

Paper 8B

MISUSE OF ISO 31000 BY AUSTRALIAN FIRE AUTHORITIES The Victorian fire Risk Register process

In recent years, the planning arms of Australian fire agencies have applied a risk management model to determine risk level. The Victorian Fire Risk Register (VFRR) is based on a concept that originated in NSW. The VFRR (now also called VFRR-B) claims to be a systematic process that identifies assets at risk from bushfire and assesses their level of risk on a consistent state wide basis using ISO 31000 Risk Management (McCann, 2013). For example, VFRR was used to determine the bushfire risk for municipal fire protection plans within the Hepburn Shire (2011 – 2014) and Macedon Ranges Shire (2012 – 2015).

But there are two fundamental problems. Firstly, ISO 31000 is not designed for or relevant to broad area bushfire risk assessment or management. The ISO web site makes it very clear that firstly, “ISO 31000 cannot be used for certification purposes”, and secondly, that ISO 31000 is designed for risk management within an organisation - “Risks affecting organizations can have consequences ... Therefore, managing risk effectively helps organizations to perform well in an environment full of uncertainty.” AS/NZS ISO 31000:2009 defines risk as “the effect of uncertainty on objectives”. It adds that an “effect” is a deviation from the expected, positive or negative”. We suggest this definition is not relevant to bushfire management. It adds that “Risk is often expressed in terms of a combination of the consequences of an event and the associated likelihood of occurrence (of that event)”. It envisages that if an event impacts the organisation, it will have consequences. Thus the risk is proportional to the event occurring. Secondly, the VFRR risk ratings have no correlation to ISO 31000, and are in effect, a confusing and distorted replica of it.

Nevertheless, McCann (2013) said the **VFRR-B** process has now identified 750 separate areas with high to extreme risk in the Human Settlement - Residential Asset Subclass. This incorporates over 140,000 houses.

How do the fire authorities apply VFRR knowledge?

McCann (2013) explains that “we (CFA) can now demonstrate to key stakeholders, partners and community that we have a common understanding of risk and that we are prioritising our activities and services to mitigate or manage that risk.” In addition, the risk register informs local decisions about:

- Deployment of resources for fire prevention and community preparedness activity.
- Targeting community safety services. For example, every community in an extreme risk area has their own tailored Community Information Guide. In the same way our Home Bushfire Advice Service while available to all Victorians, is targeted to the extreme risk areas.

And finally, “on another level VFRR drives our campaign to increase efforts in local fire prevention and vegetation management, that is reduce the hazard areas of most risk.” The meaning is unclear, but we think it means there is a campaign to reduce hazard in highest risk areas.

The Office of the Fire Services Commissioner use VFRR when preparing municipal fire protection plans via the Integrated Fire Management Planning (IFMP) process.

We observe that Municipalities are increasingly using VFRR as a reference to assess risk level for design and fortification standards of new houses.

This paper examines the VFRR process, and unfortunately reveals to the reader how it bears no relationship to ISO 31000 and how confused and confusingly ineffective the VFRR is.

ISO 31000 RISK RATING

The risk rating of ISO 31000 is generated by the inputs Consequence and Likelihood. Consequence measures the impact of an event on the organisation, on a scale that ranges from irritation to catastrophe. Likelihood is the chance of that event occurring and causing damage. The consequence scenarios include whether defences are in place or not, and this allows risk managers to determine the costs of defences and whether they are a reasonable investment.

What is appropriate use of ISO 31,000 for a bushfire scenario?

Answer - when the organisation needs protection from the bushfire. The organisation could be a business or a building or could be a group of houses where the risk and consequence issues are uniform. It is not suitable to apply to a municipality because the variability in risk and consequence issues is too great.

Risk Rating process

Staying true to the ISO 31000 model, if the event is a one day inferno bushfire, and the organisation is a group of houses, Consequence would range from zero loss if they are well prepared and defended, to replacement value if destroyed. Likelihood has to be more carefully considered. We distinguish between Likelihood of occurrence of the event and Likelihood of damage if the event occurs.

