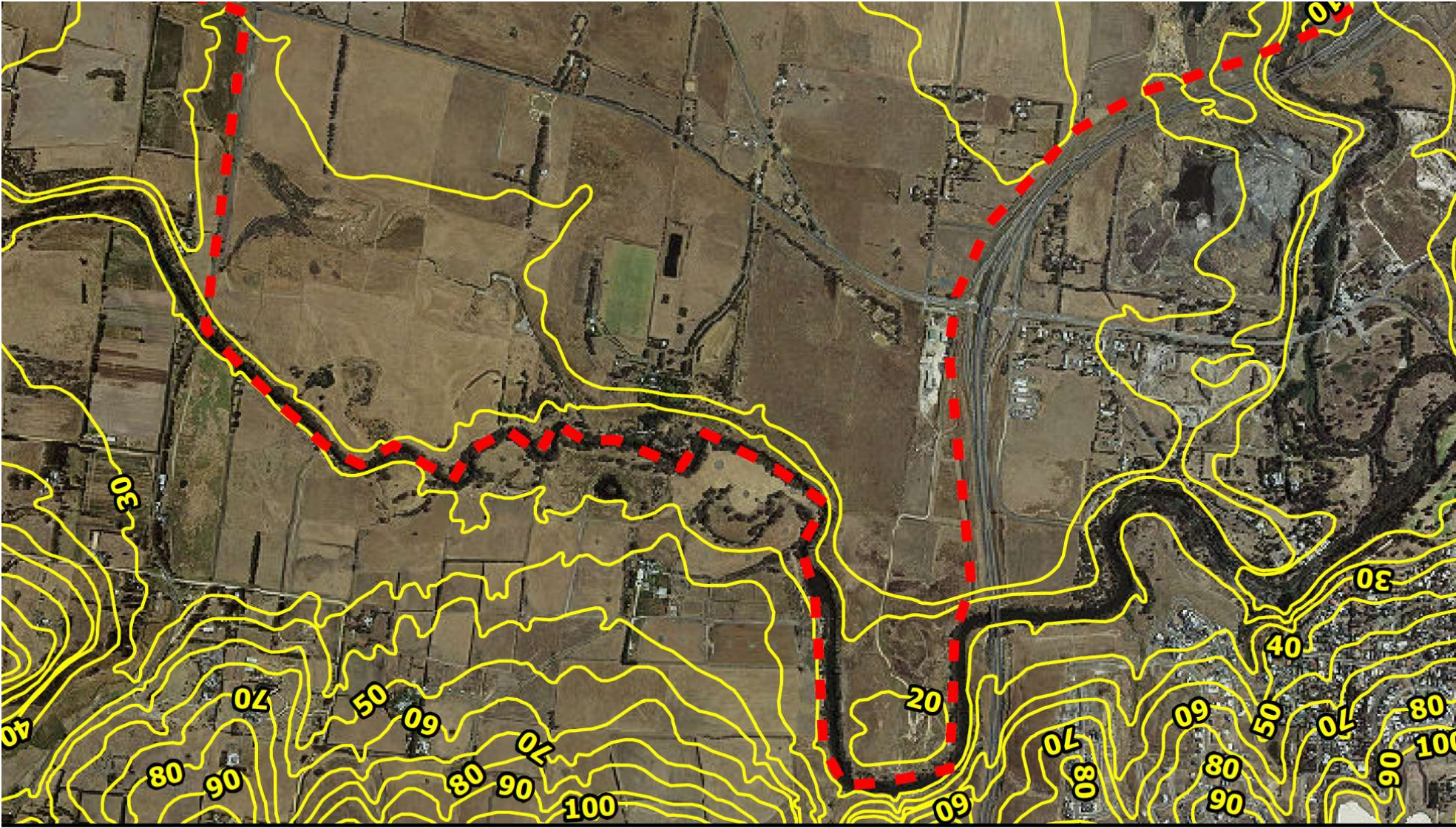


FIGURE 16: INDICATIVE TREATMENT ON BARWON RIVER INTERFACES

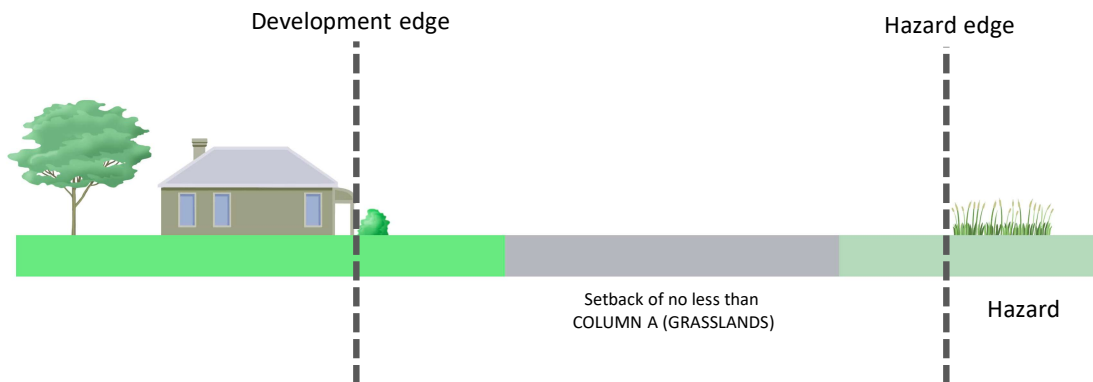


FIGURE 17: SITE ASSESSMENT PICTURES BARWON RIVER INTERFACE

Barwon River interface from Merrawarp Road, looking east (river on the far right)



7.4 BUSHFIRE HAZARD SITE ASSESSMENT – HAZARDS PROPOSED WITHIN THE STUDY AREA

Framework Plan influences

The Framework Plan shows (indicatively) that a series of open spaces and biodiversity links are proposed to be incorporated into the completed development.

Bushfire hazards within the completed development

Land proposing to contain permanent vegetation may be a bushfire hazard. A hazard is defined as assessable vegetation under *Australian Standard AS3959:2009 Construction of buildings in bushfire prone areas* (Standards Australia). In summary, vegetation is likely to be assessable where it is:

- Unmanaged or not managed to the equivalent standard of an urban park (included mowed grass).
- Is more than 1ha in area (which could be linear).

Where such areas are proposed, development will be required to be set back from assessed vegetation for a distance no less than that required to ensure exposure is no more than 12.5kw of radiant heat. This equates to Column A in Table 2 to *c53.02 Bushfire* in the planning scheme.

Achieving the setback

On the basis that the study area is mostly flat and the greenfield environment that dominates, it is reasonable to assume that exposure of future development to no more than 12.5kw of radiant heat can be demonstrated in the subsequent precinct structure plan process.

The Moorabool River is a potential bushfire hazard through the Western Growth Area and may have steeper slopes, which would increase the setback required although this could still be readily accommodated due to the greenfield environment.

