

Community Investigation Report

Bushfire risks posed by revegetation of Crown land along the Yarra River & tributaries. And proposed afforestation of Haining Park in the Upper Yarra Valley.



Figure 1: Riparian Bushfire - Yarra Junction, 2001 (photo from video footage)

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Main acronyms

YWG	Yarra Waterways Group
VEAC	Victorian Environmental Assessment Council
YCA	Yellingbo Conservation Area
DELWP	Department of Environment, Land, Water & Planning
CFA	Country Fire Authority
DEPI	Department of Environment & Primary Industry
MFB	Melbourne Fire Brigade

Introduction

This investigation was conducted by the Yarra Waterways Group and community members from the Upper Yarra Valley with decades of experience in dealing with bushfires. Contributors included members of the Yarra Waterways Group, CFA volunteers, farmers, horticultural experts and others that have worked for emergency services or government authorities, and people who have been impacted by bushfire or involved in fighting bushfires.

The purpose of the investigation was to identify bushfire risks associated with planned afforestation of Haining Park and revegetation of Crown land adjacent and including riparian corridors of the Yarra River & tributaries.

The investigation focused on what risks this project may pose to human life, property and the existing environment. The investigation also looked at the type of riparian environment that exists along the flood plains of the Yarra River, Little Yarra River and Britannia Creek, its climate and predicted effects of climate change.

The investigation examined behaviour of bushfires in bushland adjacent to and involving riparian corridors. It looks at the history of past major fires that have impacted the Yarra Valley including Black Saturday and Ash Wednesday fires. It also studied modelling of future bushfire scenarios in the Yarra Valley and reviewed countless documents, reports, recommendations, maps, papers and plans produced by authorities, commissions and experts on bushfire.

The investigation also identified assets and dwellings located near the proposed revegetation areas that could be affected by increased bushfire risk.

The report concludes with 6 recommendations to be considered by the Victorian Government and its authorities.



Figure 2: Upper Yarra Valley

Background

The Yarra Waterways Group (YWG) is a body representing the interests of its members that live in the Upper Yarra community. The YWG is not opposed to rehabilitation of waterways and improving the health of our rivers, neither does it oppose efforts to save the Helmeted Honeyeater or Leadbeaters Possum from extinction, if the rehabilitation or conservation efforts DON'T increase risks to human life, assets or businesses from bushfire and other natural disasters.

The Yarra Valley is considered to be the second worst region in the world for bushfires. The Victorian Government recognizes much of the Upper Yarra Valley is considered severe to extreme bushfire risk. The CFA, DELWP and DEPI also recognize in many documents, strategy plans, assessments and letters that adding higher fuel loads or more vegetation to the region, will increase fire risk.

The Victorian Government proposes to create wide corridors of dense bushland (hundreds of meters wide in areas) along the Yarra River, Little Yarra River, Woori Yallock Creek, Badger Creek, Don River, Dee River, Britannia Creek, Hoddles Creek, McCrea Creek, Menzies Creek, Emerald Creek and Cockatoo Creek. These proposed corridors will connect many major towns and (heavily vegetated) residential areas with the fire prone Yarra State Forest, Yarra Ranges National Park, Powelltown State Forest, Dandenong Ranges National Park, Kurth Kiln Regional Park, Conservation Reserves and Private Bushland.

The proposal is based on recommendations by the Victorian Environmental Assessment Council (VEAC) Yellingbo Investigation – Final Report. The recommendations in this report were solely focused on creating more habitat for the Helmeted Honeyeater, Lowland Leadbeaters Possum and other native fauna.

The VEAC Yellingbo Investigation failed to adequately consider if their recommendations could increase bushfire risks, and it failed to conduct a comprehensive bushfire assessment of the YCA. It also failed to properly consider the ecological ramifications that increased bushfire risks would impose on the Helmeted Honeyeater, Lowland Leadbeaters Possum and other native animals. Studies have indicated that both the Helmeted Honeyeater and Leadbeaters Possum is extremely vulnerable to bushfire, partly due to their habitat requirements and their territorial behaviors, meaning they're less likely to flee when faced with the threat of fire. This was evident during Black Saturday and the efforts undertaken to protect a colony of Helmeted Honeyeaters at Bunyip State Park. Below is a quote from a letter published by Birdlife by Birds Australia – *'Targeted responses to bushfire events can play a key role in protecting significant species and their habitat. For example, in response to Victoria's Black Saturday fires of 2009, onground efforts by the Incident Control Officer, including the aerial application of fire retardant and strategic back burning, were successful in protecting a re-introduced colony of the critically endangered Helmeted Honeyeater in Bunyip State Park (Menkhorst, et. al., 2009).'* The Bunyip State Park fire destroyed 31 houses and 26,200 hectares.

The investigation also failed to give proper consideration as to the effects continuous fencing of the Crown reserves will have on some native fauna. This type of fencing will prevent some native animals from reaching streams to drink or reach the safety of the water to escape a fire.



Figure 3: Example of Wallabies stopped by fence

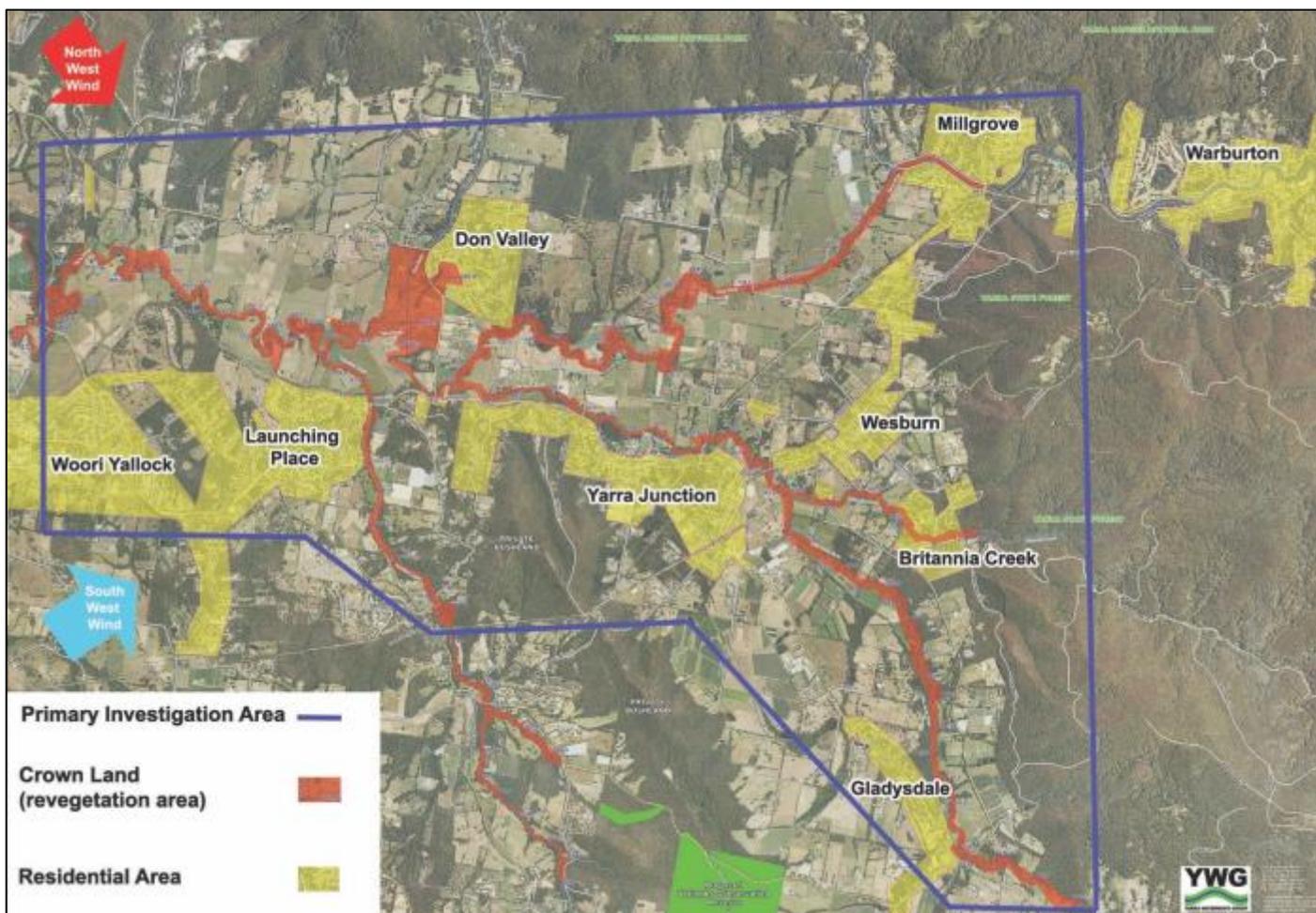
Area included in investigation

The Community Investigation conducted by the YWG included the area covered by the VEAC Yellingbo Investigation and surrounding landscapes. However, the investigation focuses on areas containing the highest density of assets and population affected by the proposed revegetation of Crown land. This included the streamside reserves of the Upper Yarra Valley flood plains, Haining Park and surrounding residential areas.

The **Primary Area** is marked on map below (within the blue line). It includes the following Crown land and streamside reserves:

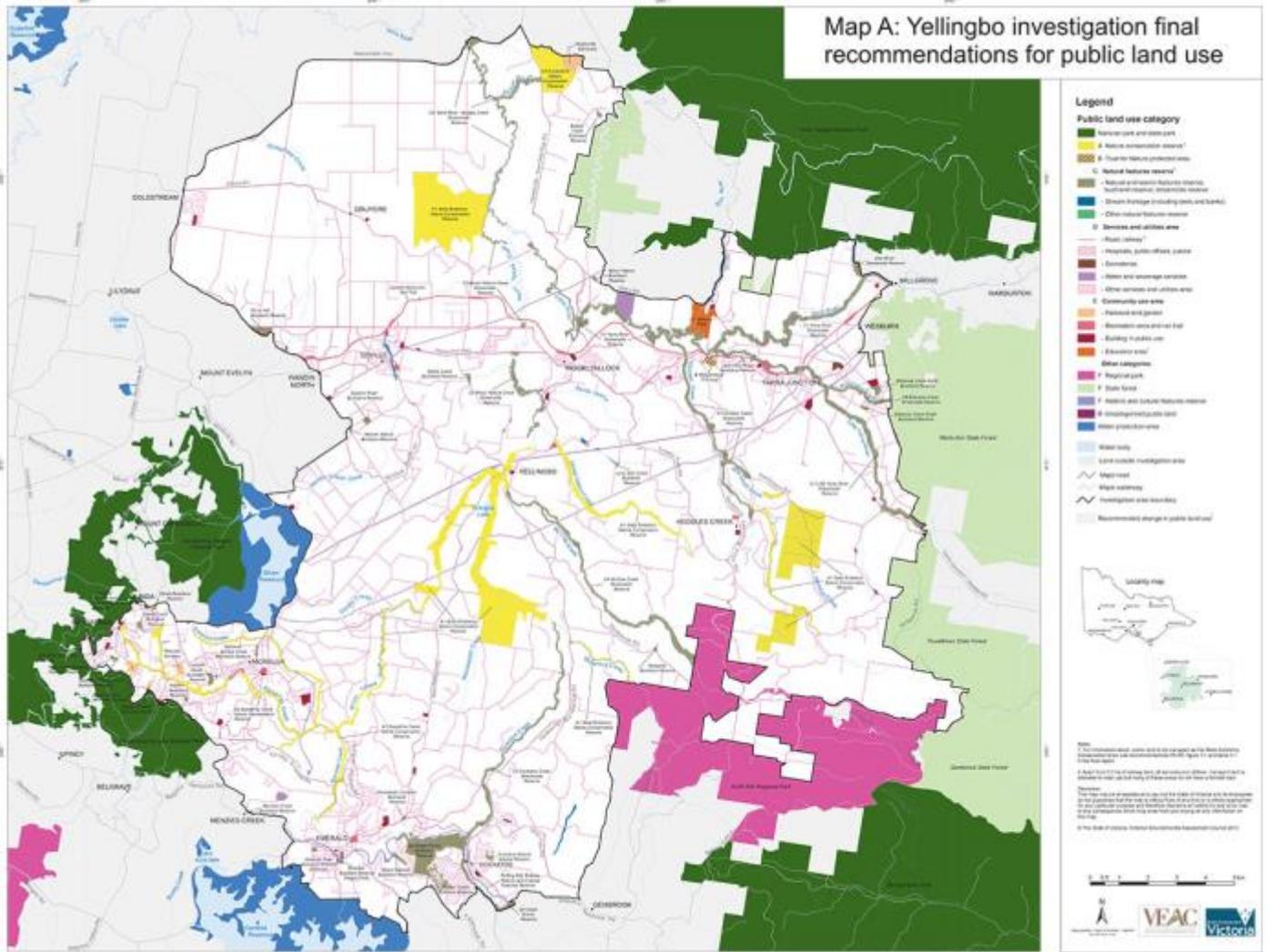
1. Yarra River upstream from Woori Yallock to Millgrove.
2. Little Yarra River upstream from Launching Place to Gladysdale.
3. Britannia Creek upstream from Yarra Junction to Yarra State Park.
4. Don River and Haining Park.
5. Hoddles Creek upstream of the Yarra River to the Hoddles Creek Bushland Reserve.

The map below was created from MAP 1: Primary Investigation Area (See Appendix A)

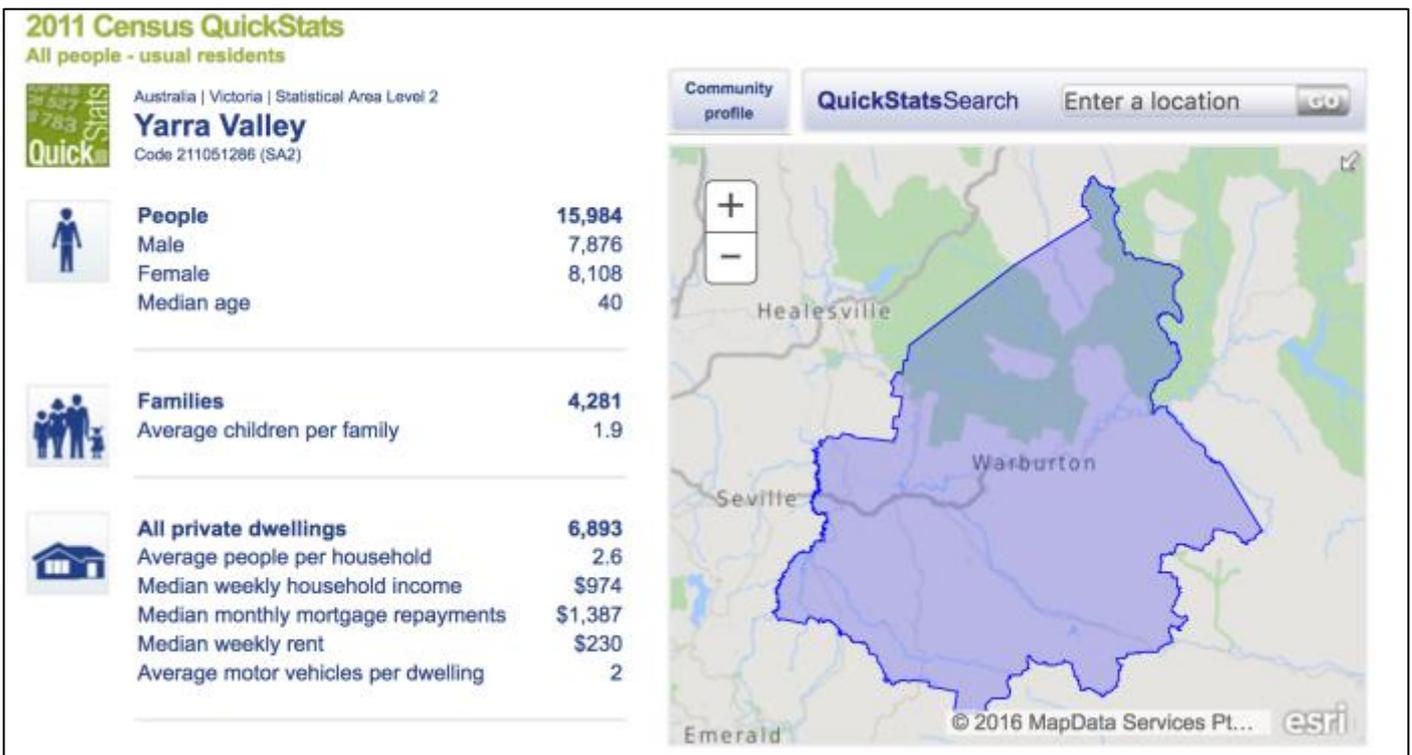


The thick blue line indicates primary investigation area. Thin blue lines along Crown land indicates measuring point-point, orange shading is Crown land and the marked measurements are in metres. This map is part of a series of maps available to download in high resolution from the Yarra Waterways Group website.

MAP 2: VEAC Investigation Area - 2013



MAP 3: Data and map of Yarra Valley – Beauru of Statistics



Topography of flood plains and surrounding area

The Bureau of Statistics identifies the middle Yarra Valley (indicated by MAP 3) as being 72,880 hectares (ha) in size that includes 9536ha of agricultural land (13%) and 19,060ha of protected National Parks or reserves (26%).

The area is dominated by broad flood plains that contains hundreds of agricultural properties, rural residential dwellings and is bordered by densely populated townships and forested mountainous areas. The plains feature six substantial waterways being the Yarra River, Little Yarra River, Don River, Dee River, Britannia Creek & Hoddles Creek.

Indigenous vegetation of the flood plains includes pockets of remnant vegetation and lineal riparian vegetation along the Yarra River, Little Yarra River and Britannia Creek. The indigenous riparian vegetation is predominately Swamp Gum Woodland with a section of Manna Gum Riparian Forest at the far eastern end. The upper story is dominated by Swamp Gum (*Eucalyptus ovata*), Manna Gum (*E. viminalis*), Green Scentbark (*E. fulgens*) and Silver-leaf Stringybark (*E. cephalocarpa*). While the middle story features Silver Wattle (*Acacia dealbata*), Blackwood (*Acacia melanoxylon*) and Prickly Tea-tree (*Leptospermum continentale*). The lower story contains a variety of low shrubs and ground covers dominated by sedges, rushes and grasses.

The soil adjacent to waterways is alluvial loam with a high content of organic debris and sand, the soil changes to a clay-loam further away from the waterway. This type of soil is free draining and dries quickly during times of low rainfall. A distinguishing feature of these flood plains is the banks of Yarra River & Little Yarra River are generally the highest point with the land sloping slightly downhill away from the waterways. This results in a dryer environment than the rest of the flood plain due to the free draining soil. Anecdotal evidence suggests that existing indigenous vegetation becomes stressed during low rainfall periods with the upper storey trees shedding limbs and leaves. The proposed dense revegetation program of riparian corridors and adjoining Crown land could contribute to the decline and dieback of existing upper story trees as the new saplings draw most of the ground moisture. This will increase the rapid drying of this environment during periods of low rainfall.



Figure 3: Yarra River flood plains, Woori Yallock

Climate & climate change

The climate of the Yarra Valley flood plains is considered temperate to maritime. Weather systems generally enter the region from the north west or south west and include high pressure systems, low pressure systems and cold fronts. In summer the prevailing winds are north-west resulting in warm to hot and dry conditions. Strong north to north-west winds, generally preceding a cold front, bring hot air from central Australia into the Yarra Valley. After the passage of these cold fronts a west to south-west wind generally develops, often as strong as the preceding hot winds.

The majority of summer cold fronts contain little moisture resulting in low or no rainfall (dry change). Sometimes these “dry” cold fronts also produce thunderstorms resulting in lightening that can ignite fires.

During winter and spring the cold frontal systems become more intense, frequently resulting in high rainfall. Rainfall averages vary across the plains from 732mm at Coldstream to 930mm at Wesburn, as the valley narrows rainfall increases with Warburton receiving 1234mm per year. Two thirds of the rainfall falls between May and October. During summer and early autumn rainfall drops dramatically with the arrival of hot dry air from central Australia. Average rainfall in January, February and March falls to low levels with the western end of the region experiencing lower rainfall than Melbourne City.

The average daily maximum temperature in January is 28 degrees Celsius and the average daily maximum temperature in July is 13 degrees Celsius (Coldstream weather station). The area averages 10 days over 35 degrees and 1 day over 40 degrees each summer, resulting in a number of days of severe or extreme bushfire danger.

Climate models predict the Yarra Valley will experience an increase of mean annual temperature of .09 – 1 degree and a decline in rainfall of 11-14% by 2030. Days above 35 degrees are to rise by 20-25% meaning a similar rise in days of severe and extreme bushfire danger.