Likelihood of occurrence of the event: If there was no defence system, the likelihood of bushfire destroying the houses would be conditional on many factors - the chance of the one day inferno fire occurring in the area and attacking them and conditional on its ability to cause damage. We can safely propose that in any given area, the probability of random alignment of spark / fuel / wind strength and direction and asset is negligible. This is the non adversarial Threat scenario. It is not helpful from the risk management point of view because negligible risk will not encourage investment of resources for defence. It does not meet the adversarial Threat scenario, where a ne'er-do-well assailant waits for the alignment and provides the spark, the asset would be attacked.

Nor is it helpful to use historical bushfire incidence data. Eg, if a severe bushfire event has not happened in last 50 years, will it ever happen? Or if a severe fire occurred last year, but the previous one was 50 years ago, are we safe for the next 50 years? This is not appropriate because it is unwise to predict the future based on past history.

Likelihood of damage if the event occurs: This Likelihood assumes the event will happen any time, ie, if it happened this year, what is likelihood of damage? It answers these questions - Can a one day inferno fire physically happen in this area and threaten the assets? Is fuel upwind of house that will generate damaging flame and embers in severe weather? These answers determine if a severe bushfire can threaten the assets, but whether damage is likely or not, depends on other factors, including the quality of the defence system and the vulnerability of the houses. We believe this is the appropriate Likelihood for the ISO 31000 model.

In summary:

Consequence is a function of house valuation less insurance cover and Likelihood is **Likelihood of damage**, which is a function of upwind fuel bed, defence system and vulnerability of houses.

Because **Risk = Consequence X Likelihood**, Risk is a function of house valuation less insurance cover, upwind fuel bed, defence system and vulnerability of houses. This application of ISO 31000 will give a reasonable risk profile for the group of houses when the threat event is a severe bushfire attack.

Application of ISO 31000 risk rating

Armed with this knowledge, we expect the risk managers will begin deliberations with the total house loss / zero defence scenario and obtain house valuations and insurance coverage levels to determine net value. They will then consider different levels of defence scenarios and obtain costs for infrastructure, and apply respective capabilities to determine net value for partial house loss to zero house loss (costs – losses). The ISO model aims to create value. It asks - what is the cost of defence and is it greater than the loss if no defence expenditure occurred? Resources expended to mitigate risk should be less than the consequence of inaction.

VFRR PROCESS

How VFRR rating works

McCann (2013) explains that risk rating is generated by Consequence and Likelihood. **Consequence** rating is derived from “**Threat** joined with **Vulnerability** assessments”. For example, “when assessing in the Human Settlement asset class, vegetation type, topography and separation distance contribute to the assessment of threat”. **Likelihood** considers past fire events and knowledge of fire behaviour, in line with set fire scenario conditions. Assessments are said to be supported by data and local knowledge allowing both subjective and objective (McCann, 2013).

One version of VFRR

Macedon Ranges fire plan 2012 – 2015 (MRFP) was prepared in accordance with the VFRR process. It is used as a supplementary document to McCann’s (2013) brief paper. In the explanatory section, MRFP explains (not referenced) that in the natural hazard environment it is appropriate to use the Hazard*Exposure*Vulnerability pyramid, ie, **Risk = Hazard X Exposure X Vulnerability**. It says this expression for risk is specifically designed for identifying those at risk from natural hazards and “**is consistent with ISO 31000 (Risk = Likelihood x Consequence)** (again not referenced). This format acknowledges the characteristics of the natural hazard risk environment where likelihood is relative to the exposure to the hazard and consequence is relative to the vulnerability of those who are or what is, being impacted. Vulnerability is reliant on existing condition and the capability and capacity of those who may be impacted by the unique elements and characteristics of a bushfire”.

