

I am opposed to elements of Amendment C87 to the Golden Plains Planning Scheme as it does not demonstrate adequate provisions for bush fire risk management, including the management of the Inverleigh Flora and Fauna Reserve, the provision of adequate infrastructure, and egress for current and future residents in the event of a fire in the Common.

The Inverleigh structure plan states that under 3.8 State Planning Policy Clause 13.02 – Bushfire that the proposals for *residential growth in Inverleigh are appropriate from a bushfire risk perspective, provided measures indicated in the Assessment are taken* to minimise risk to residents based and emergency services. The ‘measures’ including plans, timeframes and distribution of responsibility for planning, budgeting and execution across Golden Plains Shire, DELWP, Parks Victoria and the developer are not detailed in the Inverleigh Structure Plan or Amendment C87, making policing and enforcement impossible. I also believe that the bush fire risk for the Common is underestimated, with arguments detailed below. This underestimation has significant follow-on effects on the assessment of growth area 3 as ‘appropriate’ for development. Lastly, despite the *State Bushfire Plan 2014* conclusion that “the bushfire risk in Victoria is increasing”, the Inverleigh Structure Plan and Amendment C87 fail to include measures to counteract this increasing risk.

Fire risk in The Common - Inverleigh Flora and Fauna Reserve

The Fire Risk in the Inverleigh Flora and Fauna Reserve is managed by DELWP/PV, with fuel reduction burns conducted in 2006, 2009, 2010 and 2015. Mistakes made during the 2009 fuel reduction burn left a legacy of dead, dry timber. With the exception of the 2009 burn which covered approximately 13% of the reserve, other burns covered <5% of the area. The 2009 Victorian Bushfire Royal Commission Report proposes an annual rolling target of a minimum of 5 % of public land (2009 Victorian Bushfire Royal Commission Report, Final Report Summary). This minimum of 5% is conservative, and below the scientifically determined effective fuel reduction burning of 10-15% (Packham, 2010, Some observations on the effectiveness of fuel reduction burning in Southern Australia). The importance of fuel management also underpins the residual risk assessment done for the West Central district by DELWP¹. The sparse fuel reduction burns up to 2015, followed by its abandoning, illustrate that the management of the Common has fallen short of the recommended fuel reduction burn targets, and hence fails to consider protecting human life at the highest priority. Taking the risk prediction information provided by DELWP, this lack in fuel removal will have significantly increased the fire risk¹.

The Strategic Bushfire Risk Assessment underpinning the Inverleigh Structure Plan fails to indicate fuel reduction burns are significantly behind target. The Safer Together website indicates the rapid increase in bushfire risk when fuel is not removed, as well as the time it takes before this risk drops again¹. Considering the backlog in adequate management in the Common since the highest recorded Victorian bushfire risks in the mid-2000’s, the risk imposed by the Common on the Inverleigh Community, in particular those living along Common Road, can be expected to be above the Victorian average. The Strategic Bushfire Risk Assessment also does not mention the elevated fuel load as a legacy of the 2009 fuel reduction burn as an additional risk. It also does not incorporate this shortfall in assessing the fire risk, which is merely based on a historic assessment of the Inverleigh township.

Considering the high level of connectivity of fuel at ground and near ground level, the bush fire risk of the Common should have been rates as extreme. Combined with, under prevalent bush fire conditions, only a single access/egress (Common Road) and poorly maintained tracks inside the reserve, the likelihood the CFA commander will decide against a crew to the Common in case of a bush fire. Poor maintenance of the Common has put life and property at risk.

¹ <https://www.safertogether.vic.gov.au/landscapes/west-central>

Acacia Paradoxa

The Common contains Acacia Paradoxa, a native plant that has been on the noxious weed register. This yellow flowering shrub contains oils with a flash point at 35°C, 14° below that of eucalyptus. Its presence elevates the bush fire risk, particularly under extreme weather conditions^{2,3}. The Bush Fire Risk Assessment reports that since 2015, fuel reduction burns in the Common were replaced by selective removal of Acacia Paradoxa. No details are provided on the amount of Acacia paradoxa removed (as tonnage and % of estimated total). Its capacity to regrow or future removal targets and corresponding responsibility are also not included in the Bush Fire Risk Assessment nor the structure plan/amendment C87.