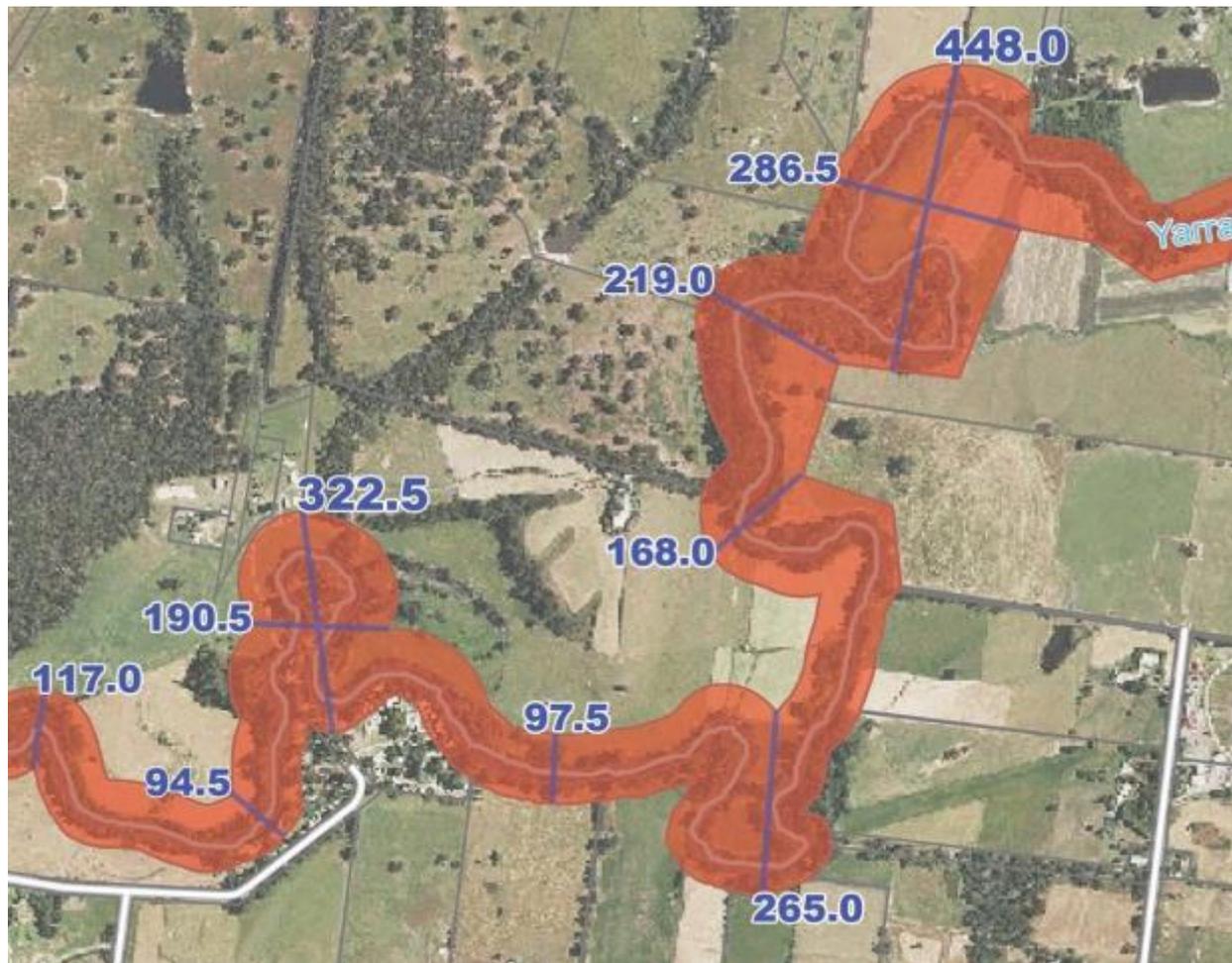


Figure 4: Photo of Black Saturday fires burning in the Yarra Ranges National Park taken from Yarra Junction at 4:50pm on the 7th February 2009.

Width of Crown land along the Yarra River and tributaries

Many people assume the Crown land along these waterways is a standard width of 20 metres. This is false, as the entire width of Crown land includes “reserved” and “un-reserved” Crown land. The total combined width Crown land varies depending on private land titles. Generally, the average width each side of the waterway ranges from 30 - 80 metres. When you combine the Crown land on both sides of the Yarra River (including the bed & banks) the average width is well over 100m. Up to 14 sections of Crown land (both sides, bed & banks) exceed 200m and four areas exceed 300m (5 – 11ha in size).

Example of Crown land widths.



This is a section of the Yarra River between Yarra Junction and Wesburn. The blue lines indicate measuring point-point, orange shading is Crown land and the marked measurements are in metres. This map is part of a series of maps available to download in high resolution from the Yarra Waterways Group website.

Fuel loads of flood plains adjoining Crown land along the Yarra River & tributaries

Grassland with sporadic pockets of remnant bushland make up the majority of the potential fuel load adjoining existing riparian corridors. The grassfire danger is considered to be high in most of the flood plain. However, this risk is reduced due to heavy grazing and management of grass (slashing, hay harvesting) by private property owners.

Areas of remnant bushland do contribute to the fuel load of the flood plain. Some of this remnant bushland contains dense understory of tea tree species that has low moisture content, volatile oils and fine fuel which would contribute to the effects of radiant heat on nearby structures.

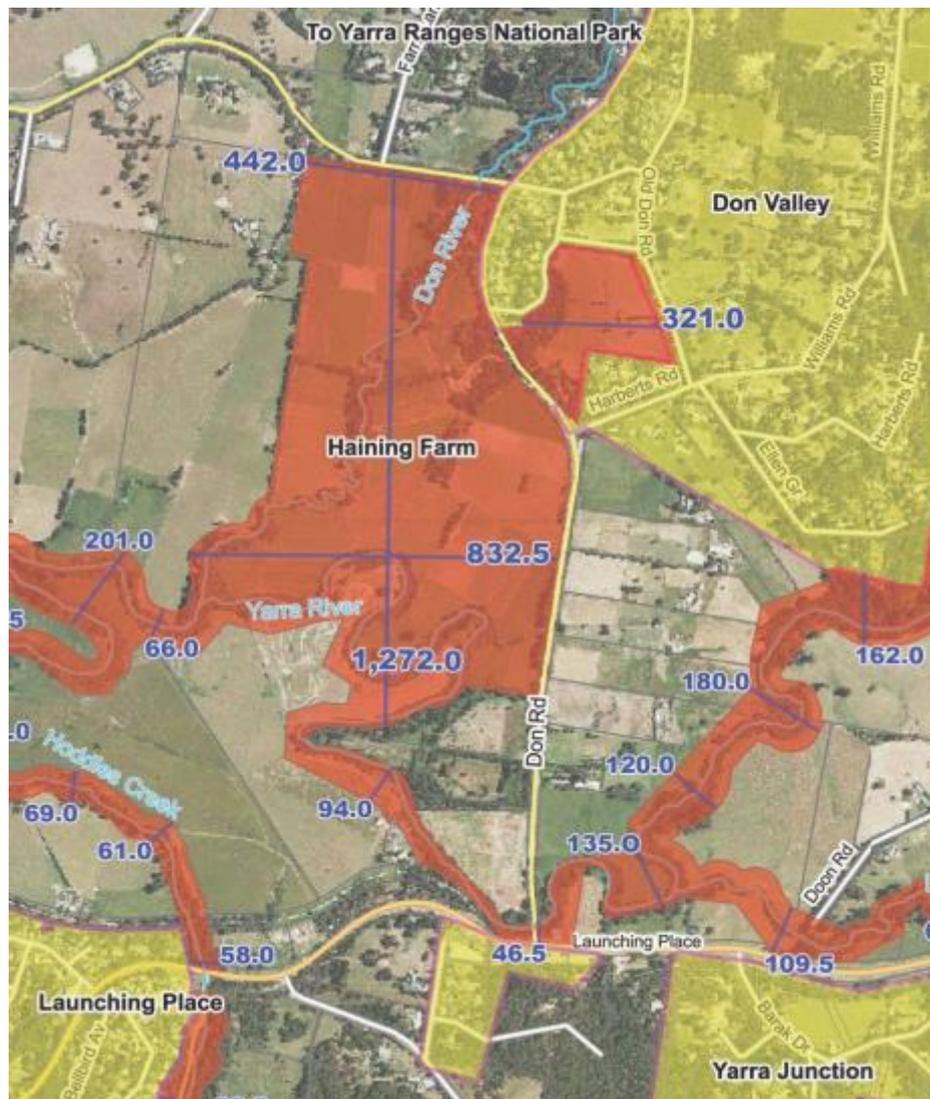
Haining Park (Haining Farm) afforestation project

Over 80% of Haining Park is planned to be revegetated with dense indigenous vegetation that contains a low moisture content and volatile oils. The purpose is to provide a bushland link between the Yarra Ranges National Park and the Yarra River. The proposed afforestation will run north to south from Don Valley to Launching Place and is approximately 1.2 km in length, 800m in width and over 60 ha in area.

The Yarra Valley community is very concerned about this revegetation due to the species to be used and the dense vegetation planned. The YWG believes it will pose an unacceptable risk to human life and property in the townships of Don Valley, Launching Place, Yarra Junction, Wesburn, Millgrove and Warburton. The YWG believes any bushfire that comes from Yarra Ranges National Park (example: Black Saturday) would spread through Haining Park impacting these townships. As the new forest develops a canopy, so does the risk of crown fire behaviour that generally travels at greater velocity and speed.

NOTE: Parks Victoria has indicated recently, they are willing to consult with the community about the future of Haining Park. The YWG supports this initiative.

MAP 4: Planned revegetation of Haining Park (Haining Farm).



The blue lines indicate measuring point-point, orange shading is Crown land and the marked measurements are in metres. This map is part of a series of maps available to download in high resolution from the Yarra Waterways Group website.

Why revegetated corridors are likely to increase bushfire & grassfire risks

The predominate wind that has driven major bushfires in the Yarra Valley is a strong north to north west wind followed by a strong south west to westerly wind change. As the valley narrows a funnelling effect can establish increasing wind speeds. Anecdotal evidence indicates this local weather phenomenon may have been a factor in the Black Sunday fires 1926, Black Friday fires 1939, Ash Wednesday fires 1983 and Black Saturday fires 2009. During extreme weather conditions (involving these winds), any outbreak of fire that occurred in the proposed revegetated corridors along the Yarra River, could be driven along these corridors due to their proximity to the prevailing wind and the available fuel.

Dense revegetation of species such as tea tree (*leptospermum*) and eucalyptus which contain volatile oils and low moisture content, combined with the widths of the proposed vegetation, could increase fire activity and the production of radiant heat. As the vegetation matures and becomes denser, the generation of radiant heat (during a fire) also increases. It's generally understood that radiant heat is a major contributor to loss of life and assets from a bushfire.

In certain areas of the proposed revegetation, due to the size and location in relation to the prevailing north-west wind. Any fire that starts in the dense lower story vegetation (of these areas) has the potential to become a crown fire. This is primarily due to the known ladder effect of some species to be used in revegetation projects. Crown fires often travel at high speed, produce extensive ember attack and can jump wide gaps in vegetation.

In the short term, grassfire risk could also increase after revegetation occurs. This is due to the spacing of plantings making mechanical slashing almost impossible. DELWP have stated they would consider intermittent grazing (for weed and grass control), **but not in revegetated areas**. See photo example of recent revegetation along the Yarra River at Wesburn.



Figure 5: Revegetation of Yarra River, Wesburn 2016

'Vegetation greater than 0.4 hectare in area and wider than 22 metres constitute "Bushland" (Newnham2012)'

NOTE: The proposed revegetated corridors don't currently include substantial fire breaks.