Refining the set backs required

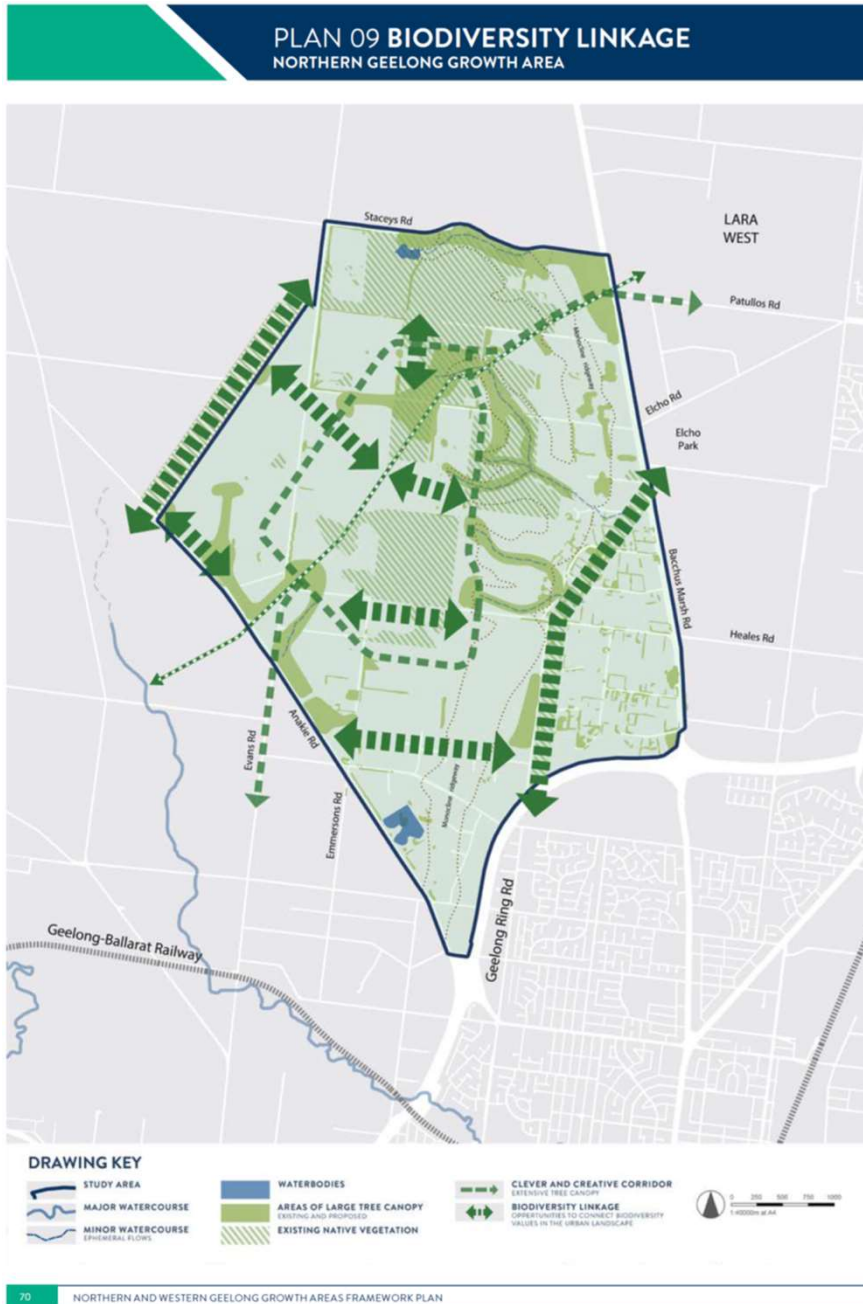
At the time a precinct structure plan is prepared, a revised bushfire hazard site assessment should be prepared. The revised assessment should:

- Assess proposed areas of vegetation at maturity to determine if it will be a bushfire hazard.
- If bushfire hazards are proposed within the study area, development should be set back from these hazards for at least the distance specific in Column A in Table 2 to *c53.02 Bushfire* in the planning scheme.

Other factors to consider

It will be essential that there is no continuity of fuel paths from grassland areas, the Dog Rocks Flora and Fauna Sanctuary and new / proposed bushfire hazards into urban developed areas. A key objective of future precinct structure planning processes is to design an internal open space and vegetation outcome that does not enable a moving bushfire to enter developed areas.

FIGURE 18: EXTRACT FROM FRAMEWORK PLAN SHOWING BIODIVERSITY AND OPEN SPACES (INDICATIVE)



7.5 BUSHFIRE HAZARD SITE ASSESSMENT – INTERIM HAZARDS DURING DEVELOPMENT PHASING

Framework Plan influences

The Framework Plan shows (indicatively) the anticipated development sequencing that envisages each Growth Area would be developed in three phases. Within each phasing, various stages of subdivision would be expected to come forward over time.

Bushfire hazards during the development phase

Bushfire hazards within the study area present a risk to development through the various stages of the development until they are either removed (as stages of development occur) or are managed as part of the completed development. Grasslands are expected to be the main source of hazards during the development phase.

Achieving setbacks from interim grassland hazards

Effective management can be achieved by providing a 50m corridor of low-threat vegetation around all developed areas within the study area. A developed area can be defined as land subdivided for urban uses where a statement of compliance has been issued.

The planning scheme requirements for vegetation management for bushfire purposes in *c53.02 Bushfire Table 6 Vegetation management requirements* (see Figure 19 in this report) is the appropriate treatment of these areas.

