Amendment C56 Mount Alexander Planning Scheme

Planning Panels Victoria

Expert Witness Report

Lincoln Kern, Ecological and Bushfire Consultant

21 August 2015
Qualifications and Experience of Lincoln Kern

I am a trained ecologist with a Bachelor’s Degree in Biology and Environmental Studies (completed in 1986 with field studies in Pacific Northwest USA, Southwest USA, India and Central America) from Antioch College in Yellow Springs, Ohio, USA, and a Graduate Diploma in Environmental Management (1998) from Deakin University, Victoria. In addition, I have been involved in environmental planning, ecological restoration and bushfire risk management for 24 years in Victoria through positions with the National Trust of Australia (Victoria) (1991–93), Greening Australia Victoria (1992 including organising a series of field days on reconciling fire risk and native vegetation management), as a supervisor for labour market programs (part-time 1993–94) and through Practical Ecology P/L, formed in 1993. I also worked in 1998 as Environmental Planner for Wellington Shire Council in Gippsland where I assessed many native vegetation clearing applications, developed the Shire’s roadside vegetation management plan and participated in developing the municipal fire plan.

As owner and manager of Practical Ecology P/L I manage and implement extensive contract works, ecological consulting and bushfire risk management projects. The work has included designing work programs and managing crews implementing ecological restoration works such as weed control projects in remnant vegetation, terrestrial and wetland revegetation projects. I have also written many management plans for bushland reserves across metropolitan Melbourne and dozens of flora and fauna assessments and land management plans for bush blocks in municipalities across Victoria. In addition I have produced or coordinated many dozens of ecological and bushfire reports on a wide range of projects, from urban and rural subdivisions to houses on rural bush blocks. I have also coordinated the investigation of several incidents of illegal clearing for Councils and DSE.

My expertise in fire ecology and fire risk management is based on training in fire ecology through my academic training, a formal course in applying the Wildfire Management Overlay in 2005, ongoing training since that time including the University of Technology Sydney’s Development and Planning in Bushfire Prone Areas short course completed in Victoria in November 2013 and most recently training in planning prescribed fire and fire suppression. I have coordinated many bushfire management plans and wildfire management statements and stayed up to date with fire risk assessment techniques through project work and liaison with fire management authorities.

As manager of Practical Ecology I have designed and implemented hundreds of restoration projects, flora and fauna surveys and planning assessments across Melbourne and Victoria. I have also developed particular experience in developing property management plans for bushland properties that reconcile development, bushfire risk and native vegetation protection through negotiating with many land owners over several years.

In summary, my expertise is in reconciling planning law and objectives and the assessment and management of native vegetation and bushfire risks. Over time I have taken extensive knowledge of vegetation, ecology and bushfire and combined it with knowledge and experience of the planning system gained through training and experience. My detailed CV is attached at the end of the statement.
Instructions to Lincoln Kern

I was instructed to review the proposed Amendment C56, consider the development proposed by Diamond Gully Estate Pty Ltd and then undertake the following tasks:

- Review the Diamond Gully Structure Plan documentation and other relevant reports to inform a review and discussion of bushfire risks and impacts on native vegetation habitats of the proposed development of the following blocks of land: 55 Diamond Gully Road, 61A Diamond Gully Road, 61B Diamond Gully Road (part of), 65 Diamond Gully Road (part of which is excluded and is proposed to be attached to the portion of 61B Diamond Gully Road that is also excluded from the proposal) and 70 Diamond Gully Road, Campbell’s Creek.

- Consider bushfire risks on the site and necessary design responses the bushfire risk management requirements of the Mount Alexander Planning Scheme.

- Evaluate the characteristics of the site and design responses to consider how the proposal addresses the requirements of the Mount Alexander Planning Scheme regarding bushfire risk.

- Consider and discuss the suitability of the site for residential development given the bushfire hazards in the local and wider landscape.

- Whether the amount and biodiversity conservation significance of native vegetation to be removed to implement the proposed development is acceptable under the Mount Alexander Planning Scheme.

- Discuss the biodiversity offsets required in the proposed rezoning and subdivision and where they would potentially be obtained.

- Compare the impact on bushfire risks and native vegetation between the proposed development and the Diamond Gully Structure Plan.

