

Flood Risk Management for Caravan Parks in Victoria

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Abstract

This paper reports some of the key findings of a study aimed at assessing flood risks and recommending strategies to manage flood risks for caravan parks in Victoria. It is estimated that about half of Victoria's 600+ caravan parks may be subject to flooding in the 100 year event, and many parks are located within floodways. The use of caravan parks as places of permanent residence, as well as the trend towards an increasing number of immovable cabins, contributes to the vulnerability of caravan parks. Despite significant flood risks, few parks appear to be adequately prepared for flooding – some would get little warning, some could not be evacuated in time, and few parks have sound flood emergency management plans. For proposed new parks or park extensions, flood risks can be managed through the planning system. For existing parks, options include better identifying flood risks, ensuring the provision of flash flood warning systems where appropriate, and raising access roads. Much can be done to improve the quality of emergency management planning in caravan parks, and a draft document containing guidelines and a template has been prepared to assist caravan park owners to prepare meaningful flood emergency management plans and to provide councils with a standard against which they can assess the plans submitted for approval. Measures to encourage caravan park owners to engage in flood risk planning include a proactive approach by councils and CMAs, education via industry newsletters, and amendments to the relevant Regulation.

1. INTRODUCTION

A study of caravan parks in NSW indicated that many parks were flood-prone and that few parks were adequately prepared for flooding. Recommendations were proposed to manage the flood risk, particularly pertaining to planning controls (Yeo, 2001, 2003; Yeo & Grech, 2006).

Flooding in Gippsland in June 2007 was a reminder of the flood-prone locations of many caravan parks in Victoria. Media reports point to flooding of caravan parks along the Macalister, Thomson, Avon and Mitchell Rivers and around the Gippsland Lakes. A park at Bairnsdale was severely flooded for the third time in 17 years (Figure 1). Most of the cabins at Montana Caravan Park in Glenmaggie were washed away.

A study was conducted in 2005 to provide an overall assessment of flood risks for caravan parks in Victoria, and to recommend best practice for managing the flood risks (Bewsher Consulting, 2007). This paper reports some of the key findings of that study, and also provides an update on the implementation of one of the recommendations of that study – that a flood emergency management plan template with guidelines be prepared to help caravan park owners prepare for flooding.

A variety of methods were used to assess flood risks in caravan parks in Victoria. Data from the Australian Bureau of Statistics (ABS) revealed trends in accommodation types within caravan parks. A GIS analysis was used to estimate the proportion of caravan parks in Victoria subject to flooding in the 100 year Average Recurrence Interval (ARI) event. A questionnaire was prepared and used by the CMA floodplain managers and the Consultant to interview park managers at 40 caravan parks.



Figure 1. Mitchell Gardens Caravan Park in the April 1990, June 1998 and June 2007 floods

Sources: Bairnsdale Advertiser (1990); unknown (1998); ABC (2007)

2. FLOOD RISK ASSESSMENT

2.1. How many caravan parks are at risk from flooding?

A GIS layer for the 100 year ARI flood extent was provided by DSE and Melbourne Water, and DSE also provided a floodway layer, though it is recognised that the coverage of these layers is incomplete (about 80% of 100 year floodplains and 30% of floodways have been mapped) and the positional accuracy of the layers is mostly of low reliability. A GIS layer for 302 out of Victoria's estimated 619 caravan parks (i.e. 49%) was prepared with the assistance of the Valuer General's Office.

According to the GIS analysis, 38% of (the sample of) caravan parks lie partly within the 100 year ARI flood extent and 22% lie partly within floodways. Given the incomplete coverage and limited accuracy of the flood mapping in some areas, this is regarded as an underestimate. A study of the City of Greater Shepparton's 17 caravan parks found that 11 (65%) are at least partially located within the 100 year ARI flood extent. In the Consultant's opinion, it seems fair to conclude that that about half of Victoria's caravan parks are at least partially flood-prone, and more if flood-prone land is defined by the PMF floodplain.