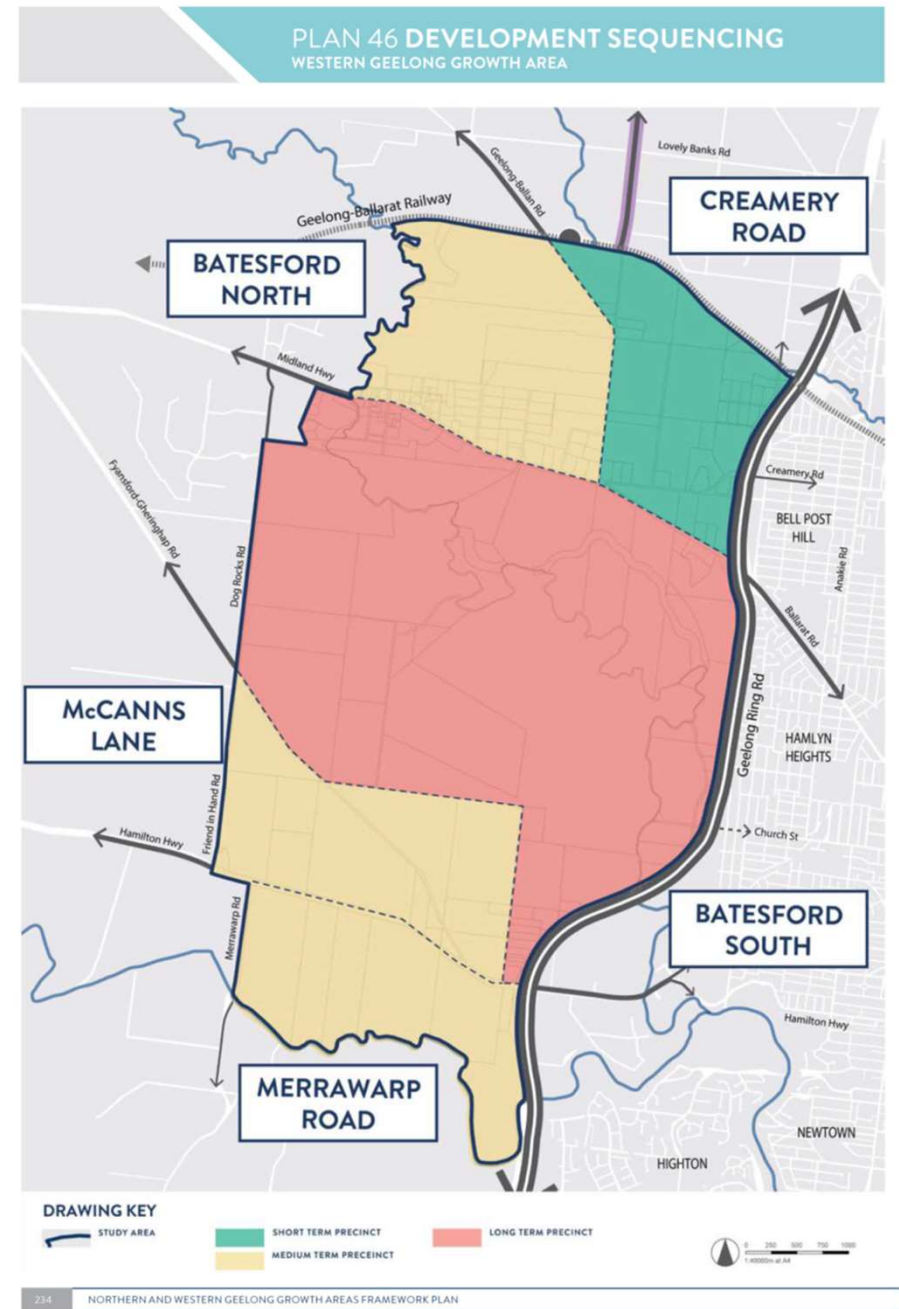
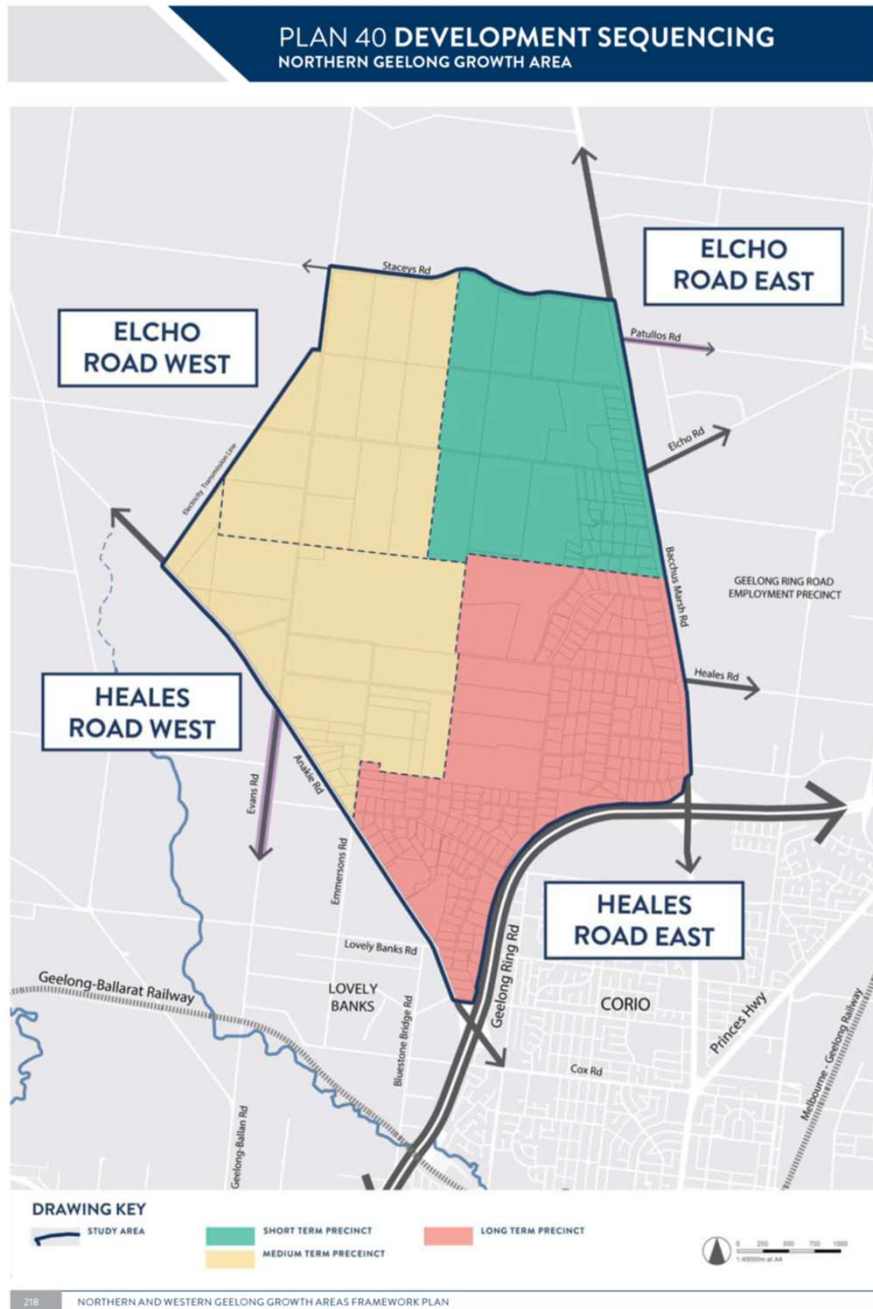
At the time a precinct structure plan is prepared, a suitable planning mechanism should be identified and included to secure interim vegetation management (for example, a s173 agreement) during the development phase.