The most recent major bushfires that have affected the Upper Yarra Valley was Black Saturday 2009, Mt Little Joe/Yarra State Park 1991 and Ash Wednesday in 1983. Studies and video footage indicate these fires developed crown fire behaviour and produced extensive ember attack that resulted in spot fires developing well in advance of the main fire front. Many dwellings were destroyed in these fires with ember attack implicated as contributing to the asset loss. During the Black Saturday fires, local residents have provided anecdotal accounts of ember attack reaching the flood plains of the Yarra River as far east as Millgrove (15km away from fire front). This caused a number of spot fires on the flood plains including in riparian vegetation near Gruyere.



Figure 6: Ash Wednesday 1983 - Warburton Fire

This type of ember attack has to be anticipated in future, multiple spot fires could develop in the proposed revegetated corridors with the risk contributed to by their size and the type of vegetation planned. Any spot fires in the corridors could travel towards residential areas, as a result of the topography in relation to the prevailing wind (north west). Fires in these corridors have the potential to produce ember attack on populated residential areas, due to their proximity.

It's possible that any fire in these corridors (driven by the prevailing wind) has the potential to spread into adjoining bushland and forested areas east and south of the investigation area. Forested areas such as the Yarra Ranges National Park, Yarra State Forest, Proposed Yellingbo Conservation Reserve and Bunyip Park could be impacted by a fire coming from a revegetated corridor. It's also possible any fire in the Yarra State Forest driven by an east or north-east wind could be driven into a revegetated corridor. This could threaten residential areas west of the Yarra State Forest and spread into the Proposed Yellingbo Conservation Reserve and Bunyip Park. An example is the Mt Little Joe/Yarra State Forest fires in March 1991. The fire was initially driven by the prevailing north-west wind and threatened Warburton. The following day a wind change to the north-east then east drove the fire west and south towards Wesburn, Yarra Junction and Gladysdale destroying one house in Wesburn. It also travelled down the riparian vegetation of Britannia Creek. The wind then changed again, to the south west, sending the fire back towards Warburton and down the east side of Mt Little Joe. Spot fires also broke out in the riparian vegetation on the banks of the Yarra River at Millgrove.

The MFB considers riparian vegetation along creeks and rivers a bushfire risk to people in Melbourne’s suburbs. ‘Fires in parks, wooded beachfronts, reserves and along rivers and creeks are a risk to the people, homes and properties that are adjacent to them. Know where the risks are in your local area’. Quote from MFB website “Know Your Fire Risk”. The MFB recognises bushland areas of 1ha pose a bushfire risk. Below is a map and list of areas the MFB has identified as a bushfire or grassfire risk. Many of these areas are along the Yarra River, Maribyrnong River, Merri Creek, Moonee Ponds Creek, Darebin Creek, Plenty River, Dandenong Creek and other riparian wetlands.

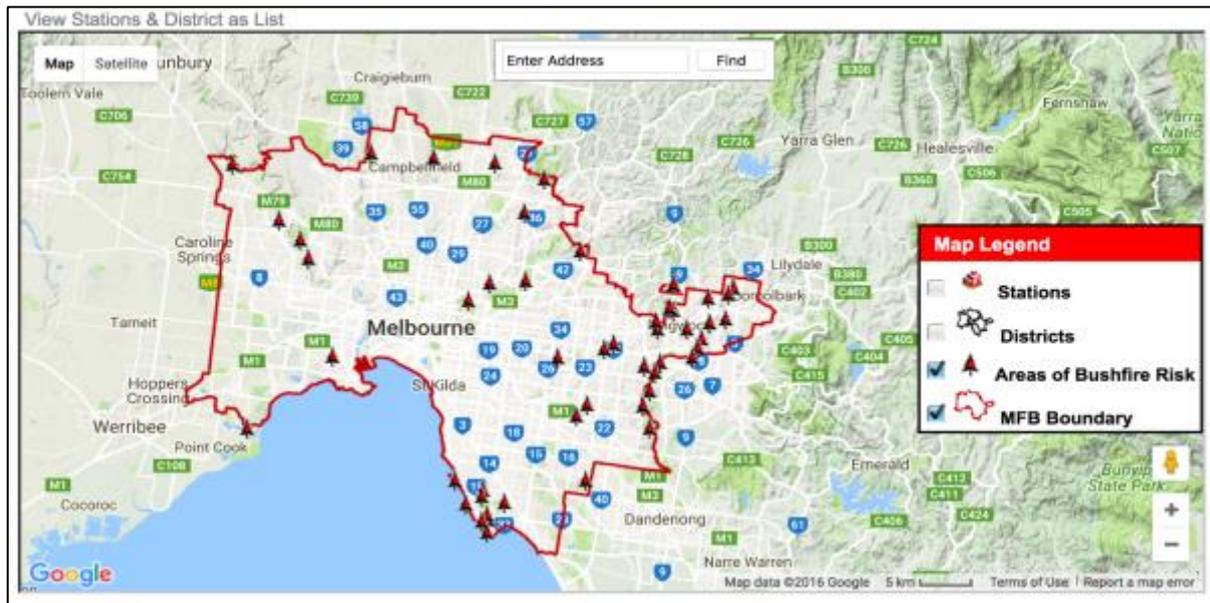


Figure 7: Screen shot of map from MFB website showing bushfire risk areas

MFB bushfire and grassfire risk areas list sourced from MFB website.

Suburb	Park, Reserve or Bush land
Altona Meadows	Cheetham Wetlands
Baumaris	Donald McDonald Reserve
Baumaris	Ricketts Point Hinterland
Baumaris	Long Hollow Heathland
Baumaris	Balcombe Park Reserve
Blackburn	Blackburn Lake
Bundoora	Plenty Gorge (Southern End)
Campbellfield	Merri Creek Park
Cheltenham	Cheltenham Reserve
Clayton South	The Grange Heathland
Croydon	Benson Oval
Croydon North	Warrien Reserve
Croydon North	Britts Reserve
Fairfield	Yarra Bend Park (North)
Fairfield	Yarra Bend Park (South)
Glen Waverley	Shepherds Bush
Heathmont	Dandenong Creek
Heathmont	Allens Road
Ivanhoe	Rockbeare Park
Ivanhoe East	Yarra Flats
Keilor	Brimbank Park
Keilor North	Organ Pipes National Park
Macleod	Gresswell Forest

Suburb	Park, Reserve or Bushland
Meadow Heights	Broadmeadows Valley Park
Mill Park	Sycamore Reserve
Mitcham	Yarran Dheran
Mitcham	Antonio Park
Mount Waverley	Valley Reserve
Mount Waverley	Fairway Reserve
Park Orchids	100 Acres
Ringwood	Ringwood Lake Park
Ringwood	Yarra Valley School
Ringwood East	Wombolano Park
Ringwood East	Loughies Reserve
Ringwood East	Cheong Sanctuary
Sandringham	Bay Road Heathlands
Sandringham	Merindah Park
Sandringham	Trevor Barker Oval
Sandringham	Beach Road
Templestowe	Westerfolds Park
Vermont	Bellbird Dell Reserve
Vermont South	Koomba Park
Wantima South	Dandenong Creek
Wheeler's Hill	Jells Park

Examples of bushfires involving riparian vegetation

During the Black Saturday fires in 2009, a spot fire started in revegetated riparian vegetation along a creek north of Briarty Hill at Gruyere. Anecdotal evidence suggests this area was fenced and revegetated under Melbourne Waters Healthy Waterways Program in the early 2000s. CFA members who battled this blaze say it started from embers that had travelled kilometres from the Kilmore East blaze and landed in a dense revegetated area along the creek. The fire initially headed south along the creek corridor into the revegetated wetland, driven by a strong north wind.

When the wind turned to the south west, the fire intensified feeding off high fuel loads in the revegetated wetland. It jumped out of the wetland running up the vegetation along Hill Rd and across farmland. It destroyed a nearby home (159m from the wetland), numerous sheds, equipment and damaged vineyards as it marched towards the Yarra River. It was eventually stopped near the river, but not before it consumed approximately 200 hectares of farmland and remnant vegetation.

Below is a current Google image (2016) of the riparian area where the fire started.



Figure 8: Aerial photo 2016 - Google Earth

Other fires on Black Saturday also burnt riparian vegetation and travelled along creeks and rivers like the Murrindindi Fire, it burnt fern gullies and wet riparian forest in the headwaters of Watts River north east of Healesville and the Stevenson River east of Marysville.

The Kilmore East fire crossed onto the flood plains of the Yarra River at Yarra Glen burning riparian vegetation along the river and pockets of remnant vegetation across the flood plains. Below is a photo taken shortly after the main fire front went through, it shows pockets of remnant vegetation on the Yarra River flood plain still on fire.

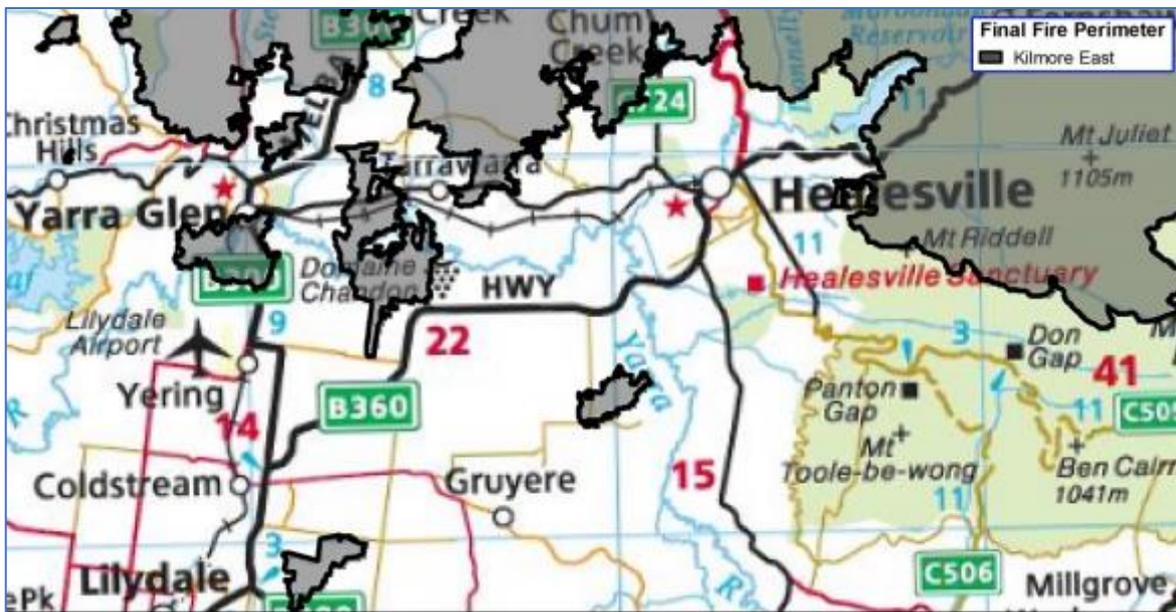


Figure 9: Image from Black Saturday - Kilmore East Fire Map - CFA/DELWP



Figure 10: Aftermath of fires on Yarra River flood plains at Yarra Glen, 2009

Other fires worth noting that involve riparian vegetation:

- 2001(August) a fire in riparian creek corridor threatened a school in Yarra Junction – SEE NEXT PAGE FOR DETAILS ON THIS FIRE.
- 2007 (August) a private burn off escaped into the riparian corridor along the Little Yarra River between Yarra Junction and Gladysdale. This fire followed the riparian corridor and produce ember attack on nearby dwellings in Baroona Rd. It also threatened the township of Gladysdale.
- 2007 a fire also burnt along riparian vegetation following the Big Pats Creek at East Warburton.
- 2015 fires burnt riparian vegetation in the headwaters of Deep Creek at Lancefield.