In summary:

Likelihood is said to be a function of Exposure to the hazard

Consequence is said to be a function of Vulnerability, which is a function of the condition and capability of the house owners.

Therefore, because **Risk = Consequence X Likelihood**, Risk is a function of Exposure to the hazard and Vulnerability of the house owners.

Our comment:

This seems to have minimal relationship to **Risk = Hazard X Exposure X Vulnerability**
It seems to have no meaningful resemblance to **Risk = Consequence X Likelihood**

Vulnerability (potential for damage) of the houses is not a direct indicator of consequence (value of damage). Exposure to the hazard is not a direct indicator of likelihood of harm unless the hazard ignites on a severe weather day.

Note: In the text, the MRFP actually mentions three types of Likelihood as follows:

Likelihood is a function of exposure to vegetation hazard

Likelihood of fire is a function of fire season length and severity of weather **

Likelihood of a fire being contained at extended first attack is a function of hazard and severity of weather

It confirms the authorities regard Consequence is related to vulnerability of objects under attack.

** MRFP says it plans for FDI > 25. It assumes that bushfires can cause damage to property and injury on days when forest or grassland fire danger rating is very high or greater (FDI > 25).

Another version of VFRR

The foregoing version of VFRR differs from McCann (2013), who regards Consequence is a function of Threat and Vulnerability. Threat is derived from vegetation, topography and separation distance. Vegetation and topography are used by fire authorities to estimate fire behaviour. This means Threat is an indicator of proximity to flame in the closest vegetation, as measured by separation distance. This process is confirmed and elaborated in the MRFP. For a nominated human settlement asset, vegetation type, slope and separation distance for the asset feed into a fire behaviour model to produce a Threat rating. Vulnerability of the asset (source MRFP) is assessed using the criteria of access and egress, water supply, education levels, whether the properties are prepared, and construction standards. The VFRR process combines the Vulnerability rating with the Threat rating to produce a Consequence rating for a Bushfire impacting the human settlement asset.

MRFP explains there are also Consequence ratings for local economic impact, environmental impact and local cultural impact.

The level of economic impact is assessed on impact the loss of this asset would have (Local, Regional or State), as well as the recovery costs (time and dollars to get the asset back to a functional capacity). These two factors produce the consequence rating for a Bushfire impacting on the identified asset. This category seems to refer to a commercial asset. We can see no reference to valuation of houses in any of the Consequence ratings.

McCann (2013) regards Likelihood as a function of fire history and fire behaviour at high FDI. MRFP explains that the likelihood of a bushfire occurring considers ignition history data, potential fire path, spotting and ember attack and local knowledge.

In summary:

Consequence is said to be a function of Threat and Vulnerability and

Likelihood is **Likelihood of fire occurrence**, which is a function of ignition history data, potential fire path, spotting and ember attack and local knowledge

Because **Risk = Consequence X Likelihood**, Risk is a function of Threat and Vulnerability, and likelihood of fire occurrence (ignition history data, potential fire path, spotting and ember attack and local knowledge).

Our comment:

This seems to bear no relationship to **Risk = Hazard X Exposure X Vulnerability**
 It seems to have no meaningful resemblance to **Risk = Consequence X Likelihood**

Consequence (value of damage) has no correlation with Vulnerability (potential for damage) nor with Threat (proximity to flame in vegetation). For example, a computer hacker may live next door to me, but that does not mean my computer system is at risk. Furthermore, Likelihood of fire occurrence has no correlation with potential for damage of the assets. For example, there are many conditional steps between chance of fire ignition and damage to houses, and they are all manageable. This means use of "Likelihood of fire occurrence" in the risk profiling model will be biased towards to excessive and non-quantifiable over-exaggeration.

Summary so far

The indicators used by VFRR claim to be related to the risk profiling tools of ISO 31000 (ie, consequence of damage and likelihood of damage), but in reality they are not. The indicators used by VFRR assume that proximity to a flame or vulnerability of the houses are automatic measures of damage potential and therefore risk level. The indicators are therefore impractical and unreliable for useful or effective risk profiling. Use of the indicator "Likelihood of fire occurrence" instead of "Likelihood of bushfire caused damage" incorporates excessive over-exaggeration in risk ratings.