FIGURE 19: VEGETATION MANAGEMENT FOR BUSHFIRE PURPOSES

Table 6 in *c53.02 Bushfire* in planning schemes specifies the vegetation management requirements for bushfire. They are:

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 centimetres in height must not be placed within 3 metres of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5 square metres in area and must be separated by at least 5 metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5 metres.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

FIGURE 20: EXTRACT FROM FRAMEWORK PLAN SHOWING INDICATIVE DEVELOPMENT PHASING



8.0 PLANNING POLICY ASSESSMENT OF THE PROPOSAL

Section 4 of this report identifies the planning scheme policies *in c13.02-1S Bushfire*. This section of the report uses these policies to assess the proposal, having regard to the completed bushfire hazard landscape assessment and bushfire hazard site assessment. For each consideration, extracts from Clause 13.02-1S are shown.

Landscape bushfire considerations

Clause 13.02-1S requires a tiered approach to assessing the hazard:

- *Considering and assessing the bushfire hazard on the basis of [...] landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site.*
- *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.*

Section 6 of this report provided a bushfire hazard landscape assessment. This has considered the bushfire hazard at the strategic and landscape scales as required by the above policies.

The primary bushfire risk to the study area is from grassfire. There is no potential for extreme fire behaviour due to the lack of larger, non-grassland areas of vegetation and the relatively flat terrain. Dog Rocks Flora and Fauna Sanctuary and surrounds is a larger scale risk but is better considered at the neighbourhood and site scale given its limited extent and inability for any bushfire in that area to develop and grow large.

The landscape provides good access to locations where human life can be better protected from the harmful effects of bushfire, including good access to areas of BAL:Low in the surrounding developed areas of Geelong and Lara and immediate access to BAL:Low areas in the completed development as envisaged in the framework plan.

Landscape type one most closely aligns with the landscape around the study area. The characteristic of this area is that the type and extent of vegetation is unlikely to result in neighbourhood scale destruction or extreme fire behaviour and immediate access is available to a place that provides shelter from bushfire. Landscape type one is the lowest risk landscape type arising under Victoria's planning system.

Landscape type 2 aligns with the landscape around Dog Rocks Flora and Fauna Sanctuary. The characteristics of this landscape are that the type and extent of vegetation may result in neighbourhood-scale destruction, bushfire (other than grasslands) can only approach from one aspect and access is available in any completed urban residential development that can provide shelter from bushfire. Landscape type 2 is at the lower end of bushfire risk arising under Victoria's planning system.

The landscape and strategic bushfire risk to the study area is low to moderate. There is no landscape bushfire feature that impacts on the principle of the Northern and Western Growth Areas as a location for growth. Areas of elevated landscape risk around Dog Rocks Flora and Fauna Sanctuary should be subject to risk avoidance strategies and interface treatments.

Alternative locations for development

Clause 13.02-1S includes two strategies that seek to direct new development:

- *Give priority to the protection of human life by [...] directing population growth and development to low risk locations[.]*
- *Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.*

The landscape risk is low to moderate, positioning the study area at the lower end of bushfire risk in Victoria. The site scale risk is also mostly moderate (grasslands only) and slightly elevated in areas around the Dog Rocks Flora and Fauna Sanctuary. There is full scope within detailed precinct structure planning to provide separation within the study area for development to be separated from permanent bushfire hazards.

There is good access to locations where human life can be better protected from a bushfire, if evacuation was ever required, currently and in completed development.

The low to moderate landscape risk, the ability to effectively treat site-based risks, and good access to safer locations make the study area a preferred location to direct development through planning decision making.

This report recommends further analysis at the neighbourhood and site scale during precinct structure planning to consider whether development should be avoided in areas of Bushfire Management Overlay around the Dog Rocks Flora and Fauna Sanctuary (including whether the Bushfire Management Overlay should be extended in this area).

Availability of safe areas

Clause 13.02-1S requires a location in easy reach that provides absolute protection for life from the harmful effects of bushfire:

- *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.*
- *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.*

Whilst the Geelong Ring Road forms a strong barrier to movement to the east, the road network does provide a series of connections where the study area connects with urban areas of Geelong that are capable of being assessed as BAL:Low. For the Northern Growth Area, travel to Lara which is capable of containing an area of BAL:Low is available along a 3km journey through grassland areas.

The study area itself, once developed, will provide extensive areas of BAL:Low. The availability of these areas to future occupants of the study areas provides for immediate access to them in the event of a bushfire.

The views of the relevant fire authority

Clause 13.02-1S identifies that a key element of a risk assessment is to:

- *Consult[...] with [...] the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.*

CFA were consulted in preparing this report through a meeting with the Council and the report author. CFA were supportive of report recommendations and reiterated that it has no concerns with the principle of urban development in the study area, as previously advised to Council in earlier phases of the Framework Plan's preparation. This should be confirmed at the time the planning scheme amendment is exhibited.

CFA provided advice on additional matters which could be considered by the Council in finalising the planning scheme amendment:

- CFA were supportive of key recommendations being included in the planning scheme amendment itself. This would enable the matters most instructive to preparing a precinct structure plan to form part of the planning scheme rather than relying on this report. Through discussions, CFA indicated that recommendations relating to land around Dog Rocks Flora and Fauna Sanctuary and perimeter roads along the Barwon River interface should be priorities for inclusion in the planning scheme amendment.
- CFA identified the potential constraints associated with large numbers of people seeking to move east across the Geelong Ring Road during an emergency. It suggested that matters relating to effectively managing people during a bushfire could be considered by the Council at the time a precinct structure plan is prepared (note commentary on page 21 of this report has been included in response to this).