A bushfire occurred in a riparian creek corridor on the 16th of August, 2001 at Yarra Junction. It's believed the fire started in swampy riparian vegetation at the back of the Yarra Ranges Council Depot near the timber mill. This fire travelled quickly along the creek and swamp land driven by strong northerly winds, it fed on volatile fuels being predominately *Melaleuca*, *Leptospermum* & *Eucalyptus*. The fire burnt up to 10ha and caused ember attack on nearby residential areas and started spot fires in the playground of St Joseph's Primary School. The fire was stopped at the Melbourne Water pipeline near Milners Rd, only metres from a residential estate. On the following page is a map showing the approximate location of the fire and the location of nearby assets. Images taken of the fire are from video footage shot on the day.

Upper Yarra Mail
 Covering the Upper Yarra Region of the Yarra Ranges Shire

TUESDAY, AUGUST 21, 2001 YARRA JUNCTION Phone: 5967 2031 Fax 5967 2132

Police bans on **More support needed** **County living feature**

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BLAZING: The fire reached the fenceline of the Shire of Yarra Ranges vehicle depot before being controlled by CFA firefighters, (pictured below).
Pictures by LEIGH PASCOE

Fire threatens students

By **KELLEE NOLAN** and **SUE MARSHALL**
STUDENTS were evacuated from St Joseph's Primary School at Yarra Junction last Thursday when a fire blazed out of control onto their school grounds.

No-one was injured in the fire after spot fires on the school grounds were put out by CFA officers. The fire also threatened homes and came within metres of a flammable liquids store at the Yarra Ranges Shire vehicle depot.

Started as a burning off operation the fire was fanned out of control by strong winds.

Nine CFA units, three Department of Resources and Environment units and police attended the fire after being alerted at 11.30 am and had the fire under control by 1 pm.

It burnt about ten hectares of scrub behind Milners Road.

CFA brigade support officer Phil Cuthbert praised the calm actions of St Joseph's teachers and 170 students during the fire.

"There was alot of smoke and we could see flames so the children knew it was serious," acting principal Margaret Broderick said.

"We moved the children out of the portable classrooms into the main building. From the time the siren went it was only two or three minutes before they were all safely in the main building."

Yarra Junction CFA firefighters Daniel Colverson and Rick Crook fought the fire as it licked the fenceline of the depot, metres from a store of flammable liquids.

"If we hadn't had a 64 ml hose right there, it could have been a very different story," Mr Colverson said.

CFA operations officer Mark Jones said the extent of the fire was a worrying sign for summer.

"Here we've got a grass and scrub fire that's burnt very well in the middle of August, so if we don't get significant rains between now and summer, we've got a real problem," he said.

The CFA warned people to prepare their homes against fires in the lead up to the main fire season.

Fight is on

THE battle over Warburton's proposed business incubator is set to continue with the lodging of an appeal to the Victorian Civil and Administrative Tribunal (VCAT).

Shire of Yarra Ranges spokesperson James Martin said the appeal had been lodged by the owners of the motel adjoining the proposed incubator site, Lana and Franz Planinc.

Mr Planinc refused to comment on whether he had lodged an appeal, but said any appeal would be a group effort.

Mr Martin said the appeal had been lodged on the grounds the incubator would be an inappropriate use of the Woods Road site and it would be detrimental to local residential amenity.

The Planincs have objected to the proposal during recent months and Mr Planinc spoke against it at a June council meeting.

But despite this council voted to give the business incubator a permit to go ahead.

Mr Martin said no date had been set for the appeal hearing and he expected it would be about three months before VCAT made any decision.

He said no work could take place on the site before the VCAT ruling was made.

The business incubator has a government grant to clean up the Woods Road site and aims to help small businesses start up in Warburton.

Figure 11: Local newspaper article

MAP 5: Approximate area affected by 2001 riparian fire at Yarra Junction



Figure 14: 2001 Riparian Bushfire—
Yarra Junction (photo from video footage)



Figure 15: School threatened by 2001 Riparian Bushfire—
Yarra Junction (photo from video footage)

Addressing the document *Riparian Land & Bushfire Risk by the DEPI*

The Yarra Waterways Group believes the document produced by the DEPI on *Riparian Land & Bushfire Risk* is being miss-represented by some committees and authorities. Where the document suggests that riparian vegetation poses a low bushfire risk, this assumption is based on narrow riparian strips generally less than 20 metres wide, sheltered from wind and in areas considered low-moderate bushfire risk. It also notes revegetation is NOT to be conducted near assets including homes. Quote from summary of document – ***‘Where, after exploring options, a conflict between conservation and community safety objectives cannot be achieved, priority should be given to protection of human life.’***

Below is a screen shot from this document with recommendation of revegetation setbacks from assets to protect them from bushfire risk. The YWG believes the setbacks recommended in this document don’t adequately reflect the inherent bushfire risks that exist in the Upper Yarra Valley. **The recommendations in this document by the DEPI are only a guide and should be viewed as such.** Revegetation setbacks of 200 – 250 metres is more appropriate considering most of the mid & upper sections of Yarra Valley is recognised (by fire experts and authorities), as being severe to extreme bushfire risk.

7.15 How can the separation of riparian revegetation programs from existing houses or other assets be determined?

Current bushfire controls do not directly affect riparian revegetation proposals. However both planning and building controls can be used as a guide for planning the separation of riparian revegetation proposals from existing houses or other assets.

Options include:

- Avoiding locating revegetation within 150 metres of houses
- Avoiding locating revegetation within a distance likely to expose buildings to unacceptable levels of radiant heat, using tables developed for designated Bushfire Management Overlay areas or Bushfire Prone Areas
- Avoiding locating revegetation within 30 or 50 metres of assets using the ‘10/30 or 10/50 rules (exemptions)’ (DPCD 2011 and clause 52.48 of planning schemes)
- Where a more site-specific solution is required, identifying vegetation setbacks using Method 2 of the Australian Standard AS3959-2009.

These options aim to limit the impacts of flame contact, radiant heat and ember attack on houses or other assets, although only the first option is aimed at significantly reducing the impacts of embers. However, as only limited ember attack is expected from riparian areas in agricultural landscapes that are isolated from significant patches of native vegetation, this option may overestimate the vegetation setback required. Where ember attack is considered to be a significant issue, additional options such as fuel management should be considered.

Figure 16: Riparian land and bushfire risk: Resource document - Page 33

Bushfire scenario modelling including CFA bushfire & grassfire risks

DELWP, Warburton Emergency Planning Group, Yarra Ranges Council, CFA, Parks Victoria, SES and Victoria Police hosted a bushfire scenario for the Warburton community on 14 January 2016, over 100 people attended the presentation.

DELWP produced digital modelling using the same conditions experienced on Black Saturday. The digital scenario had a fire starting north of the Badger Creek close to the flood plain of the Yarra River at 11am. It showed the expected travel and spread of this fire along the valley floor and flood plains.

Below is quoted from the DELWP website regarding the scenario:

'How would a bushfire approaching Warburton behave? Where is it likely to come from and how would it spread? Where would you be? What about your family or friends? What would you do and what are fire agencies doing?'

DELWP, Warburton Emergency Planning Group, Yarra Ranges Council, CFA, Parks Victoria, SES and Victoria Police hosted a bushfire scenario for the Warburton community on 14 January, to help answer some of these questions without the need for an actual fire.

Almost 100 residents participated in the scenario during two separate sessions at the Upper Yarra Arts Centre.

It's critical to get your bushfire plan right and to know your trigger points for action.'

The DELWP Warburton Bushfire Scenario – Slide Show is attached as Appendix B. See the dramatic examples of images from the scenario below and over the page:



Figure 17: 2 hours after ignition, near the Yarra River flood plain, Badger Creek.

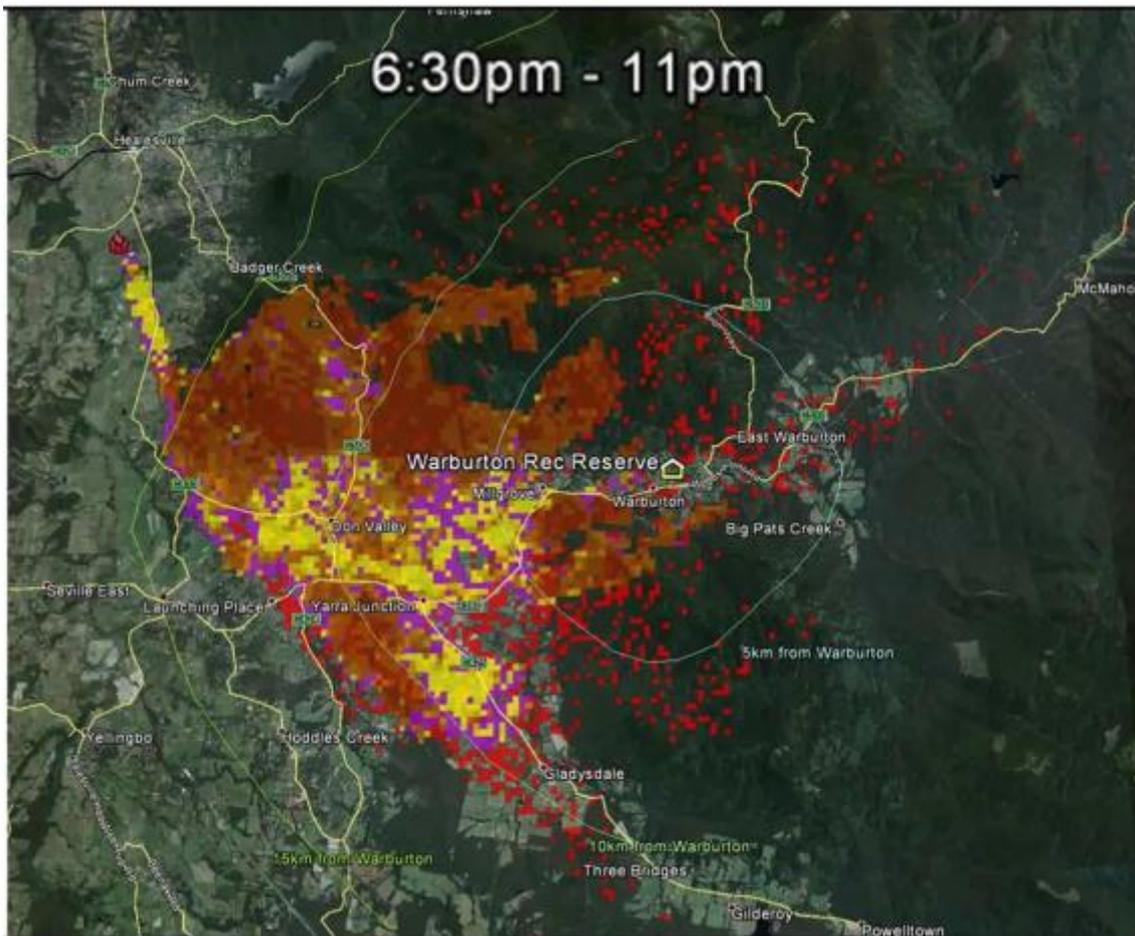


Figure 18: Fire funnelled along the Yarra River & Little Yarra River flood plains.