2.2. How vulnerable are caravan parks to flooding?

Caravan parks consist of a diversity of accommodation types including "permanents" (residential sites), "annuals" (where a caravan or cabin is permanently situated in a caravan park but used only occasionally for holiday purposes), and tourist accommodation (cabins, on-site vans, powered and unpowered sites). Figure 2 illustrates the median number of sites for each accommodation type based on the survey of 40 caravan parks.

Most parks provide at least a few sites for "permanents", and one of the parks had 90 long-term sites. Residents of caravan parks tend to be older and poorer than other Australians, which points to the potential difficulty of emergency evacuation (high level of aged) and reduced capacities to recover after floods by repairing or relocating (low savings and income levels). Often the dwellings of residents in caravan parks are in practice immovable in the time before a flood.

Also contributing to the vulnerability of caravan parks is the tourist population, who may lack awareness of the flood threat, and can dramatically swell the logistics of evacuation should a flood occur during peak holiday season. The manager of a caravan park with 400 sites estimated that 2,000 people stayed there at peak times. Furthermore, industry trends show that over the last decade, on-site vans, powered sites and unpowered sites – which are generally occupied by dwellings that can be shifted – have been replaced by tourist cabins – which are usually not able to be shifted quickly (Figure 3). This represents an increase in the amount and capital value of property exposed to flood risks, though 33% of the surveyed parks had raised the floor levels of all or most of their tourist cabins to reduce the frequency of inundation.

2.3. How prepared are caravan parks for flooding?

Figure 4 shows that 14 (35%) out of the 40 surveyed caravan parks are not currently part of the Bureau of Meteorology's (BoM's) quantitative flood warning network. Figure 5 shows that 13 parks (33%) have estimated available warning times of six hours or less (i.e. are prone to "flash floods"). An estimated seven parks (18%) are believed to occupy dangerous "shrinking island" evacuation settings in the 100 year ARI flood, where the park would first be isolated then completely inundated by a rising flood (Figure 6). Based on comparisons of effective warning times and the required times (estimated by park managers) to evacuate people and movable property from caravan parks, five parks (13%) would have insufficient time to evacuate people and nine parks (23%) would have insufficient time to evacuate property before the onset of flooding. This result highlights a real concern – a number of caravan parks will not have sufficient time to evacuate the park prior to being inundated, posing a genuine threat to life and property.

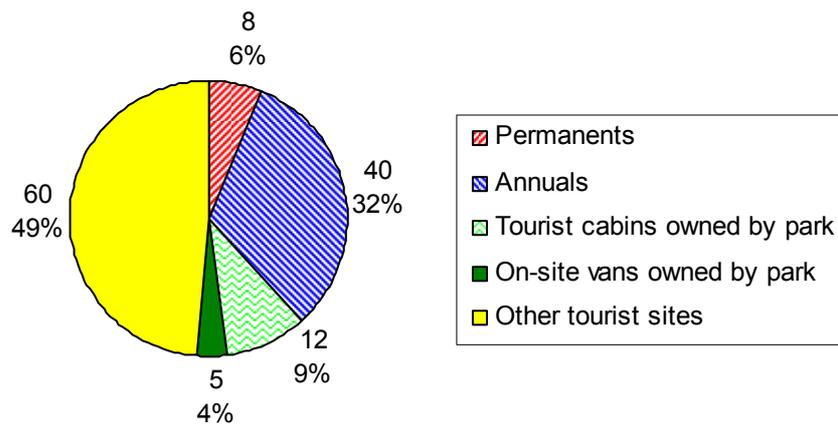


Figure 2. Median number of sites for each accommodation type (N = 40)