CFA also indicated that at the time a planning scheme amendment is exhibited, they would provide further comments in relation to non-bushfire issues of interest to the relevant fire authority (for example, fire station planning). These issues are beyond the scope of this report.

Site based exposure

Clause 13.02-1S provides directions for planning authorities about the level of acceptable exposure for new development enabled by a planning scheme amendment:

- *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.*
- *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).*

An assessment of site based exposure prepared as part of this report (Section 7) made recommendations that can ensure the emerging structure plan satisfies the site-based exposure elements of c13.02-1S.

The site assessment considered the following areas separately:

- Grassland interfaces on study area edges.
- Dog Rocks Flora And Fauna Sanctuary.
- Barwon River interface.
- Hazards proposed within the study area.
- Interim hazards during the development phase.

An assessment of site based exposure prepared as part of this report (Section 7) made recommendations that can ensure future precinct structure plan satisfy the site-based exposure elements of c13.02-1S.

The site assessment concludes that exposure of future development to no more than 12.5kw of radiant heat can be achieved, as required by *c13.02-1S Bushfire*. Precinct structure plans should give effect to this in the more detailed design of various precincts in the study area as contained in the recommendations in Section 7.

Areas of high biodiversity conservation value

Clause 13.02-1S provides directions on situations where bushfire and high biodiversity conservation values correlate:

- *Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that are of high biodiversity conservation value.*

The framework plan identifies ecological values based on assessments to date. They include remnant vegetation patches (Plains Grassland), scattered trees, wetlands and potential habitat for a range of species.

It is beyond the scope of this report to assess the biodiversity conservation value of vegetation that may need to be removed or managed as a result of bushfire requirements. However, given the greenfield environment and the availability of land within the study area, it is reasonable to assume that development can accommodate the setbacks required from any vegetation that must be retained for biodiversity purposes.

At this stage, and recognising that more detailed work will occur at the precinct structure plan stage, is it reasonable to conclude that development can implement bushfire protection measures. However, if any part of the study area cannot accommodate bushfire requirements due to biodiversity factors, then development should not proceed.

No increase in risk

Clause 13.02-1S provides an overall view of acceptable risk:

- *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 reduce bushfire risk overall.*

The development of the land is not likely to increase the bushfire risk to existing and future occupants on and around the study area. The study area is low to moderate risk at both the landscape and site scale (where the recommendations in this report are implemented) and the study area is a sensible location to direct development towards.

c44.06 Bushfire Management Overlay

Land subject to the Bushfire Management Overlay will require a planning permit to develop, including for subdivision. Section 7.2 identified the minimum setbacks that will be required for development adjoining the Dog Rocks Flora and Fauna Reserve.

At the time a precinct structure plan is prepared, the potential to avoid development in land subject to the Bushfire Management Overlay (effectively resulting in a 150m setback) should be investigated. This should focus on whether it is sensible to avoid development on land subject to the Bushfire Management Overlay that will be most at risk from the permanent and on-going bushfire hazard in the Dog Rocks Flora and Fauna Sanctuary and surrounds.

If development does proceed in any part of the Bushfire Management Overlay, the requirements of *c53.02 Bushfire* can be met as they relate to the following approved measures, including:

- AM2.2 - Siting of development within a proposed lot.
- AM2.3 – Building design.
- AM3.1 - Defendable space and construction standards.
- AM4.1 - Water supply and emergency vehicle access.
- AM5.3 - Perimeter road adjoining permanent hazards.

The planning scheme requirements for vegetation management for bushfire purposes in *c53.02 Bushfire Table 6 Vegetation management* requirements (see Figure 19 in this report) will need to be applied to all developed areas subject to the Bushfire Management Overlay.

Approved *measure AM2.1* requires that the risk from the landscape beyond a site be mitigated to an acceptable level. Given the elevated landscape risk in areas around Dog Rocks Flora and Fauna Sanctuary, this approved measure will need careful consideration at the time any permit was sought for urban residential development.