- Present the results of the review in an expert witness report to the Planning Panel to inform their consideration of the following issues.
Documents and other materials considered

This statement relies on two documents prepared by Practical Ecology personnel (attachments 1 and 2):


These documents were produced under my supervision and with my direct involvement. They are the primary basis for the supporting documentation and evidence behind the findings and opinions set forward in this statement. This statement will summarise my expert opinion on relevant issues but is generally reliant on the information presented in these associated reports.

I also reviewed other relevant documentation specifically relating to Amendment C56:


Statement of Expert Evidence

1. **Appointment by Diamond Gully Estate Pty Ltd and review of existing information**

1.1 Practical Ecology was initially commissioned by Diamond Gully Estate Pty Ltd in May 2013 to conduct a Bushfire Risk Assessment for what was then labelled Mount Alexander Shire Council Amendment C67.

1.2 Practical Ecology was then commissioned to review the flora and fauna assessment undertaken by Cheers Flora and Fauna Consultants (March and May 2014) and conduct a No Net Loss Analysis under the revised native vegetation regulations under the Planning and Environment Act implemented in December 2013. The data collected by Cheers (2012a and 2012b) was used as the basis for assessing the impacts of native vegetation from the rezoning and subdivision proposed by Diamond Gully Estate Pty Ltd under the new regulations.

1.3 I was further engaged in August 2015 to prepare my Expert Witness Statement for the Planning Panel for Amendment C56 and present our findings concerning bushfire risk and impacts on native vegetation.

1.4 I reviewed in detail the documents prepared by Practical Ecology staff, as well as the relevant planning scheme provisions, relevant planning guidelines and documents prepared by the Country Fire Authority, Department of Environment, Water, Land and Planning, Department of Transport, Planning and Local Development and other relevant research and documentation regarding bushfires. I also visited the site on several occasions between May 2013 and now.

1.5 This statement reviews significant points focussing on the bushfire risk and management at the site. It relies on the two attached documents in respect to C67 provided to the proponent to evaluate and address the bushfire risks on the site as well as consider the potential impacts on native vegetation. These two documents were prepared by Practical Ecology staff under my supervision and with my significant involvement; I was involved with the project from the beginning of our company’s work.

2. **Review of relevant planning provisions for bushfire risk**

2.1 The key planning legislation this document seeks to respond to includes:

- Ministerial Direction Number 11 – Strategic assessment of amendments
- Clause 13.05–1 Bushfire Planning Strategies and Principles, which provides a broad framework to assist and strengthen community resilience to bushfire
• Clause 44.06 Bushfire Management Overlay and associated Clause 52.47 Bushfire Protection Planning requirements

• Clause 22.14 Wildfire Management seeks to ensure new development does not increase the level of fire risk and include adequate fire protection measures.

2.2 All of the above planning requirements were considered in the development of the Bushfire Management Statement developed as part of the Bushfire Risk Assessment (Practical Ecology June 2013) provided to support the proposed rezoning and subdivision. It was found that the requirements of the planning provisions could be met with appropriate subdivision design.

2.3 The larger issue of whether or not “the risk to human life, property and community infrastructure from bushfire can be reduced to an acceptable level” in the proposed rezoning is difficult to determine because of the lack of clear definition and thresholds for the requirement. This statement will detail that the bushfire risks on the site can be adequately addressed and reduced to an acceptable level in our view.

2.4 It should be noted that Clause 44.06 was changed in July 2014 and there has also been a relevant Practice Note released by DTPLI: Planning Practice Note 65 July 2014 Preparing and Assessing A Planning Application under the Bushfire Provisions in Planning Schemes. These changes most significantly affected the calculation of required fuel reduced buffers around individual dwellings but the landscape hazard assessment procedures remain largely similar. Despite these changed planning rules the bushfire risk assessment undertaken for the site remains accurate primarily because the landscape hazard and fuel load assessments remain roughly the same under the new provisions. The only significant change that is likely under the new rules is that the required fuel reduced buffers will be less than previously required.

3. Whether the location of the site is appropriate for residential development given the bushfire hazard near the site and in the wider landscape

3.1 I found that the site is appropriate for residential development as the bushfire risk can be reduced to an acceptable level. A detailed site assessment is provided in the Practical Ecology Bushfire Risk Assessment (2013) and this will be summarised and updated against current planning policy and support material.