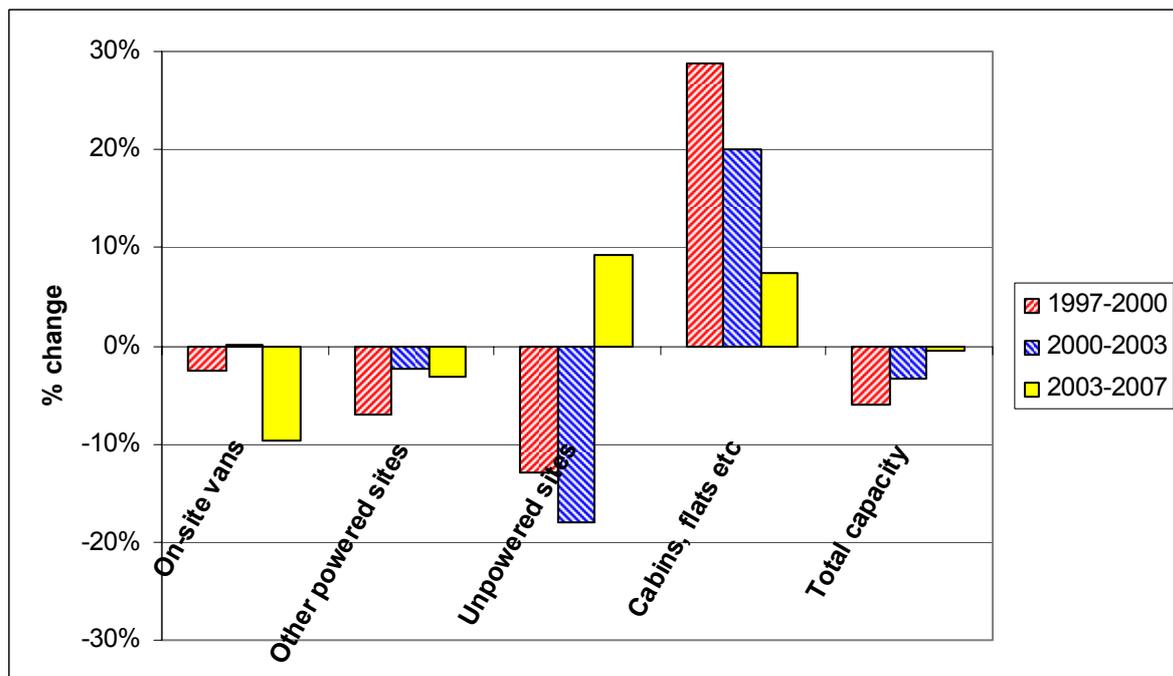


Figure 3. Trends in accommodation types in caravan parks in Victoria

Notes:

- 1) Data is only for establishments with 40 or more powered sites and cabins, flats, units and villas;
- 2) Trends are taken from March 1997 to March 2000, March 2000 to March 2003, June 2003 to March 2007. The latter was chosen to avoid a break in time series between the March and June quarters of 2003, when 21 caravan parks in Victoria were added to the series.

Sources:

- ABS Tourist Accommodation Australia, 8635.0, March Quarter 2000, p.43;
- ABS Tourist Accommodation Australia, Expanded Scope Collection, 8635.0.55.001, Year Ended 31 December 2003, pp.33-34;
- ABS Tourist Accommodation Australia, 8635.0, March Quarter 2007, pp.44-45.