However, this report separately recommends that consideration be made at the precinct structure plan stage as to whether development should be avoided in the areas of Bushfire Management Overlay. This can ensure that, through the precinct structure plan, landscape risk factors are fully resolved before planning permits are sought.

c13.02-1S Use and development control in a bushfire prone area

The use and development control in a bushfire area will apply to future planning applications to subdivide the land into more than 10 lots. Whilst the considerations are to be made at the time of a planning permit application, this report confirms that there are no additional considerations that arise over and above what is derived from other parts of c13.02-1S and from the Bushfire Management Overlay (where it applies to part of the study area).

Implementing the recommendations in this report would address the use and development control in a bushfire prone area and their translation into the precinct structure plans when prepared will ensure they are given effect to at the time planning permits are issued.

Overall conclusion

The proposal is consistent with the bushfire policies and directions contained in the planning scheme. There is no planning scheme bushfire factor that would warrant the proposal not proceeding subject to the recommendations in this report being implemented through precinct structure plans.

9.0 RECOMMENDATIONS

Based on the assessments contained in this report, the following recommendations should be considered when preparing precinct structure plans and before a subsequent planning scheme amendment is approved to introduce precinct structure plans into the planning scheme.

[Note: There are no recommendations arising from the landscape assessment].

Recommendation 1: All interfaces with a bushfire hazard

Development will be required to be set back from assessed vegetation for a distance no less than that required to ensure exposure is no more than 12.5kw of radiant heat. This equates to Column A in Table 2 to *c53.02 Bushfire* in the planning scheme.

Recommendation 2: Grassland interfaces on the edges of the study area

At the time a precinct structure plan is prepared, a revised bushfire hazard site assessment should be prepared. The revised assessment should ensure that there is no continuity of fuel paths from grassland areas into urban developed areas.

Recommendation 3: Dog Rocks Flora and Fauna Sanctuary and surrounds

At the time a precinct structure plan is prepared, the potential to avoid development in land subject to the Bushfire Management Overlay (effectively resulting in a 150m setback) should be investigated. This should focus on whether it is sensible to avoid development on land subject to the Bushfire Management Overlay that will be most at risk from this permanent and on-going bushfire hazard.

If development proceeds on land subject to the Bushfire Management Overlay, at the time a precinct structure plan is prepared a revised bushfire hazard site assessment should be prepared. The revised assessment should factor in the end-state treatment of the Dog Rocks Flora and Fauna Sanctuary and surrounds, as articulated in the precinct structure plan and the impact this may have on fuel loads.

It would also be prudent to consider the end-state treatment of woodland / treed areas to the south and whether, in combination with the main area of hazard, they would warrant inclusion into the Bushfire Management Overlay.

Recommendation 4: Barwon River Interface

At the time a precinct structure plan is prepared, the potential to provide a perimeter road adjoining development should be investigated to create a permanent, effective interface and minimise the rear of properties abutting the river corridor.

Recommendation 5: Hazards proposed within the study area

At the time a precinct structure plan is prepared, a revised bushfire hazard site assessment should be prepared. The revised assessment should:

- Assess proposed areas of vegetation at maturity to determine if they will be a bushfire hazard.
- If bushfire hazards are proposed within the study area, development should be set back from these hazards for at least the distance specific in Column A in Table 2 to *c53.02 Bushfire* in the planning scheme.

Ensure there is no continuity of fuel paths from grassland areas, the Dog Rocks Flora and Fauna Sanctuary and proposed bushfire hazards into urban developed areas. A key objective of future precinct structure planning process is to design an internal open space and vegetation outcome that does not enable a moving bushfire to enter developed areas.

Recommendation 6: Interim hazards during development phasing

A 50m corridor of low-threat vegetation should be provided around all developed areas within the study area. A developed area can be defined as land subdivided for urban uses where a statement of compliance has been issued.

The planning scheme requirements for vegetation management for bushfire purposes in *c53.02 Bushfire Table 6 Vegetation management requirements* (see Figure 19 in this report) is the appropriate treatment of these areas.

At the time a precinct structure plan is prepared, a suitable planning mechanism should be identified and included to secure interim vegetation management (for example, a s173 agreement) during the development phase.

Recommendation 7: Biodiversity

If any part of the study area cannot accommodate bushfire requirements due to biodiversity factors, then development should not proceed in that area.