Site description

3.2 The site is located approximately 3km southwest from the centre of Castlemaine and approximately 1km west from the existing urban area of Castlemaine. The site is accessed by Diamond Gully Road to the north, Sluicers Road to the east and Ranters Gully Road to the south. The site has an irregular shape, and is comprised of 35 allotments with a total area of approximately 47 hectares, which includes the properties listed above under instructions provided.
3.3 The site is currently zoned partially Rural Living Zone (RLZ) and partially Township Zone (TZ). The study site abuts a fragmented remnant of Box–Ironbark forest in an otherwise largely cleared landscape to the south and west associated with the more fertile agricultural areas towards the Muckleford Creek and the Loddon River. A golf course is located to the north–west of the site adjoin the Pyrenees Highway. In other directions beyond the adjacent developed areas of Castlemaine, McKenzie Hill and Campbells Creek, the landscape is dominated by Box–Ironbark forest such as to the south–east and north–east, or a mixture of forest and cleared areas such as occurs to the north–east.

Topography

3.4 The site contains Ordovician sedimentary soils and complex undulating topography, with altitude ranging from approximately 300 to 330 m above sea level. The soils are old and typically have low permeability and fertility with shallow depth on the rises often with exposed rock. While there are various peaks and gullies across the site there are two pronounced gullies that run in a south–east to north–west direction. The more significant of these gullies is the cleared area. The other major gully is the adjacent gully to the west. Both gullies eventually drain to the swampy area at 70 Diamond Gully Road to the north. In the west of the site the land is undulating and complex in topography.

3.5 Most slopes are less than 10 degrees. However, some slopes, particularly south of the site, approach 15 degrees. A small section of slope above the swampy area of 70 Diamond Gully Road is greater than 15 degrees – this slope is likely affected by the adjacent quarry. There are also large portions of the site that contain slopes of less than 5 degrees; much of which had been cleared for agriculture.

Vegetation and fuel loads

3.6 Approximately half of the subject site consists of grassland with limited trees. The south–western portion is treed and consists of four Ecological Vegetation Classes (EVCs): EVC 61 Box Ironbark Forest (Depleted), EVC 22 Grassy Dry Forest (Depleted), EVC 47 Valley Grassy Forest (Vulnerable), and EVC 67 Alluvial Terraces Herb–rich Woodland (Endangered). The first of these EVCs is the most abundant, with the latter three generally confined to smaller sections. The remnant vegetation on site is typical of the Box–Ironbark forests on public land that adjoins the site and is widespread across the Goldfields region.

3.7 As is common in Box–Ironbark vegetation, the entire site has suffered significant clearing and disturbance in the past as there are very few old trees present, most of which are confined to drainage lines. The entire site, much like the surrounding Castlemaine area has suffered significant disturbance in the past. There are very few old trees present as much of the forests have been harvested and are now coppice regrowth and/or young trees. The soil profiles have been severely diminished from past clearing, disturbance and erosion. Consequently, forest structure and fuel or biomass levels have been significantly affected since European settlement.
3.8 Due to the characteristic poor soils and low rainfall typical of Box-Ironbark Forests in central Victoria, fuel levels are limited. A typical assessment of the bushland areas would provide an overall fuel hazard (Hines et al. 2010) of moderate, although some areas with high level of near surface fuels would give an overall fuel hazard of high.

3.9 The “woodland” vegetation classification used in the BMO rating assumes a fine fuel load of between 15t/ha surface (i.e. all understorey but excluding canopy) and 25t/ha total (i.e. with canopy) (i.e. 15/25 t/ha). Assessments carried out by Practical Ecology staff indicate that the typical load across the site ranges up to 21 t/ha. On site fuel load assessments indicate that the levels are consistent with the range within the “woodland” fuel load classification.

3.10 Planning for Bushfire Victoria – Guidelines for Meeting Victoria’s Bushfire Planning Requirements provides specific detail on considering landscape risk under Clause 52.47-3 Location Objective and the relevant standard BF3: “Development should avoid locations where the risk to life, property and community infrastructure from bushfire cannot be reduced to an acceptable level through bushfire protection measures.”

3.11 Clause 52.47-3 also provides the following decision guidelines:

- The characteristics of the bushfire hazard including the type, area and location of vegetation
- The topography of the land and its potential impact on the intensity and severity of bushfire
- The likely bushfire behaviour at both the local and broader scale
- Access and egress both to the site and within the site
- The proximity of the site to established urban or township areas
- The impact of bushfire protection objectives under the Bushfire Management Overlay and any schedule to the overlay on the level of risk.