VFRR Risk Matrix

Fire authorities require Municipalities to apply the following risk matrix to determine the risk level of assets or areas:

Qualitative Risk Analysis Matrix – Level of Risk:

| LIKELIHOOD | CONSEQUENCE | | | |
|------------------|-------------|------------|----------|----------------|
| | 1 MINOR | 2 MODERATE | 3 MAJOR | 4 CATASTROPHIC |
| 5 ALMOST CERTAIN | MODERATE | HIGH | HIGH | EXTREME |
| 4 LIKELY | MODERATE | HIGH | HIGH | EXTREME |
| 3 POSSIBLE | LOW | MODERATE | HIGH | HIGH |
| 2 UNLIKELY | LOW | MODERATE | MODERATE | HIGH |
| 1 RARE | LOW | LOW | MODERATE | MODERATE |

The five levels of Consequence and five levels of Likelihood, and both have been semi-quantified in the following Tables. We observe that Likelihood is Likelihood of bushfire occurrence, not Likelihood of bushfire-caused damage.

Qualitative Measures of Consequence:

| LEVEL | DESCRIPTOR | EXAMPLE DETAIL DESCRIPTION |
|-------|---------------|--|
| 1 | Insignificant | Less than 2 ha fire, low or no assets damaged small scrub, paddock fire, small hazmat incident. \$0 – \$10,000 |
| 2 | Minor | 2-10 ha fire, vehicle fire, room of a house, medium hazmat incident. \$10,000 - \$100,000 |
| 3 | Moderate | 10-100ha fire, large hazmat incident, house/shop fire. \$100,000 - \$1,000,000 |
| 4 | Major | 100-1,000 ha fire, industrial estate, nursing home, 1-10 houses, multiple businesses. \$1,000,000 - \$10,000,000 |
| 5 | Catastrophic | 1,000+ha, fuel depot, block in CBD, Hospital, 10+ houses. \$10,000,000 Plus |

Qualitative Measures of Likelihood:

| LEVEL | DESCRIPTOR | GENERIC DESCRIPTION | STATE DESCRIPTION |
|-------|----------------|---|------------------------------|
| 1 | RARE | MAY OCCUR IN EXCEPTIONAL CIRCUMSTANCES ONLY | 1% (ONCE IN EVERY 100 YEARS) |
| 2 | UNLIKELY | COULD OCCUR AT SOME TIME | 3% (ONCE IN EVERY 30 YEARS) |
| 3 | POSSIBLE | MIGHT OCCUR AT SOME TIME | 10% (ONCE IN EVERY 10 YEARS) |
| 4 | LIKELY | WILL PROBABLY OCCUR IN MOST CIRCUMSTANCES | 33% (ONCE IN EVERY 3 YEARS) |
| 5 | ALMOST CERTAIN | IS EXPECTED TO OCCUR IN MOST CIRCUMSTANCES | CLOSE TO 100%-ANNUALLY |

Comment: We cannot find a logical link between the Threat and Vulnerability indicators described above and the descriptors in the Consequence Table. We suggest that a transparent trail is required. ISO 31000 risk profiling requires inputs of level of damage caused by the event and likelihood of the event causing damage, but this Risk Matrix uses Likelihood of occurrence of the event, which has no correlation with likelihood of damage. Because very few bushfire events cause damage, the Risk Matrix will be biased towards substantial over estimation.

We can find no scientific connection between the threat factors of the bushfire that will damage the houses – flame and embers – and the indicators. This means the indicators are not responsive to either management or non management of the flame and embers.

Summary so far:

The VFRR system claims to be consistent with ISO 31000 are shown to be false and misleading. It uses indicators that have no logical or scientific connection to the ISO risk rating indicators.