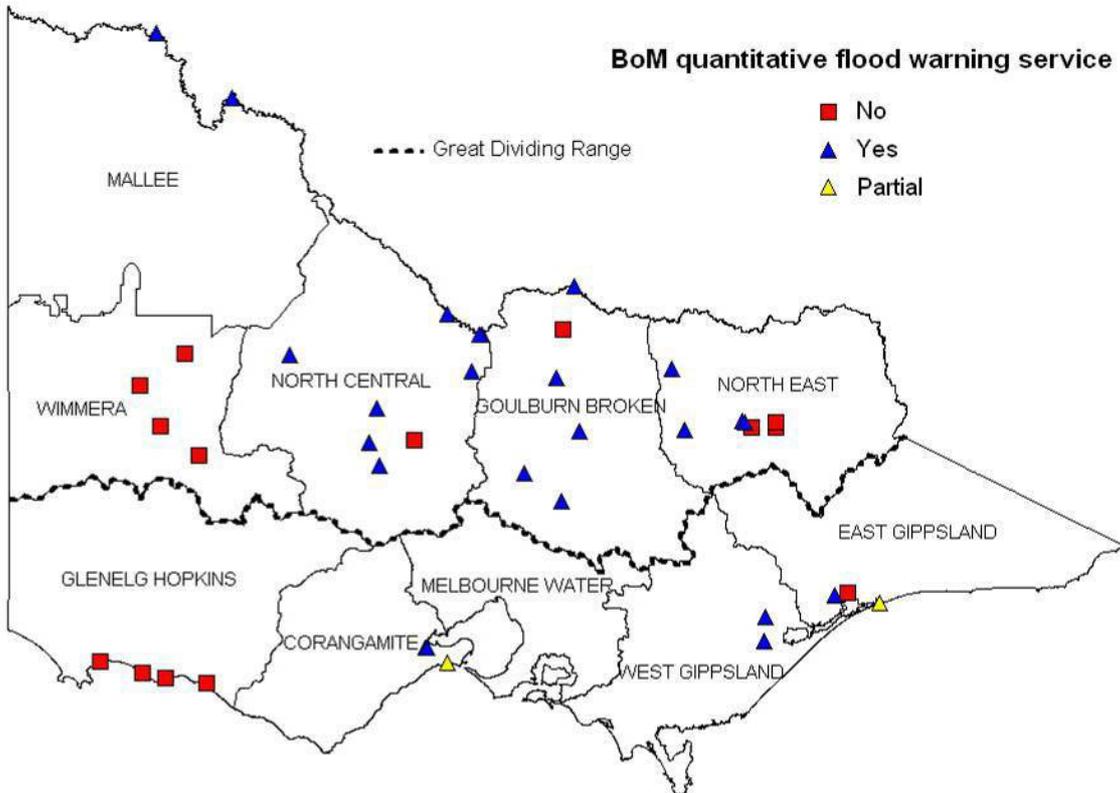


Figure 4. Provision of flood warning services at surveyed caravan parks

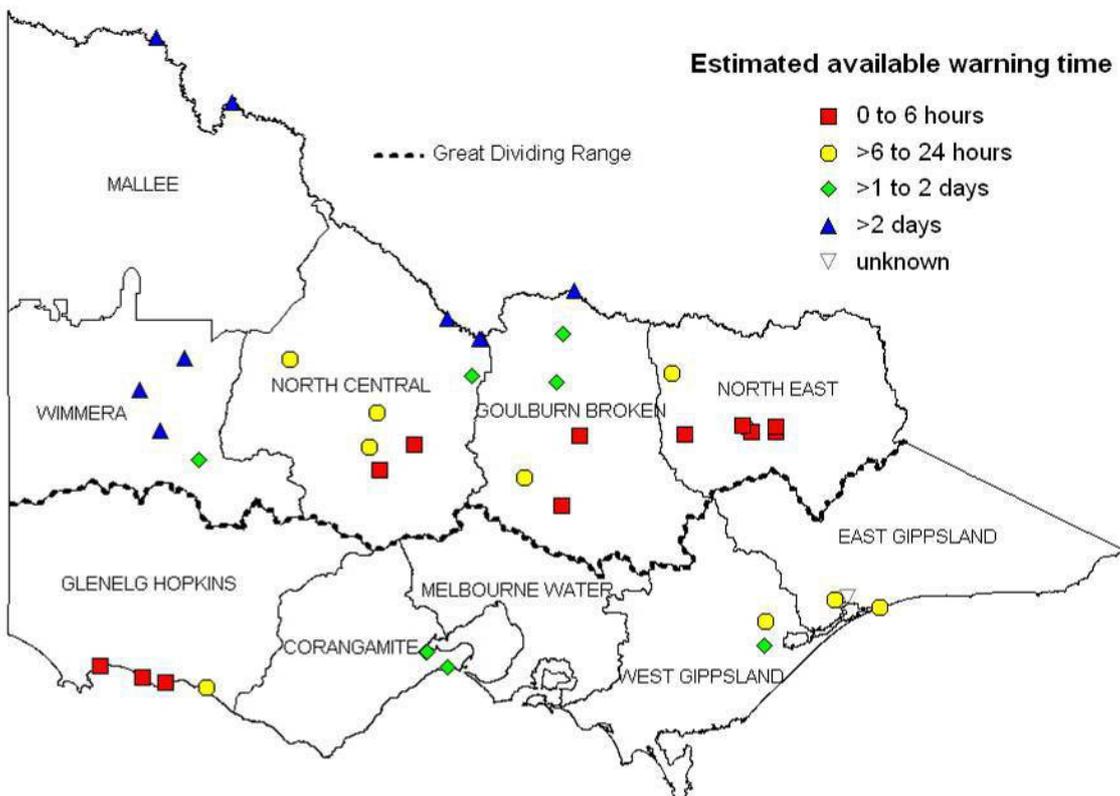


Figure 5. Estimated available warning times at surveyed caravan parks