3.12 To assist the implementation of the decision guidelines Planning for Bushfire Victoria (CFA 2012) provides example landscape scenarios to consider landscape risk and how this may affect the application of the standards within Clause 52.47 of the planning scheme, including the defendable space determination as derived from AS3959-2009 Construction of buildings in bushfire-prone areas. The intention being to consider if the inherent assumptions and inputs of the models adequately reflect the particular landscape circumstance in question and hence if the protection measures within 52.47 will reduce the risk to an acceptable level and thus meets the objective and relevant strategies of Clause 13.05.

3.13 Four landscape scenarios are presented and these are shown in Figure 1 below (CFA 2012).
3.14 Landscape conditions around the site demonstrate that the proposed urban development would be in Landscape Scenario B. It has an absence of conditions required to generate ‘fire storms’ or the more extreme fire behaviour detailed in Scenario C and D. Conditions in the surrounding landscape include:

- woodland vegetation with moderate fuel loads
- relatively benign undulating topography with slopes rarely exceeding 10 degrees
moderate to low level of connected bushland from the most high risk fire–weather wind directions being the north through to south–west; and a lower level of connectivity from the lesser risk fire–weather wind directions: north–east through to south

good access and egress to established urban and township areas can be established.

3.15 Landscape Scenario B occurs in established urban areas that are in close proximity to bushland. In these environments burning elements are predominantly from the urban landscape such as buildings, fences, sheds, and clumps of vegetation. Here there is no fire–front per se as assumed in AS3959–2009 but rather a number of fires and separate distinct fuel sources due to ignition from airborne embers and fire–brands that have resulted from near–by bushfire. These sources can provide significant radiant heat and may result in fires spreading from house to house. These conditions could occur in the more developed areas of the site. Management of fuels in the urban environment including landscape design around dwellings and building standards such as AS3959–20090 are essential in managing this risk.

3.16 Given the landscape considerations convective energy will be limited and hence the associated impacts with a ‘firestorm’ including extensive pyrocumulous formation and cyclonic fire–driven winds are not a feature of bushfires in the surrounding landscape.

3.17 Another consideration of fire behaviour is residency time due to the burning of coarse fuels. Given the young age and poor growing conditions of the forests around Castlemaine and the site there is very little coarse fuel in the landscape. Hence, residency time for fire is limited and the fire behaviour exhibits a short pulse of high intensity behaviour that decreases rapidly to low intensity levels following the burn–out of fine fuels.

Strategic bushfire planning context

3.18 Practical Ecology’s Bushfire Risk Assessment included a general investigation of possible development areas around Castlemaine as the CFA requested at the time and consideration of the appropriateness of the site in the context of other possible options for new urban development around Castlemaine. The process had been undertaken generally by Mount Alexander Shire Council prior to selecting the Diamond Gully area as the preferred area for expansion but more detailed review was requested by the CFA. Strategic planning done by Mount Alexander Shire Council over time, as detailed in the Bushfire Risk Assessment (Practical Ecology 2013), does demonstrate the need for more urban development and the appropriateness of the Diamond Gully area because of a wide range of factors.

3.19 After assessing a range of urban development options around Castlemaine it is clear that any green field development would be exposed to and need to consider the bushfire risk including consideration of risks associated with treed remnant vegetation and the forest/urban interface. There also appears to be little potential for substantial
areas of residential expansion around Castlemaine due to surrounding areas of native vegetation. Furthermore, there does not appear to be clearly apparent alternative lower risk locations to the subject site where residential development can proceed and address the identified supply requirement.

Conclusions

3.20 In consideration as to whether the location of the site is appropriate for residential development given the significant bushfire hazard in the wider landscape, I have considered the nature of the landscape and fuel loads in the local area including the factors that influence fire behaviour and the potential impact on life and property.

3.21 In my opinion there is an absence of detail from planning authorities regarding a metric or scale for considering what an acceptable level of risk from bushfire is at the re-zoning level. Practical Ecology has employed the considerations of assessing an acceptable risk at the subdivision and building permit stage within the planning scheme and supporting documentation. As part of this evidence, I have also considered the broader bushfire risks and risk management framework detailed in various relevant government policies and documents.

3.22 Despite the abundant wooded areas around Castlemaine, around the site and on the site, there has been few significant bushfires that have affected the township over time. This is likely because of a range of factors but most prominently the fragmented nature of the local landscape with limited patches of bush with low fuel levels because of poor soils and low rainfall.