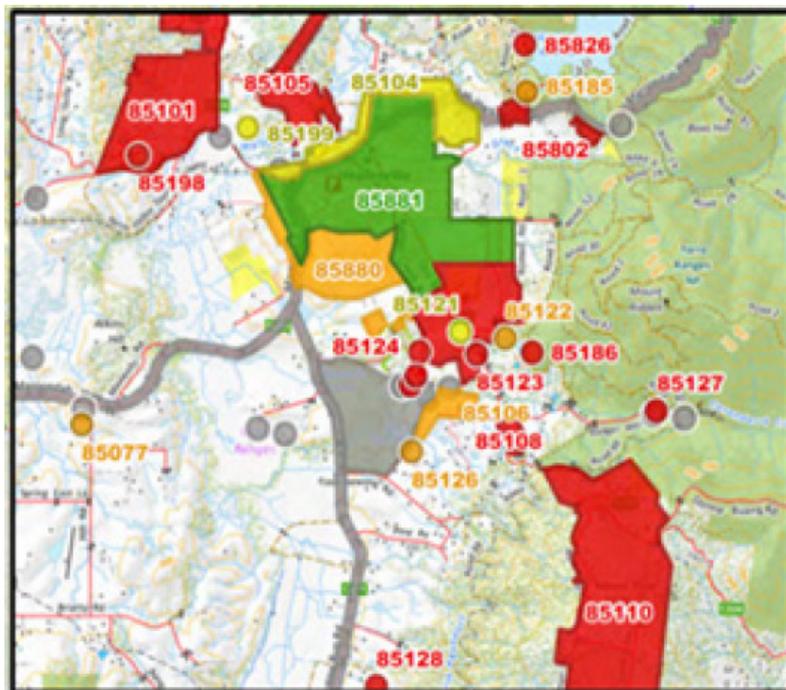
Examples of application of VFRR

1 Risk mapping

McCann (3013) provides a map of the Healesville area to indicate how risk ratings are derived and mapped.

| Criteria used | Asset area | #85110 | #85881 | # 85104 | # 85101 | # 85105 |
|-------------------------------------|------------|----------------|----------|----------------|----------------|----------------|
| Hazard | | dry scl * | dry scl | dry scl | dry scl | dry scl |
| Slope | | > 15 deg | upslope | upslope | upslope | upslope |
| Separation distance | | < 20m | > 50m | > 50m | < 20m | < 20m |
| Threat rating | | VH | Med | Med | High | VH |
| Vulnerability | | High | Low | Low | High | High |
| Consequence | | catastrophic | minor | minor | catastrophic | catastrophic |
| Do ignitions occur frequently | | Yes | Yes | Yes | Yes | Yes |
| Expected to spread and reach assets | | Yes | No | Yes | Yes | Yes |
| Likelihood rating | | almost certain | possible | almost certain | almost certain | almost certain |
| Risk rating | | Extreme | Low | High | Extreme | Extreme |

* dry scl = dry sclerophyll forest



Map of Healesville and surrounds, showing bushfire risk ratings

Asset / area names:

- #85110 Mt Toole be wong
- #85881 Healesville
- # 85104 Healesville – north interface
- # 85101 Healesville west
- # 85105 Healesville north

The analysis questions in more detail are as follows:

What is the threatening vegetation to the asset?

What is the slope that the threatening vegetation is on?

What is the separation distance from the threatening vegetation to the asset?

What is the susceptibility of the residents / of the asset?

Is there a frequency of ignitions in the threatening vegetation?

If there was an ignition, is it expected to spread and reach from threatening vegetation on a 'Code Red' day (100FDI) to the asset?

These questions indicate that risk rating is done for entire residential areas using a very shallow and incomplete analysis that is based on proximity to forest vegetation that seems to have been declared as an unmanageable threat and the based on a belief that houses are vulnerable and not defensible.