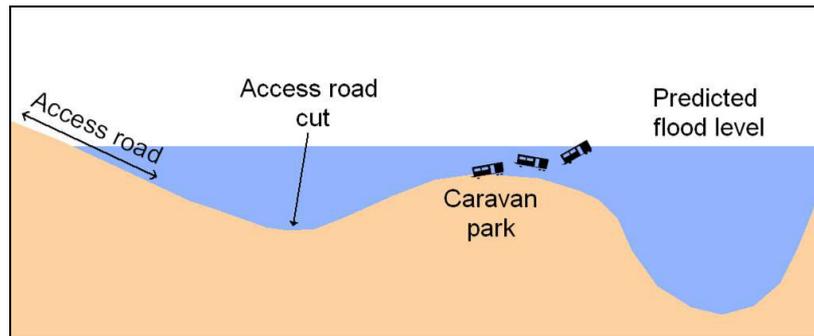


Figure 6. 'Low flood island' ('shrinking island') evacuation setting

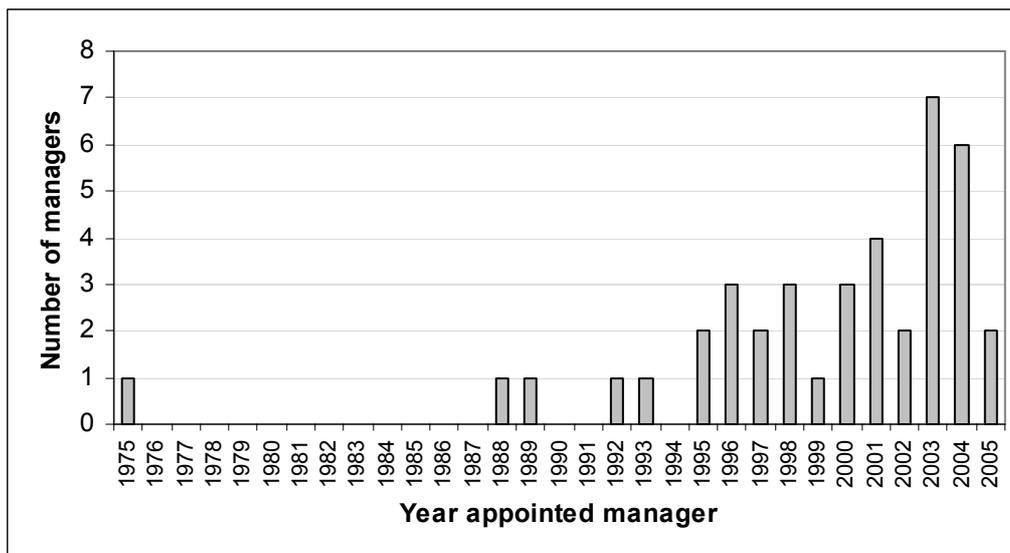


Figure 7. Park managers' year of appointment (N = 40)