3.23 I have found that while some bushfire risk would occur after subdivision, the level is not outside the acceptable parameters used within the planning scheme or contrary to the strategic bushfire risk management framework in place. Development at this site can also mitigate the fire risk to nearby and adjacent properties to the east by providing more bushfire resilient and secure land management at the interface between bushland and residential development than currently exists.

4. Design Response in the Master Plan

Subdivision layout

4.1 Clause 52.47–4 provides siting and layout objectives and standards for development, these include:

- Minimise the bushfire risk having regard to slope, access, aspect, orientation and vegetation.
- Avoid or minimize the removal of vegetation.
- Site new buildings as far from the bushfire hazard as practicable.
• Minimise the need for long access and egress routes through areas of bushfire hazard and locate habitable buildings as close as practicable to property entrances.

• Provide safe access and egress for emergency services.

4.2 Planning for Bushfire Victoria (CFA 2012) provides further detail on how these should be applied at the subdivision level. Subdivision layout and design guidelines to minimise the bushfire risk include:

• Group development to areas of low fuel away from the bushfire hazard

• Minimise the extent of the perimeter of a subdivision exposed to the hazard by employing a simple consolidated subdivision design

• Provide clear separation from the bushfire hazard through the use of perimeter roads and other low-fuel treatments

• Ensure defendable space is provided and is managed appropriately

• Ensure access and egress is sufficient by limiting length and avoiding travel adjacent or through the bushfire hazard

4.3 The proposed subdivision design developed by Roberts Day and presented in the Bushfire Risk Assessment (Practical Ecology 2013), with a minor variation in the proposed Rural Living Zone blocks to be retained, affects these guidelines through the following considerations:

i. Placement of lots to avoid the most densely, continuous and steeply sloping bushland of the site

ii. Consolidating most of the development in the open low fuel areas of the site

iii. Employing perimeter roads around the areas of urban development

iv. Detailed design lots proposed for the edge of the forest interface can be designed to ensure BAL-19 levels by using perimeter roads as firebreak and setting houses back on each block to achieve the required fuel reduced buffer

v. Placing two houses in the proposed Rural Living Zone blocks to the west close to the road and each other to limit clearing and maximise safety in a bushfire event

vi. The roads can be designed to minimise length access and egress routes close to hazardous fuel loads
5. Impacts on Native Vegetation

5.1 The development as proposed by Diamond Gully Estate Pty Ltd goes beyond the proposed urban development footprint put forward as part of the Diamond Gully Structure Plan. The Structure Plan excludes development in the areas of the site with larger patches of remnant vegetation.

5.2 The ecological assessment by Cheers (2012a and 2012b) was done under the provisions of the Native Vegetation Framework as was the original analysis of the Diamond Gully Structure Plan. Cheers (2012a) determined the habitat scores of the mapped habitat zones on the site.

5.3 Much of the bushland areas with higher habitat scores, including Sites 1, 2, 3, 4, 5, 6 and 9, are all above 55. They all have Understorey scores of 15 out of 25 indicating fairly good understorey but missing many life forms. They have a Lack of Weeds score of 15 out of 15 indicating almost a weed free condition indicating good ecological condition. All of these sites are in the western end of the site and would mostly be retained in both the proposed subdivision and in the Diamond Gully Structure Plan.

5.4 Sites in the south central portions of the site, including Sites 7, 8 and 10, have lower scores ranging from 44 to 51. The Understorey score is 5 or 10 out of 25 indicating a depleted and disturbed understorey. The Lack of Weeds score ranges from 13 to 9 out of 15 indicating a small level of weed invasion. Most of these sites would be cleared within the proposed subdivision as presented but would be retained in the Diamond Gully Structure Plan as it is presented. These are lowest quality areas of remnant native vegetation on the site.

5.5 Sites in the north of the site around the old quarry, including 11, 12, 13, and 14, range in score from 24 to 44. Three out of four have Understorey scores of 15 out of 25 indicating high understorey cover but being depleted in life forms somewhat. The Lack of Weeds ranges from 0 to 9 out of 15 indicating that weed cover is probably significant. Site 12 is small and actually has 4 Large Old Trees so is one of the few sites with that important ecological feature. All of these sites would be retained in the proposed development.