The efficacy of selective removal of bushfire prone Acacia Paradoxa as sole bush fire risk mitigation strategy is not reported. Searches in the public domain and scientific literature (scopus search conducted on 17/9/2019, Acacia Paradoxa management provides 7 hits, none in relation with bushfire management) also failed to reveal any evidence that removal of Acacia Paradoxa is a bush fire mitigation risk. Documents agree Acacia Paradoxa should be avoided in a bush fire resilient gardens (see for example^{4,5}) and that removal is the best Acacia Paradoxa management strategy⁶. Concerns remain that the selective removal of Acacia Paradoxa alone does not remove the large amount surface and near-surface fuel originating from the dead trees and other shrubs throughout the Common. The high level of connectivity of the dry, near surface fuel makes this an extreme fire hazard (Overall fuel assessment guide, Department of Sustainable Development and Environment, 2010). The removal of Acacia Paradoxa as bush fire mitigation risk as proposed in the Bush Fire Risk Assessment underpinning the Inverleigh Structure Plan is therefore not valid, undermining the technical validity of the document.

Track Maintenance

The Strategic Bushfire Risk Assessment indicated that the tracks in the Common are well maintained to provide access. The condition of the tracks in the Common is poor due to sparse maintenance. Parts of the Eastern and Old Teesdale tracks are eroded with >40 cm deep holes, making accessible with 4WD vehicles impossible, let alone fire trucks. These tracks will complicate effective bush fire management in the likely event of a fire in the Common.

Climate change

Despite the *State Bushfire Plan 2014* conclusion that “the bushfire risk in Victoria is increasing”, the Inverleigh Structure Plan and Amendment C87 fail to include measures to counteract this increasing risk. With climate change, the number of extreme weather events is expected to increase, as already evidenced by the increase in days with temperature over 35 °C per year, with a 10-year average in 2007, and 11 and 14 days recorded in 2018 and 2019 (until September) respectively. Lightning is the major cause of bush fire, and considering historic data shows a bush fire in the Common was caused by lightning, highly relevant to the bushfire risk. With global warming, the frequency of thunder storms is decreasing but 25% more of the strongest storms can be expected, accompanied with a 5% increase in lightning⁷. This risk is not mentioned in the Bushfire Risk assessment.

² The Effects of Alien Shrub Invasions on Vegetation Structure and Fire Behaviour in South African Fynbos Shrublands: A Simulation Study B. W. van Wilgen and D. M. Richardson *Journal of Applied Ecology* Vol. 22, No. 3 (Dec., 1985), pp. 955-966

³ Evaluating the invasiveness of Acacia paradoxa in South Africa, South African Journal of Botany 75, 3, 2009, Pages 485-496 R.D.Zenni J.R.U.Wilson J.J.Le Roux D.M.Richardson <https://doi.org/10.1016/j.sajb.2009.04.001>

⁴ <https://www.surfcoast.vic.gov.au › 03-community › emergencies-and-safety>

⁵ https://www.naturalresources.sa.gov.au › files › sharedassets › botanic_gardens

⁶ Moore, J. L., Runge, M. C., Webber, B. L. and Wilson, J. R. (2011), Contain or eradicate? Optimizing the management goal for Australian acacia invasions in the face of uncertainty. *Diversity and Distributions*, 17: 1047-1059. doi:[10.1111/j.1472-4642.2011.00809.x](https://doi.org/10.1111/j.1472-4642.2011.00809.x)

⁷ https://www.giss.nasa.gov/research/briefs/delgenio_07/

Population Density

Amendment 87 proposes the decrease of the minimum block size to 1 acre, effectively increasing population density. This contradicts information discussed for Amendment 74, where limiting the size to 1 to 2 hectares is used to reduce the extent of population growth that might be exposed to bushfire risk.⁸ Considering the bush fire risk imposed by the Common, development of Potential growth area 3 should be reconsidered, in line with Golden Plains rulings for other development areas.