Figure 7 shows the year in which caravan park managers were appointed, when interviewed in 2005. Over 50% of park managers had been so for less than five years. A high turnover of park managers means that most managers have no experience of flooding at their current caravan park.

Caravan park owners in Victoria are required under *the Residential Tenancies (Caravan Parks and Movable Dwellings Registration and Standards) Regulations 1999* (Reg. 36(1)) to prepare emergency management plans (EMPs):

A caravan park owner must, to the satisfaction of the council, prepare an emergency management plan providing for evacuation procedures to be followed by residents and occupiers in a fire or other emergency that may affect the caravan park.

It is therefore surprising to find that 15 (38%) of the surveyed caravan parks apparently do not have a written emergency management plan. Furthermore, a review of 19 of the available EMPs revealed that few address flood risk in an adequate manner. Some plans consist of no more than a list of emergency contact numbers and a map showing assembly points. Many parks have generic plans that emphasise bushfire risks, with no mention of flood risks, and with assembly points inappropriately located within floodways, or with provisions to shift vans when an inspection shows that no vans are in a condition to be shifted. With the turnover of park managers, most plans are inherited and managers have little ownership of their contents. In contrast, the few EMPs deemed to be adequate contain a realistic, site-specific consideration of the flooding risk. More than anything, these plans demonstrate a degree of effort and ownership that is not evident in the other plans.

Efforts to evacuate patrons from caravan parks are expected to be more successful if the patrons already have some awareness of evacuation procedures. The *Residential Tenancies Regulations* (Reg. 36(3)) require park owners to communicate these procedures in several ways:

- A caravan park owner must notify residents and occupiers of the evacuation procedures in the emergency management plan by—
- (a) giving them a copy of the evacuation procedures before they take up residence or occupy a site at the caravan park; and
 - (b) displaying a copy of the evacuation procedures in a prominent position in—
 - (i) the caravan park office; and
 - (ii) every building in the caravan park that contains communal facilities.

Again, the evidence from the 40 interviews points to substantial non-compliance with the Regulation – 19 parks (48%) do not display evacuation procedures in the office and communal buildings, and even more do not issue evacuation procedures to patrons on arrival.

A qualitative assessment of each caravan park's overall state of readiness for flooding indicated that nine parks (23%) are believed to have a high readiness for flooding and 16 parks (40%) have a low readiness. There is a strong correlation between flood readiness and the manager's flood experience.

3. FLOOD RISK TREATMENT

3.1. New parks and park extensions

For proposed new caravan parks or new development within caravan parks in flood-affected areas, there is scope to manage the flood risk through the planning system. The flood overlays require a permit for "works", and the *Victoria Caravan Parks Flood Risk Survey* (Bewsher Consulting, 2007) contains a matrix that can be used as a starting point for formulating conditions of permit. A project currently underway for Shoalhaven City Council in NSW is building on that work by preparing a Development Control Plan and Local Approvals Policy for caravan parks located on flood-labile land. This work is to be presented at the NSW Floodplain Management Conference in February 2008.

3.2. Existing parks

For the purposes of this paper, we focus on the difficult issue of addressing flood risks at existing caravan parks. In particular, we consider how emergency response may be improved. First, there is a need for councils (assisted by the CMAs) to systematically identify flood risks at caravan parks. Future flood studies and floodplain management plans should give explicit attention to flood-prone caravan parks.