5.6 Sites 15 and 16 on the eastern edge of the site are relatively high scoring with scores of 49 and 55 respectively. Site 16 is quite small and even has 1 Large and 1 Very Large Old Tree which skews the score by increasing the Large Old Trees score but still having a significantly depleted Understorey. Understorey scores are fair and weed levels are likely moderate. These areas are long and narrow and would be in road reserves where there may be some room for tree retention but the understorey would need fuel reduction in both the Structure Plan and in the proposed subdivision being considered.

5.7 Cheers (2012a) also found that there were very few Large Old Trees in any of the habitat zones or present as scattered trees, as indicated in his tables of habitat zone score. This is another indication of the substantial disturbance that has occurred in all
of the bushland present on the site in the past; all habitat zones were likely all cleared of trees in the past and have regenerated in the last 50 or so years.

5.8 Under the current clause 52.17 of the Mount Alexander Planning Scheme I am obligated to follow the procedures under No Net Loss guidelines and the Biodiversity Assessment Handbook, which uses a framework of different levels of risk to indigenous biodiversity. The Practical Ecology No Net Loss Analysis (June 2014) indicates that all of the remnant vegetation on the site would be in the Low Risk category but the quantity of clearing, greater than 1 ha, means that the proposed clearing would be of moderate risk to indigenous biodiversity.

5.9 Under a ‘Moderate-risk’ based pathway the proponent is required to detail how the application has minimised the impacts of the removal of native vegetation on biodiversity. In this instance the proponent has located the subdivision so that it is mainly within the already cleared areas of the study site. The most recent plan, as presented in the Practical Ecology No Net Loss report (July 2014) has also repositioned the dwellings on the retained Rural Living blocks to be closer to the urban subdivision in order to minimise the clearing that is required for the defendable space of the dwellings. Furthermore, the low density dwellings on the Rural Living blocks that would remain would be built to a minimum of BAL 19 requirements rather than BAL 12.5 which would result in more clearing being required. In addition, the highest quality native vegetation on the site, i.e. in the western end and in the north around the quarry, would be retained.

5.10 The level of clearing proposed by Diamond Gully Estate Pty Ltd is greater than the level proposed within the Diamond Gully Structure Plan as the Structure Plan has been designed to avoid clearing any large patches of native vegetation. However, the proposed subdivision has still generally been designed as the planning scheme requires in that clearing of the areas of higher significance vegetation have been avoided and minimised while only lower quality areas of native vegetation would be lost. The planning provisions do not prohibit clearing but simply provide guidance in how to design development to avoid and/or minimise impacts.

6. Native Vegetation Offsets

6.1 There is a limited potential for the placement of native vegetation offsets within the subdivision in the large Rural Living Zone blocks that would remain in the southwest portion of the site.

6.2 CFA guidelines state that (CFA 2012) "any revegetation or native vegetation offsets within the 150 metre BMO assessment area should not:

- alter the predominant vegetation class that has been used to calculate defendable space and level of bushfire attack
- prevent defendable space from being established and maintained
• have an impact on the defendable space of existing adjacent development (in the same or separate ownership.)

6.3 Any native vegetation offsets would be located outside of the required defendable spaces and would be consolidated in large blocks rather than distributed throughout the site. They would not significantly alter the nature of the vegetation or the associated bushfire hazard as the management required for an offset will be quite similar to the current management regime of non-interference. The Box-Ironbark Forest, Heathy Dry Forest and Grassy Dry Forest that could be managed as offsets has inherently limited capacity for generating significant fuel loads and it is likely that current fuel loads would continue if the larger blocks of bush were managed as native vegetation offsets. With these factors considered I am sure that the patch of remnant forest that would be retained could be used as an offset.

6.4 The offsets required for the subdivision as proposed by Diamond Gully Estate Pty Ltd would total approximately 0.022 general units and 11.434 units of habitat for Arching Flax-lily *Dianella sp. aff. Benambra*. Some of the offsets available on the site itself in the retained native vegetation are likely to satisfy the requirements but most would have to be purchased from a third party offsite. The quantity of species-specific offset required is significant and it is difficult to know if these offsets would be available without investigation. Sourcing offsets is a matter for the future applicant for specific planning permits.

7. Comparison of the Master Plan with the Diamond Gully Structure Plan

7.1 The most significant difference between the proposed Master Plan and the Diamond Gully Structure Plan is the level of residential development and rural living lots on the site being considered in this statement. There is an interaction between development, associated fuel reduction required and native vegetation so both issues will be discussed in this section.