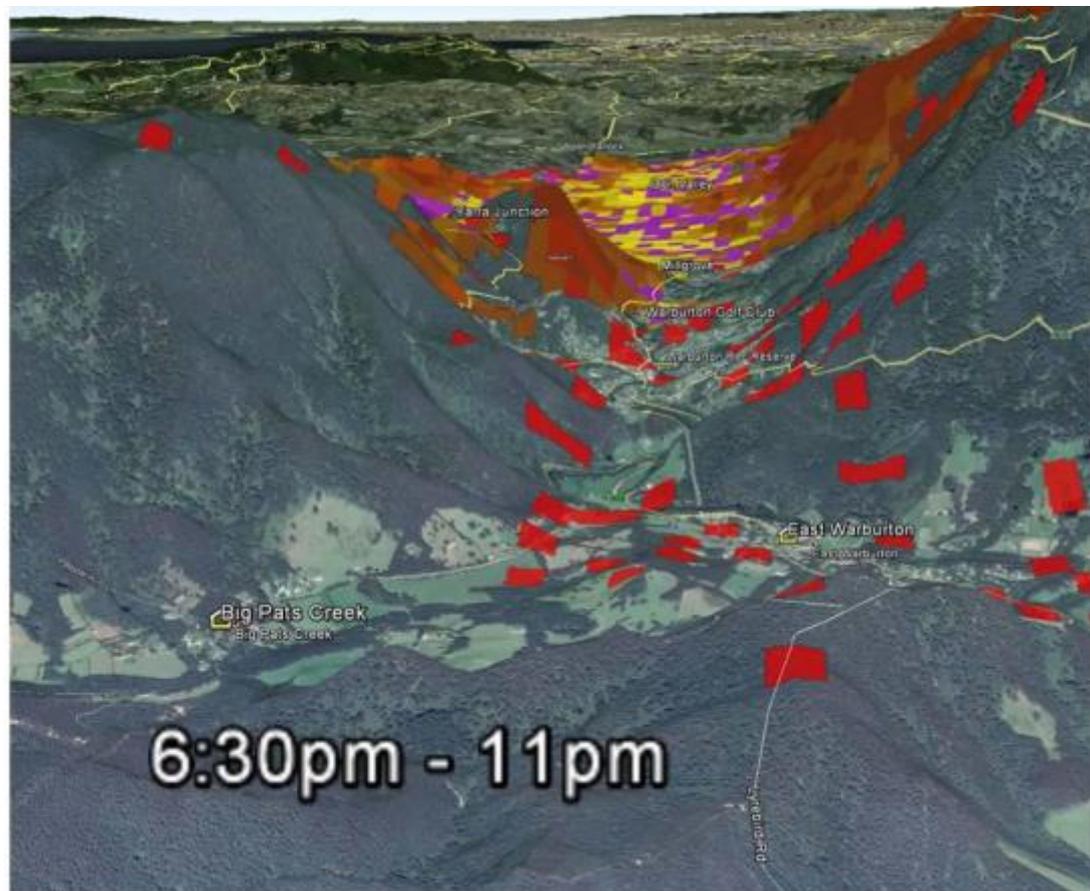


Figure 19: 3D image showing the main fire approaching Warburton.

The East Central Bushfire Risk Landscape document produced by the Victorian Government lists Warburton, Yarra Junction, Wesburn, Don Valley, Millgrove and Powelltown as being at extreme fire risk from bushfire and grassfire. Warburton is recognised by DELWP as “The most at risk township in Victoria for serious bushfire events.” This document does NOT take into consideration the proposed revegetation of wide corridors of bushland along the Yarra River & tributaries or that of Haining Park. This document will need to be updated if the revegetation occurs.

It also has to be noted that the CFA Community Information Guides that provide information to residences about bushfire & grassfire risk, **indicates the corridor of the Little Yarra River and Britannia Creek is a bushfire threat.** These community guides were last updated in 2014, it’s unlikely they included the proposed revegetation. Currently NO community guide is available for the towns of Launching Place, Don Valley or Yarra Junction. The YWG highly recommends the CFA publish a guide for these towns.

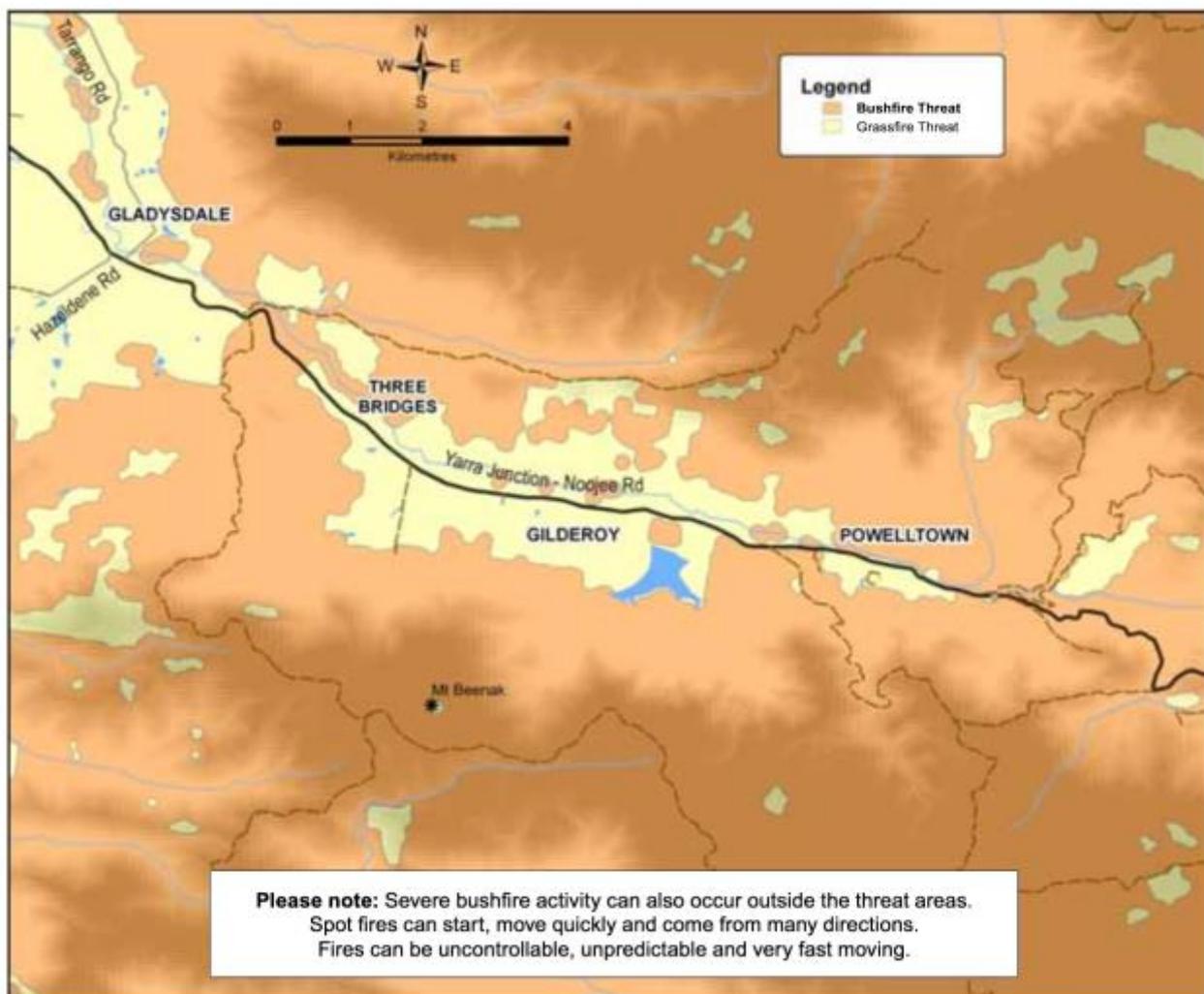


Figure 20: Map from CFA Community Information Guide (Powelltown, Gilderoy, Three Bridges)