Responses to flooding can be improved by ensuring that caravan parks subject to flash flooding have a warning system. The primary responsibility for flash flood warning rests with local government, though the BoM is able to provide specialist advice for the establishment of these systems.

A significant reduction in risk could be achieved at some parks simply by improving access to the park. Raising the access road (provided works do not create adverse flood effects elsewhere) would provide additional time and increased safety during evacuations.

Another way of improving emergency response is to encourage park owners (and managers) to prepare meaningful flood emergency management plans (EMPs). One resource to facilitate this process is the Flood EMP Guidelines and Template that is currently being prepared, and is intended to help owners prepare suitable plans and to help councils to have a measure of confidence in the plans they are required to approve under the Regulation. A draft document has been prepared and will be vetted by a Steering Committee, which includes representation from the Victorian Caravan Parks Association, and piloted on several caravan parks.

The “Guidelines” component draws upon aspects of the structure of the CFA’s guidelines to manage bushfire risks (CFA, 2006), and consists of a foreword explaining the reasons for the document, a section titled “Why plan for flooding?” that aims to persuade caravan park owners to prepare an EMP (see Table 1), a list of definitions, a list of key stakeholder responsibilities, and directions for how to use the template.

Table 1. Excerpt from draft Flood EMP Template and Guidelines.

<h2 style="color: blue;">Why Plan for Flooding?</h2> <ul style="list-style-type: none"> • Although a long time may elapse between floods, prevailing conditions can change quickly. <u>Future flooding is inevitable.</u> • A flood can be life threatening to caravan park staff and patrons. <u>Planning for flooding saves lives and prevents injury.</u> • A flood can cause hundreds of thousands of dollars worth of damage to caravan park assets. <u>Planning for flooding reduces damage and speeds the clean-up process.</u> • An Emergency Management Plan contributes towards compliance with <u>Occupational Health and Safety standards.</u> • An Emergency Management Plan that provides for evacuation procedures in a fire or other emergency (including a <i>flood</i>) is required under Regulation 36 of the <u>Residential Tenancies (Caravan Parks and Moveable Dwellings Registration and Standards) Regulations 1999.</u>

The “Template” component consists of the following sections:

- Background information
- Emergency contacts
- Flood risk assessment
 - flood history
 - flood levels and extents
 - ground and floor levels and flood depths
 - planning scheme zones and overlays
 - elements at risk
 - flood warning arrangements and constraints
 - evacuation arrangements and constraints
 - summary
- Key priorities and triggers
- Flood action
 - prepare – always
 - respond – flood possible
 - respond – during flood
 - recover
- Other resources
- Flood risk map

Clearly for many parks the level of rigour required to complete the flood EMP template is likely to be markedly higher than was previously the case. Indeed, this could hardly be otherwise considering that some parks do not appear to have a plan and that few of the plans reviewed by the Consultant show a genuine effort to understand and respond to the particular flood risks that confront a particular site. Also, it seems prudent that for an industry that provides accommodation services and includes parks located in areas of high (and in a few cases, arguably, extreme) flood risk, detailed planning is undertaken to improve flood safety. Nevertheless, the vetting of the template by industry representatives, and the testing of the template on several caravan parks in Victoria (and of a similar template on 30 caravan parks in the Shoalhaven City Local Government Area), should ensure that the template is comprehensive yet also reasonable in its expectations of park owners. Also, while the intention is for park owners and managers to complete (and maintain) the EMP for their parks in order that they may gain from the process and own the plan for themselves, sources of information such as the council, the CMA and VICSES are identified on the template.

Given its length and detail, the flood EMPs are not intended to be displayed or distributed to park patrons (but should be available for inspection by interested park patrons at the park office). Rather, a separate template showing emergency contacts and evacuation procedures has been prepared, but this also will need to be modified for each park and a map showing the location of flood-prone land, the emergency assembly point and the evacuation route(s) will need to be prepared.