Egress

Common Road and Inverleigh Teesdale Road are marked as egress in the event of a bushfire in the Common. Inverleigh-Teesdale road is unlikely to provide a safe egress towards Teesdale, as this will lead through the Common and hence through the fire. In a scenario of easterly winds, the north-western part of Common Road will be filled with smoke and spot fires due to ember attacks. Under bush fire conditions with northerly and north-easterly winds, the section of Inverleigh-Teesdale Road connecting Common Road with The Hamilton Highway across the Twin Bridges will be exposed to smoke and ember attack, and will not function as egress. With the likely scenario of north westerly winds, the functionality of whole of Common Road is in doubt as ember, ash and smoke are likely to travel down Common Road towards the Hamilton Highway. These scenarios are depicted in Figure 1. This means that under the most likely bush fire scenarios, Common Road will be the sole egress for all residents. This is a serious risk and lives are likely to be lost, particularly if a bottleneck forms anywhere on Common due to fallen branches/trees, smoke or accidents due to panicking residents evacuating. The risk of incidents during evacuation increases rapidly with the number of cars evacuating, arguing against the proposed high-density residential development in growth area 3. The risk to life and property as a result of Common Road as sole egress, nor bottlenecks caused by ember attacks, fallen trees or panicking residents are not articulated in the Strategic Bush Fire Assessment.



Figure 1 Map of the Common and Common Road with arrows indicating showing the direction ember, ash and smoke will be sent from the Common in case of a bushfire. Under Northerly and Easterly winds, the north-western part of Common

Road will not be usable. With North-Westerly winds, the functionality of Common Road as a whole could be severely compromised due to smoke, ashes and ember.

The proposed development will increase the number of residents evacuating through Common Road (more than double). These residents will first have to flee into the bush fire affected area at the northern end of Common Road, which is intended to serve as fire break, and use this to connect with the rest of Common Road as egress. This decision appears to put human life at risk and conflicts with planning and development policies including Victorian Planning Practice Note 64.

No Refuge in Inverleigh

The Strategic Bushfire Risk Assessment fails to mention there is no shelter/refuge in Inverleigh. Additionally, documents provided by Golden Plains Shire suggest there is a safe refuge⁸. The current CFA advise for Inverleigh residents to travel down the Hamilton Highway to Geelong because ‘there are NO designated Neighbourhood Safer Places – Places of Last Resort at Inverleigh’⁹. It is unclear if the Hamilton Highway will allow for safe and orderly evacuation, particularly under poor visibility conditions. Additionally, no provisions are made in Amendment C87 for the development of a refuge in Inverleigh to minimize the reliance on the Hamilton Highway in the event of a bush fire. The panel discussions in Amendment 74⁸ discuss access to a near and safe refuge as elemental to rezoning that area as residential”. If it would have been known that safe access was not available to a safe refuge within close proximity to the site, the Panel may have had a very different conclusion regarding the Amendment.”⁸ This makes availability of a refuge quintessential for Growth area 3 as proposed in Amendment C87, still the refuge is not mentioned in the Structure Plan, Bush Risk Assessment or Amendment.

In conclusion, the Strategic Fire Risk Assessment underpinning the Inverleigh Structure Plan grossly underestimates the bush fire risk imposed by the Common. Fuel reduction burns have not been conducted in line with recommendations from the Royal Commission into the 2009 Victorian Bush Fires nor the DELWP strategic Bushfire Management Plan. Proposed alternative strategies (incl. selective Acacia Paradoxa removal) have not been evaluated on effectiveness as bushfire mitigation strategy, tracks in the Common have not been maintained, egress options not thoroughly evaluated. Additionally, the fact there is no bush fire shelter in Inverleigh has been overlooked. Amendment C87, the Strategic Bushfire Risk Assessment and the Inverleigh Structure Plan all fail to provide clarity who carries responsibility for management and assessment of the bushfire risk of the Common. The Inverleigh community needs to be presented with a clear management plan for the Common, clearly articulating the risk mitigation strategies, their scale and periodicity as well as clearly identify responsibilities for execution, monitoring and payment. Additionally, the residual risk of the Common needs to be assessed and reported back to the community on an annual basis. Considering the Common comprises of bushland, the existing bush fire risk assessment conducted for Inverleigh township cannot be transferred to the Common and adjacent areas without further review and careful considerations of fuel, landscape and other factors. Amendment C87 and approval of any new developments in Inverleigh should only be evaluated once a clearly articulated and independently reviewed bush fire management strategy has been communicated with residents and implemented. Once the strategy has been implemented, the Strategic Bush Fire Risk Assessment needs to be re-done to define areas for new development, earmarking those that do not impose additional risk on life and property.

⁸ <https://www.goldenplains.vic.gov.au/sites/default/files/Golden%20Plains%20C74%20Panel%20Report.pdf>

⁹ https://cfaonline.cfa.vic.gov.au/mycfa/Show?pagelid=publicDisplayDoc&fname=2017/CIG-BSW-Inverleigh-3_00_78605.pdf