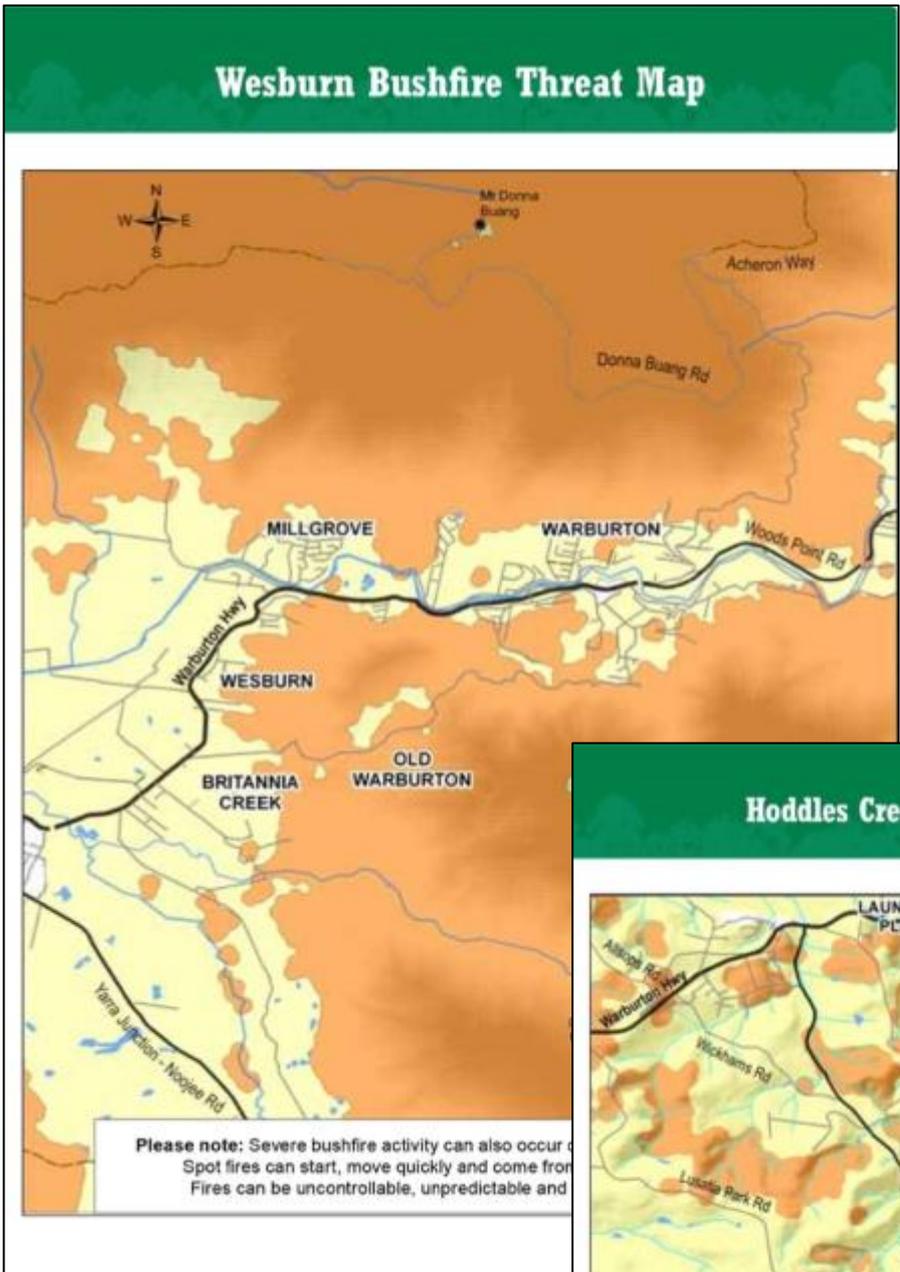


Figure 21: Map from CFA Community Information Guide (Wesburn)

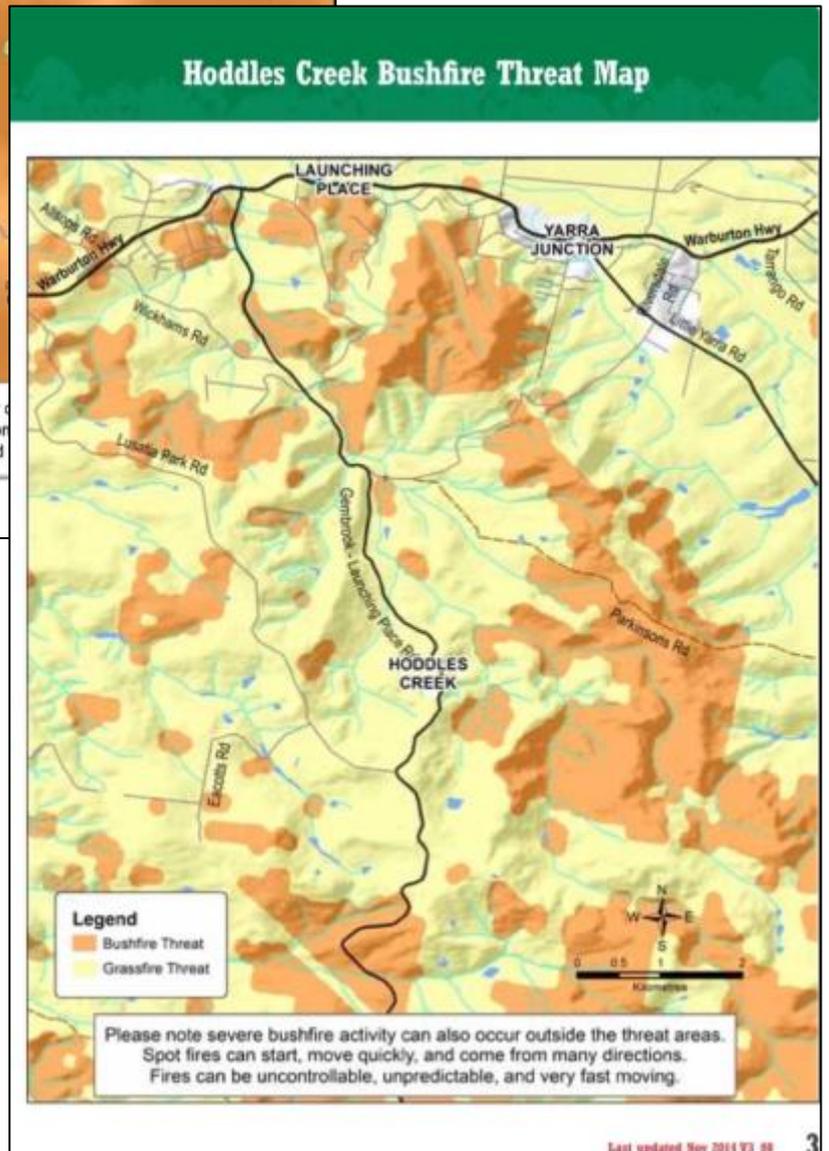


Figure 22: Map from CFA Community Information Guide (Hoddles Creek)

Proximity of fixed assets including dwellings (homes), shops and major public or private facilities to proposed revegetation of Crown land corridors & Haining Park vulnerable to increased bushfire risks.

NOTE: This survey is preliminary and more fixed assets may exist than mentioned below.

A total of **433** dwellings and businesses exist within 200 metres of the proposed revegetation of Crown land associated with the YCA along the Yarra River (Woori Yallock to Millgrove), Little Yarra River & Britannia Creek (Launching Place to Gladysdale) and Haining Park.

The above figure includes the following:

Yarra River (including Don River and Haining Park) from Koo Wee Rup-Healesville Rd, Woori Yallock to McKenzie King Drive, Millgrove:

- 121 dwellings & businesses within 50 metres of proposed bushland corridor.
- 43 dwellings & businesses within 100 metres of the proposed bushland corridor.
- 67 dwellings & businesses within 200 metres of the proposed bushland corridor.
- Millgrove Primary School within 200 metres of the proposed bushland corridor.
- Doon Reserve Caravan Park with numerous temporary and fixed assets abuts a 200 metre by 300 metre section directly adjacent to the proposed bushland corridor on its northern boundary.
- Warburton Rail Trail within 50 metres of proposed bushland corridor.
- Yarra Valley Water sewerage treatment plant within 200 metres of the proposed bushland corridor.

Little Yarra River & Britannia Creek from Launching Place to Gladysdale:

- 37 dwellings & businesses within 50 metres of the proposed bushland corridor.
- 66 dwellings & businesses within 100 metres of the proposed bushland corridor.
- 99 dwellings & businesses within 200 metres of the proposed bushland corridor.
- Yarra Junction Primary School, Home Hotel, Yarra Junction Bowling Club, Benwerrin Accommodation Complex, Blue Lotus Water Garden, Britannia Ridge Caravan Park and Gladysdale Fire Station within 50 metres of the proposed bushland corridor.
- Yarra Centre, Yarra Brae Centre, 3 business properties at east end of Yarra Junction, Gawler Foundation Treatment Centre within 100 metres of the proposed bushland corridor.
- Yarra Junction Commonwealth and National Banks, Eastern Access Community Health, Yarra Junction Post Office, 2 real estate agent offices, Upper Yarra Museum Buildings, Witness Church, Tennis Club & Football Club, Caulfield Grammar Campus, Gladysdale Primary School, Britannia Guides Camp, Camp Eureka and water treatment facility at Yarra Junction all within 200 metres of the proposed bushland corridor.

Limits of access & egress due to proposed bushland corridors during a bushfire emergency

Almost 16,000 people reside in the mid/upper section of Yarra Valley (refer MAP 3) with a large majority travelling out of the area for work. This results in over 13,500 vehicle trips along the Warburton Highway on average, per day (data Vic Roads, Warburton Hwy at Woori Yallock). On weekends, public holidays and school holidays the amount of vehicle trips increases substantially, as many thousands of day tripping tourists come from Melbourne. This is very evident during the peak bushfire risk months of December to April. Because of a combination of these factors, the Warburton Highway becomes very congested.

An example of the potential risk to access, is the 3.5km section of the Warburton Highway between Don Rd, Launching Place and Lowes Rd, Yarra Junction. The proposed bushland corridor runs parallel with the highway and the Little Yarra River. The distance between the corridor and the highway (edge of bitumen) ranges from 5m – 200m with large sections closer than 20m. During a major bushfire emergency (similar to Black Saturday) spot fires could develop in this corridor resulting in the highway being closed. This would trap thousands of people trying to evacuate, as there is no other safe alternative road before this point. The southern access road being Little Yarra – Noojee Road, the proposed bushland corridor comes within 10m at Gladysdale and could be cut off from a fire in the Yarra State Park or Bunyip Park (like what happened on Ash Wednesday & Black Saturday).

Strong to gale force winds usually accompany extreme bushfire weather. This results in trees, limbs, branches and powerlines landing on roads in the area, sometimes cutting off access. The proposed revegetation that runs close to or crosses these main arterial roads, could also contribute to the risk of them becoming blocked from falling trees, limbs and powerlines.

Another point of concern is the limited access for firefighting tankers to Crown land corridors due to limited direct road access because of adjoining private property. This is likely to delay firefighting suppression allowing fires to develop more intensity. In some circumstances the only effective method of suppression will be with aerial water bombing appliances such as sky cranes.

Arterial and access roads cross the proposed bushland corridors (Primary Investigation Area) at 13 different locations. This will limit access by residents trying to evacuate and emergency services attempting to access the fire ground.



Figure 23: Tree trapping hundreds of tourists at Mt Donna Buang



Figure 24: Tree on Don Rd, Don Valley 2016

Recommendations

In light of this investigation and the information provided in this report, the Yarra Waterways Group makes the following 6 recommendations to the Victorian Government.

1. The Victorian Government immediately stop any revegetation projects of the Yellingbo Conservation Area within 200 metres of identified assets in this report, until the recommendations of a comprehensive Independent Bushfire Risk Assessment of the YCA has been implemented. The “terms of reference” of such an assessment must focus on the increased risks to human life, assets, property and the existing environment from bushfire, caused by revegetation of Crown lands in the YCA. We make this recommendation for the following reason:
 - A serious conflict exists between conservation values imposed by the Yellingbo Conservation Area and the obligation of the State to give priority to the protection of human life and assets from bushfire risks. We quote the 2009 Victorian Bushfires Royal Commission Final Report *‘DSE should modify its Code of Practice for Fire management on Public Land so that it is clear that protecting human life is given highest priority,’* end quote. We also quote the CFA Act 1958 – Section 43 *‘In the country area of Victoria it is the duty of every municipal council and public authority to take all practicable steps (including burning) to prevent the occurrence of fires on, and minimise the danger of the spread of fires on and from any land vested in it or under its control or management’* end quote.
2. Roll back the boundary of the Yellingbo Conservation Area and exclude areas and towns east of the Koo Wee Rup-Healesville Rd at Woori Yallock. This includes the Yarra River, Little Yarra River, Britannia Creek, Don River, Hoddles Creek (north of Warburton Highway) and Haining Park. This would result in the YCA being reduced by approximately 419 hectares or 14% of the 2,940 hectares currently proposed. We make this recommendation for the following reasons:
 - This area contains the highest density of towns and assets inside the YCA including **433** homes & businesses, dozens of public assets and hundreds of powerlines that are all within 200 metres of proposed revegetation of Crown land. All these assets are vulnerable to increased bushfire risks.
 - DELWP can return to a more flexible approach in managing this Crown land for the prevention and suppression of bushfires. Under the current proposal this area will become part of a protected reserve, State Park or National Park which will increase restrictions on fire suppression, prescribed burning and vegetation management activities. Under the previous arrangement DELWP, CFA, adjoining private land owners and Crown licensees worked together to reduce bushfire risk along the streamside reserves. Unfortunately, the YCA has fragmented this relationship putting the existing and future environment at risk.
 - The majority of this area was not included in the original Yellingbo Investigation by the the VEAC indicated by their 2011 Map (Appendix C). It has limited habitat values required by the Helmeted Honeyeater or Lowland Leadbeaters Possum.