Of course, providing a resource such as the Flood EMP Guidelines and Template is no guarantee that the resource will be used. Some park owners may remain unconvinced of the possibility of flooding, perhaps especially where the park is believed to be fully “protected” by a levee. For this reason, councils and CMAs should work proactively with the caravan park industry to assist with the development of EMPs. Industry newsletters could carry messages about flood (and bushfire etc) risk management. Examples of parks where flood risks are being managed well (and without doubt some park managers are energetic and innovative risk managers) could be used as positive case studies. In addition, consideration should be given to developing an accreditation system that benefits caravan park owners that act responsibly in terms of managing the flood risk.

In addition to providing “carrots” to encourage better flood risk management, there also appears to be a need to create bigger “sticks”. In our opinion, the Regulation should explicitly require that flood-prone parks should address flood risks in their EMPs (and not simply subsume flooding under “other emergencies”). Also, the Regulation could require that councils consult with the relevant floodplain management authority before approving EMPs for flood-prone parks (though the cost recovery implications of this suggestion require thought). The Regulation could also be amended to require that appropriately updated EMPs be submitted on a regular basis, perhaps with the application for renewal of registration every year. A “stick” to encourage local councils in their central role in local flood risk management (including in the application of the provisions of the Regulation for EMPs and for ensuring that flood risks are communicated to patrons) is that Natural Disaster Relief payments are conditional upon the council following a set process of identifying, analysing and treating local risks.

4. CONCLUSION

An overall flood risk assessment of caravan parks in Victoria shows that many are flood-prone, including an alarming number located in floodways, where high hydraulic hazards are expected. Caravan parks cater for a diversity of patrons, including residents and tourists, each with their distinctive vulnerabilities. A trend over the past decade has seen the displacement of on-site vans, powered and unpowered sites by (essentially immovable) cabins, which amounts to an increase in property exposed to flood hazards. Many parks are not part of the BoM’s quantitative flood warning network and many have short warning times. Some parks occupy dangerous locations where egress would be cut prior to inundation of the park. Some parks provide insufficient time to evacuate people and property. A high turnover of park managers means that most have no experience of flooding. A surprisingly high proportion of parks do not appear to have Emergency Management Plans and few plans address flood risk in an adequate manner. Many parks do not display evacuation procedures in public areas or issue evacuation procedures to patrons on arrival. About 40% of the 40 surveyed caravan parks were judged to be poorly prepared for floods.

Flood risks in proposed caravan parks or park extensions in Victoria can be managed through the planning system. Options are more limited for existing parks. Identifying flood risks is vital, improving flood warning is particularly pressing for parks subject to flash flooding, and raising roads would provide additional time and increase safety during evacuations. Much can be done to improve the quality of emergency management planning, and a draft document containing guidelines and a template has been prepared to assist caravan park owners to prepare meaningful flood emergency management plans and to provide councils with a “measuring stick” against which they can assess the plans submitted for approval (at least in terms of the scope of the plan). Measures to encourage caravan park owners to engage in flood risk planning have been proposed, including a proactive approach by councils and the CMAs, education via industry newsletters, and amendments to the relevant Regulation.

5. ACKNOWLEDGMENTS

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Park managers were interviewed by the CMA floodplain managers, Bewsher Consulting and Earth Tech Engineering. DSE provided an initial GIS layer for caravan parks. The Bureau of Meteorology and Goulburn-Murray Water provided information about flood warning. DSE and Regional Planning Services provided advice about planning controls. The Floodplain Management Unit of DSE managed the Flood Risk Survey study, and North East CMA managed the Emergency Management Plan study. Both studies were overseen by a Steering Committee that included representatives from DSE, North East CMA, Goulburn Broken CMA, Melbourne Water, the Office of the Emergency Services Commissioner, the Victoria State Emergency Services, the City of Greater Shepparton and the Victorian Caravan Parks Association. We are grateful to the many who have assisted with this research, including caravan park managers.

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