We now select one area for closer scrutiny. Mount Toole be Wong is a low density rural settlement amongst forest south of Healesville. The summit of the mountain is 750m above sea level. At the 2006 Census, Mount Toole be Wong had a population of 325 in approx 80 – 100 houses.

VFRR derives Threat from vegetation type, topography and separation distance. It classifies the separation distance of houses to the forest is < 20m. We ask is this a measured average or a subjective perceived average that levers the Threat rating higher. The basis of the Vulnerability rating seems to be based on the answer about perceived susceptibility of the residents. Toole be Wong area is classified as Very High Threat and High Vulnerability and this means Consequence is Catastrophic. If we look at the Consequence Table above, the description of Catastrophic seems a misfit for this area. Furthermore, the VFRR analysis says a fire will spread to houses. This assumes the fire is upwind of each house and no houses have defence infrastructure. We conclude that Consequence rating is exaggerated.

VFRR classifies Likelihood as almost certain. The Likelihood Table would have us believe a severe fire occurs each year. But government records show the last fire within the area was in 1970, some 44 years ago. The 2009 fire occurred within 10 km of the area, but not within it. VFRR says ignitions occur frequently, but we suspect its analysis extends far beyond the subject area. the inputs to Likelihood are therefore outside the subject area, which means that Likelihood rating is exaggerated.

The Risk Matrix classifies this area as Extreme, but because the inputs are exaggerated, the risk rating is also exaggerated. We suspect the VFRR risk rating is an estimate of fire intensity in the nearest forest vegetation and it assumes it will cause damage because it is close by. It is not a reliable risk profiling tool because there is no estimate of likely damage by severe bushfire or likelihood of a severe bushfire causing damage. It does not conform to ISO principles because it does not assess value of loss or probability of loss.

2 Bushfire Risk classification

The Hepburn Municipal Fire Plan (2011 – 2014) classifies the North Daylesford-Hepburn Springs area as **Extreme** risk. It identifies the risk scenario as bushfire from “nth west direction & from sth west on wind change”. It does not describe the source of classification, but according to these Tables, an Extreme rating requires a Likelihood of **likely** or **almost certain** and a Consequence of **catastrophic**.

The Consequence Table shows that a **catastrophic** event means destruction of a CBD block, of 10+ houses, or 1000 ha+ or damage bill over \$10M, or perhaps all of them.

The Likelihood Table's definitions of **likely** and **almost certain** suggest this catastrophic bushfire event occurs either each three years or annually.

We wonder what has happened to make Daylesford risk level so high. We observe that not even the entire state of Victoria has such annual losses. The historical record (INSET) lists significant bushfire events in and near Daylesford and Hepburn Springs.

INSET

Bushfire history – Daylesford and Hepburn Springs

1851 Black Thursday fires killed Daylesford sheep
1861 Daylesford's Freemasons Hotel burnt down in 15 minutes. Fire Brigade was instituted
1865 "Black Monday" A large fire from Geelong to Ballarat burnt numerous houses, fences, and crops. Damage at Daylesford
1870's – 1890's Frequent press reports of bushfires in the Daylesford area
1899 A fire burned from Franklinford to Glenlyon.
1906 A fire started at Shepherds Flat and quickly swept toward Hepburn destroying the Shire offices, Vanzetta's Bakery, Bellinzona and then the Kidds Gully Hotel. A wind change diverted the fire from Daylesford to Glenlyon. It burnt north towards Lyon Bank farm destroying considerable areas of property
1910's to 1930's Frequent press reports of bushfires in the Daylesford area
1939 Nearby towns of Denver, Drummond and Lyonville were burnt.
1944 Fires occurred near Daylesford, Woodend, Gisborne and Bendigo.
1951 Bushfire nearby, but it neither entered or threatened the town
1962 Bushfire to west of Daylesford, extinguished quickly
1966 Bushfire to west of Daylesford, extinguished quickly
1969 Bushfire nearby, but it neither entered or threatened the town
2009 Bushfire nearby, but it neither entered or threatened the town
Major sources - Museum Victoria web site and Hepburn 2011