7.2 The Diamond Gully Structure Plan proposed a narrow strip of small lot residential development on the east side of the site with 5 ha lots to the west and 2–5 ha lots to the east of the urban residential development on other properties. These latter larger lots would presumably comply with the current Rural Living Zone that covers the site. In my view these proposed Rural Living Zone lots are problematic in that they will create areas where residents will face significant bushfire risks while also having a significant impact on native vegetation because of the need to clear significant areas of vegetation to develop a dwelling.

7.3 Dwellings and residents on larger Rural Living Zone lots of 2 to 5 ha will be at significantly higher risk of bushfire impacts than urban residential dwellings. On larger lots in bushland settings dwellings and required fuel-reduced buffers can be created and many design features, such as perimeter roads, clustering houses, short driveways etc., can reduce bushfire risks. However, homes will still be distributed through bushland that is a fuel hazard and access will also be problematic if bushland fuel loads are adjacent to driveways and roads. To put it simply standard urban small
lot development creates much safer homes for future residents because of the road layout and intensive management of road reserves and private gardens.

7.4 Lots of 5 or 2-5 ha, as proposed for the southern end of the Diamond Gully Structure Plan, are also inefficient in providing dwelling stock when comparing the impacts on native vegetation with the numbers of house sites created. All of the land proposed for these larger Rural Living lots are currently vegetated and would be significantly fragmented and degraded by the proposed development outcome. Distributing infrastructure and homes in the bushland will create very minimal new dwelling stock but have high environmental impacts.

7.5 It is more than possible to take areas of native vegetation and create room for access, infrastructure and dwellings but the impacts on native vegetation are quite significant in Rural Living Zone style developments while relatively few new opportunities for houses are created. The dwellings, access roads, utility installations and fuel reduced buffers easily add up to 1 ha of impact per dwelling. Therefore a dwelling on 2 ha means that half of such a site would be cleared while a dwelling on 5 ha means that a fifth of that site would be cleared. Access roads and utility installations add to the fragmentation and degradation.

7.6 It is likely that planners, and residents, are attracted to Rural Living Zone type developments to achieve some development while conserving amenity and some native habitat. However, in my experience Rural Living or Rural Residential development is inevitably a significant environmental impact when done in areas of remnant vegetation and should be limited to cleared areas. If achieving certain targets of dwelling stocks are required then standard small lot urban development achieves more dwellings with less risk to future residents from bushfire and remnant native vegetation.

7.7 The proposal put forward by Diamond Gully Estate Pty Ltd would put intensive urban development in areas proposed for 5 ha lots by the Diamond Gully Structure Plan. However, there would still be significant environmental impacts and substantial loss of native vegetation on the proposed 5 ha lots with very few new dwellings provided. If maximising new dwelling stocks **while** minimising loss of native vegetation is a key objective then the design put forward for the site by Diamond Gully Estate Pty Ltd will achieve a better balance than the proposed Structure Plan.

8. Overall Conclusions

8.1 The development proposed by Diamond Gully Estate Pty Ltd was found to meet the required level of safety required under relevant bushfire provisions in the Mount Alexander Shire Planning Scheme.

8.2 The development proposed by Diamond Gully Estate Pty Ltd would result in losses of native vegetation on their site but the clearing proposed does meet the requirements of the Mount Alexander Shire Planning Scheme in that areas of lower quality vegetation would be cleared and highly quality areas would be retained. In addition,
the design as proposed would result in greater yield of dwelling stock with a similar impact on native vegetation because urban and rural residential development can have similar impacts.

Finally, I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance that I regard as relevant have to my knowledge been withheld from the Tribunal.

Lincoln Kern, Ecological Consultant and Managing Director  Date:  21 August 2015
Curriculum Vitae: Lincoln Kern

Date of Birth 1 February 1963

Lincoln was trained in botany and environmental science in the United States and has been working in the environmental field in Victoria on a full-time basis since 1991 including time with the Merri Creek Management Committee, the National Trust Save the Bush Program and Greening Australia Victoria. Lincoln has run Practical Ecology Pty. Ltd. since November 1993, offering an integrated service for managers of native vegetation and developers as required.