Recommendations (continued)

3. If recommendation 2 is implemented by the Victorian Government, DELWP reinstate Crown Water Frontage (Grazing) Licenses and Riparian Management Licenses.
4. Installation of no less than 3 safe accessible points for CFA & DELWP tankers to draw water installed on the Yarra River between Woori Yallock and Millgrove. And the Little Yarra River between Launching Place and Gladysdale. Additionally, 2 firefighting helicopter filling points located between Woori Yallock and Warburton.
5. Restrict any future revegetation projects to within 200 metres of the following fixed assets being a dwelling, building, school, hospital, caravan park or accommodation facility, outdoor recreation facility, retail shop, public facility or public building, powerlines, substations, sewerage treatment plants, water pumping stations and treatment plants, public and private roads in the Yellingbo Conservation Area and the Yarra River & tributaries east of Woori Yallock to the following:
 - Setbacks between assets and revegetation as recommended by a new Independent Bushfire Risk Assessment of the YCA.
 - Vegetation that poses very low fire risk.
6. Fencing of Crown streamside reserves to allow access for native fauna. We recommend that no fencing be required on properties with streamside frontage, if the property has no agricultural livestock or horses that can access the stream. If properties do have livestock or horses, fencing is designed to allow access points by native fauna to the waterway.

References

Map used in investigation with links:

LASSI-SPEAR Interactive Mapping - <https://www.spear.land.vic.gov.au/lassi/SpearUI.jsp>

Google maps - <https://www.google.com.au/maps>

MAP 1 – MAIN (Upper Yarra Valley) – link below

<http://www.yarrowaterwaysgroup.com.au/wp-content/uploads/2016/09/A3-YWG-MAP-1-outlines-copy.pdf>

MAP 2 – (Wesburn to Warburton) – link below

<http://www.yarrowaterwaysgroup.com.au/wp-content/uploads/2016/09/A3-YWG-MAP-2-enlargement-copy.pdf>

MAP 3 – (Yarra Junction to Wesburn) – link below

<http://www.yarrowaterwaysgroup.com.au/wp-content/uploads/2016/09/A3-YWG-MAP3-enlargement-copy.pdf>

MAP 4 – (Don Valley & Haining Farm) – link below

<http://www.yarrowaterwaysgroup.com.au/wp-content/uploads/2016/09/A3-YWG-MAP-4-enlargement-copy.pdf>

MAP 5 – (Woori Yallock to Launching Place) – link below

<http://www.yarrowaterwaysgroup.com.au/wp-content/uploads/2016/09/A3-YWG-MAP-5-enlargement-copy.pdf>

MAP 6 – (Little Yarra Valley to Gladysdale) – link below

<http://www.yarrowaterwaysgroup.com.au/wp-content/uploads/2016/09/A3-YWG-MAP-6-enlargement-copy.pdf>

MAP – Black Saturday (Yarra Valley Area) – Kilmore East/Murrindindi fire – link below

http://www.cfa.vic.gov.au/fm_files/attachments/About_Us/maps/KilmoreEast_Murrindindi_low_detail.pdf

MAP – Black Saturday (Yarra Valley Area) – Upwey fire – link below

http://www.cfa.vic.gov.au/fm_files/attachments/About_Us/maps/Upwey_low_detail.pdf

MAP – Black Saturday (Yarra Valley Area) – Bunyip fire – link below

http://www.cfa.vic.gov.au/fm_files/attachments/About_Us/maps/Bunyip_low_detail.pdf

VEAC Yellingbo interactive maps - <http://www.veac.vic.gov.au/yellingbomapping/yellingbo.html>

Documents, studies, laws, reports and assessments with links:

(CFA) Country Fire Authority Act – Section 43 http://www.austlii.edu.au/au/legis/vic/consol_act/cfaa1958292/s43.html

National Parks Act 1975 http://www.austlii.edu.au/au/legis/vic/consol_act/npa1975159/

Crown Land (Reserves) Act 1978 http://www.austlii.edu.au/au/legis/vic/consol_act/cla1978219/

VEAC Yellingbo Investigation Final Report – link below

http://ycaccyyellingbo.com/wp-content/uploads/2016/07/YellingboFINAL_REPORT-interactive-web.pdf

2009 Victorian Bushfire Royal Commission Final Report – link below

http://www.royalcommission.vic.gov.au/finaldocuments/summary/PF/VBRC_Summary_P.F.pdf

CFA Towns at Bushfire Risk - <http://www.cfa.vic.gov.au/plan-prepare/community-information-guides>

Riparian Land & Bushfire Risk - http://www.cfa.vic.gov.au/fm_files/attachments/Publications/riparian-land-and-fire-resource-document-2014.pdf

CFA Planning for Bushfire Victoria - http://www.cfa.vic.gov.au/fm_files/attachments/plan_and_prepare/planning-for-bushfire-web.pdf

CFA Landscaping for bushfire – garden design and plant selection – link below

http://www.cfa.vic.gov.au/fm_files/attachments/plan_and_prepare/landscaping/landscaping_for_bushfire.pdf

CFA About Black Saturday Fires - <http://www.cfa.vic.gov.au/about/black-saturday/>

CFA About ash Wednesday Fires - <http://www.cfa.vic.gov.au/about/about-ash-wednesday/>

CFA Major Fires - <http://www.cfa.vic.gov.au/about/major-fires/>

MFB Know Your Fire Risk - <http://www.mfb.vic.gov.au/Community/Bush-and-Grass-Fires/Know-Your-Fire-Risk.html>

DEPI East Central Bushfire Risk Landscape - http://www.depi.vic.gov.au/data/assets/pdf_file/0004/278248/East-Central_Strategic-Bushfire-Management-Plan_2014.pdf

Dandenong Ranges Landscape Bushfire Project - Managing hazards & risk: Fuel Management NO LINK

DELWP Managing Bushfire Risk Victoria – link below
http://www.delwp.vic.gov.au/data/assets/pdf_file/0009/318879/DELWP0017_BushfireRiskProfiles_rebrand_v5.pdf

DELWP Warburton Bushfire Scenario - <http://bushfire-planning.delwp.vic.gov.au/warburton/documents>

Assessment of vulnerability to climate change across Australia’s wine regions –
<http://research.wineaustralia.com/wp-content/uploads/2013/09/SAR-1002.pdf>

Bureau of Meteorology Climate change and variability
<http://www.bom.gov.au/climate/change/#tabs=Tracker&tracker=timeseries>

Bureau of Meteorology – Melbourne Regional Office Monthly Climate Statistics, link below
http://www.bom.gov.au/climate/averages/tables/cw_086071.shtml

Bureau of Meteorology – Coldstream Monthly Climate Statistics, link below
http://www.bom.gov.au/climate/averages/tables/cw_086383.shtml

Britannia Creek Weather Station, Wesburn - <http://www.britanniacreek.com/records.php>

Melbourne Water Warburton rain gauge records – link below
<http://www.melbournewater.com.au/waterdata/rainfallandriverleveledata/Pages/Rainfall-and-river-level-new.aspx>

SA Government DEPI – Reducing fire risk in gardens - http://www.ahc.sa.gov.au/ahc-resident/Documents/reducing_fire_risk_in_gardens.pdf

Planting Trees for Living Firebreaks - <http://www.smalltreefarm.com.au/about-retardants.pdf>

Case study – Living Fire Break <http://www.smalltreefarm.com.au/Case-Studies.pdf>

Submission to the VBRC: Benefits of fire-retardant ornamental plants – link below
http://vol4.royalcommission.vic.gov.au/files/JF_3.pdf

Yarra Ranges Plant Communities – link below
http://fe.yarraranges.vic.gov.au/Residents/Trees_Vegetation/Yarra_Ranges_Plant_Directory/Yarra_Ranges_Local_Plant_Communities

Vic Roads Traffic Data on Arterial Roads - <https://www.vicroads.vic.gov.au/traffic-and-road-use/road-network-and-performance/road-use-and-performance>

Birdlife Australia letter - <http://birdlife.org.au/documents/SUB-BA-FireKTP-Nov10.pdf>

Bunyip Fire He Ho Herald - http://www.helmetedhoneyeater.org.au/images/2009_winter_hehoherald.pdf

Conservation Advice *Lichenostomus melanops cassidix* helmeted honeyeater – link below
<http://www.environment.gov.au/biodiversity/threatened/species/pubs/26011-conservation-advice.pdf>

Conservation Advice *Gymnobelideus leadbeateri* Leadbeater’s possum – link below
<http://www.environment.gov.au/biodiversity/threatened/species/pubs/273-conservation-advice.pdf>

Wildlife friendly fencing - http://www.wildlifefriendlyfencing.com/WFF/Friendly_Fencing.html

Population data and other statistics – Census 2011 <http://www.abs.gov.au/websitedbs/censushome.nsf/home/data>

Additional research:
 News footage 2001 fire at Yarra Junction – Channel Nine News, Melbourne
 Upper Yarra Mail Newspapers
 Yarra Valley Leader Newspaper
 The Age Newspaper
 ABC 774 radio transcripts

Information on local conditions, topography, assets, historic fires and other evidence used in the investigation was contributed to by members of the Yarra Waterways Group including Stephen Squires, Rick Houlihan, Peter Cooper & Sue Hotton. This report was produced by Peter Cochrane on behalf of the Yarra Waterways Group.

Appendix A – YWG MAP 1: Primary Investigation Area – link below

<http://www.yarrawaterwaysgroup.com.au/wp-content/uploads/2016/10/MAP-1-Primary-Investigation-Area.pdf>

Appendix B – DELWP Warburton Bushfire Scenario (Slide Show) – link below

<http://bushfire-planning.delwp.vic.gov.au/warburton/documents/31417/download>

Appendix C – VEAC Yellingbo Investigation boundary map 2011 – link below

<http://www.yarrawaterwaysgroup.com.au/wp-content/uploads/2016/09/YCA-map-2011.pdf>

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