We can see that neither Daylesford nor Hepburn townships has been burnt by bushfire in the past 100 years, even though some have occurred nearby. This suggests the **Rare** category is the more logical choice for Likelihood. However, using ISO criteria, we may conclude that such a record does not qualify it for significant bushfire risk mitigation expenditure, nor does it justify an increase in such expenditure. But before the authorities embrace this ISO principle, they must remember that Marysville and Kinglake had a similar historical record, yet they were both wiped out in one day in 2009.

3 Municipal Fire Plan

Example 1 The Hepburn Municipal Fire Management Plan (2011 – 2014)

The fire plan proposes that its treatments will reduce the risk level for North Daylesford-Hepburn Springs from Extreme to High over the planning period. We also note that the risk matrix is the only risk analysis technique provided. This implies that risk level can be controlled by managing Likelihood and Consequence, which are in turn delivered by the treatments on the Plan.

According to the risk matrix, to change risk from Extreme to High can be done only by a reduction in **consequence** or in **likelihood** or both. The Plan suggests that **Likelihood** after treatment in **Daylesford North / Hepburn Springs** reduces to "Possible" (= once in 10 years), but it is unclear how it can be changed because it relates to historical frequency. **Consequence** level reduces when expected damage decreases. The Plan suggests **Consequence** might reduce from Catastrophic to Major, where damage reduces from over \$10M to under \$10M. We suspect this is unlikely to be either meaningful or comforting to the local population. How are these reductions to be achieved? When we examine the proposed treatments, we see reference to fire tracks and fire breaks. Neither these works nor their location is capable of reducing damage. Neither have any impact on the root causes of house loss, ie, flame and ember.

We are very concerned that the risk matrix is based on two causal factors that (1) do not accurately describe the true bushfire risk of the two towns and (2) that cannot be reduced without a huge investment in fire protection works on the ground and social engineering. Yet

the Fire Plan purports to reduce likelihood and consequence levels with minimal change to current strategies.

Thus in summary, the Fire Plan uses unknown criteria to assess the risk level as **Extreme** and it promises to deliver **High** risk level (= a lower risk) with a continuation of current treatments and some inconsequential new treatments, neither of which have any known causal correlation with either Likelihood or Consequence.

Post script The approved Fire Plan period runs from 2011 to 2014. It is now 2014. According to the Fire Plan, the residual risk should now be Major. Yet the Community Information Guide (CIG – see below), which covers the same area, was Extreme in 2011 and was updated in September 2013 as Extreme. Does this mean the Fire Plan has been ineffective?

Example 2 Daylesford CBD

Another example from the Fire Plan is the Daylesford CBD.

Risk has been classified as Very High.

Likely bushfire scenario: “Possibility of ember attack on aging buildings”

Residual risk after treatments Moderate

Proposed treatments: Daily readiness, fire plug maintenance

Our comment: We agree with the likely bushfire scenario. The proposed treatments are unchanged from the past. If they were effective in the past, we suggest the current risk level would already be Moderate. We infer that the proposed treatments rely on suppression of spot fires, yet the Community Information Guide (see below) encourages evacuation from the town. We conclude the risk level will not be reduced by these treatments, ie, remains at Very High.

Post script: To add to the confusion, since this fire plan was adopted, Daylesford CBD, complete with its Very High risk rating, has been declared a Neighbourhood Safer Places - Places of Last Resort.

4 Community Information Guide (CIG)

Fire authorities publish a CIG for many towns. The pre-requisite for a CIG seems to be an Extreme or Very High risk classification. The CIG documents are heavily biased to encourage early evacuation. We are concerned that legitimate responses other than evacuation are not adequately canvassed. Evacuation means vacant houses, which is known to exacerbate house loss (Papers 6A and 6B). This is the contrary to our goal of preventing house loss.