Lincoln has provided relevant and realistic management advice because he has extensive experience with costing, planning and doing the required physical works and sharing the whys and hows of reconciling development and nature conservation objectives with staff and the public. He also specialises in devising vegetation management systems that are clear and useful to every person involved and interested in managing vegetation, whether amateur or professional.

Education

April 2014 Suppressing Wildfire and Planning Prescribed Burns
Training required to work on a fire crew and implement prescribed burns accredited by Timber Training Creswick Pty Ltd – since this time I have participated in several prescribed burns

November 2013 Design and Building Bushfire Prone Areas Course
Week-long course run by University of Technology Sydney on preparing Bushfire Attack Level Assessments and Bushfire Management Statements and designing development and building in response to AS3959 and the relevant Victorian Planning Scheme provisions.

November 2005 Wildfire Management Overlay Implementation Course
Week-long course sponsored by the Country Fire Authority to train people in designing developments to meet the requirements of the Wildfire Management Overlay in Victoria

Deakin University, Rusden Campus. Part-time: Begun February 1995 and completed in April 1998.

1992 Bush Regeneration Supervisors Course
Organised by National Trust, Victoria. A course exploring management skills, the role of management plans and monitoring programs in bush regeneration.

1990 Bush Regeneration Techniques Course
Organised by National Trust, Victoria. A course emphasising plant identification and ecology and technical skills needed to manage bushland.

Winter 1988 Rainforest Field Studies
Semester–long field course in Guatemala and Belize organised by University of California at Santa Cruz
### Permaculture Design Course

February 1987  
Organised by Aprovecho Institute, Cottage Grove, Oregon USA and presented at Solala Agriculture College, Guatemala

1986  
**B.A. Antioch College, Yellow Springs, Ohio, USA**  
Major in Biology with course work in Botany, Environmental Studies, Anthropology and Education

### Employment History

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<tr>
<th>Date Range</th>
<th>Position and Organization</th>
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<tr>
<td>2007 to 2011</td>
<td>Governor–in Council Appointee on the Alpine Resorts Coordinating Council</td>
<td>Responsible for contributing to general business, chairing the Sustainability Committee of the Council and attending Environmental Officer Forums.</td>
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| 1993 to present | Practical Ecology Pty. Ltd. – Ecological Consultant and Managing Director | Consulting and contracting business specialising in native vegetation management. Services include:  
- vegetation management ecological restoration project designs  
- flora and fauna surveys & management plans  
- preparing bushfire management plans and wildfire management statements  
- coordinating planning processes requiring reconciliation of conservation and development objectives  
- expert witness representation at VCAT and Planning Panels  
- education services including plant ID, land management planning, net gain and planning policy etc  
- community group coordination and/or support  
- coordination of contract works including revegetation, wetland planting and remnant vegetation management |
| June 1998 to May 1999 | Wellington Shire Council – Environmental Planner | Provided environmental advice to Council and officers with roles in commenting on planning permits and developing a wide variety of environmental programs. |
| 1993/94 | Victoria University of Technology, Melton LEAP PROGRAM – Part time supervisor based at Taylor's Creek, Keilor. | Supervision and formal training of program participants students in regeneration work in a suburban creek valley. |
| June 1991 – Nov 1993 | National Trust ‘Save the Bush’ – Part time Technical Supervisor | Development of works programs for and supervision of bush regeneration crews  
- vegetation surveys  
- developing and presenting bushland management courses  
- working with community groups. |
| June 1992 – June | Greening Australia Victoria – Part time Project Officer, Urban Program | Assessments for Parks and Waterways community grants  
- Conservation project advice to community groups |
<table>
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<tr>
<th>Year(s)</th>
<th>Position and Description</th>
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<tbody>
<tr>
<td>1993</td>
<td>Coordination of education programs and community information days</td>
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| May 1991 – June 2003 | **Council of Adult Education** – Casual Tutor  
Self developed and run short courses in:  
- Natural history  
- Field botany  
- Organic gardening and permaculture |
| 1991–92    | **Merri Creek Management Committee** – Revegetation Crew Member  
- Site preparation and maintenance,  
- Direct seeding and tubestock planting  
- Remnant vegetation management. |
| 1984       | **Coordinator** – **Environmental Field Program** Antioch College Science Institute, Yellow Springs, Ohio USA. As one of three coordinators, developed and implemented the curriculum and itinerary of a 3 month field program for adults in Arizona and New Mexico. |