The Daylesford / Hepburn CIG declares the area as Extreme risk based on the VFRR process. We look in vain for a schedule of when the government proposes to reduce the risk level to acceptable. Instead, it then provides us with information to make an informed decision about how to survive a bushfire. It asks people to understand their risk, including:

- Assess and prepare the capability of your property to withstand a bushfire or grassfire.
- Be aware it is impossible for emergency services to protect every individual home or property.
- In extreme wind conditions, and without any occurrence of fire in the area, roads and tracks may become blocked by falling trees, preventing residents from leaving early.

It then asks people to reduce their risk, including:

- Prepare your home and property against bushfire, grassfire, burning embers and radiant heat.
- Even if your plan is to leave early, a well prepared home has a greater chance of not being destroyed while you are away.

It states that people are responsible for their own survival, ie, the government is not. It says that houses are not designed to withstand a severe bushfire, even if well prepared. Therefore, it says, it is not safe to stay and defend.

It suggests people should leave before a fire threatens. It suggests you should go to larger towns or safer property in an urban area. It suggests evacuation to Ballarat and Castlemaine. It suggests that we should avoid travelling through forest, yet Daylesford is surrounded by forest. We then find there is a CIG for Castlemaine and learn that it has been declared Extreme risk. Why are they evacuating people to an Extreme risk area? They advise Castlemaine people to evacuate to Bendigo and Kyneton. We check Bendigo and we find that the outskirts of Bendigo are also Extreme but the CBD is not. We check Kyneton, and learn there is no CIG, yet Kyneton is surrounded by properties with tall dead grass in the fire season. We are concerned the government advice is inadequate and confusing, and may be putting dependent people at risk.

CONCLUSION

The above examples show that the risk rating levels are based on superficial and incomplete analysis and, as a result, do not reflect local reality. Moreover, the works proposed to reduce risk levels are ineffective for two reasons – they have no impact on the inputs for risk rating calculations, and, worse still, they will not neutralise the threats that actually cause damage.

McCann (2013) claims to have a consistent system of risk assessment, but it is not transparent, it is based on incomplete and superficial analysis, it uses input indicators that are vague and not correlated with the causes of bushfire damage, ie, flame and embers, or their neutralisation and its risk levels are exaggerated by an unknown amount and they have no meaningful relation to reality. In short, it is impractical and not helpful in assessing or managing bushfire risk. Furthermore, it is false and misleading to declare that it is consistent with ISO 31000.

The sad thing is that this spurious system is being promoted as an authentic tool by government and is used as a basis for planning by government.

The fire authorities have not thought things through. They do not need to use such a convoluted system to achieve their purposes. It is obvious that their major concern is proximity of house or asset to forest and its associated flame. It is like a dogma – the forest is the source of risk, and the closer the forest, the closer is the risk level. The fire behaviour issue of whether the forest is the source of damage or not, is not contemplated. The manageability of the forest or the ability to defend the house is also not contemplated. As they seek to achieve their purpose of decrying the nearest forest, their fixation is blinding them to the real causes of house loss and how to neutralise them and thereby protect a community.

Nevertheless, the authorities may have created a rod for their own backs which may well result in a community benefit. It has classified hundreds of areas as extreme risk. At this stage, they have no apparent intention or no prescribed treatments that reduce their levels. We

suspect the communities will not be satisfied with such inaction, and indeed, it is contrary to the spirit of the CFA Act.

Consider this potential exchange:

Is it true that if you identify a building or area at risk of fire, you will propose a treatment to reduce the risk and assign someone to treat it?

Yes, says the fire authority, Section 55A of CFA Act.

You have declared my community extreme risk. Why don't you just tell us what factors threaten our houses with damage and how you are planning to neutralise them to make it a low risk.

REFERENCES

McCann L (2013) Bushfire Risk - Identifying, Categorising and Rating Victorian Assets
AFAC 13 Conference Melbourne, Australia