

# Unifying Flood Information – The Victorian Flood Web Portal

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## *Abstract*

*Responsibility for various aspects of floodplain management, community education, warning, response and recovery are shared between Federal, State and Local government organisations throughout Australia and in many parts of the country regional natural resource management organisations are also involved.*

*While the roles and responsibilities for each organisation might be clearly defined and each understands its legislated role, this clarity is not necessarily shared by the community. Furthermore, community members are often quite unaware of the important role that they themselves have before, during and after a flood.*

*The responsible agencies in Victoria thought that it would be beneficial to use the capabilities of the internet to bring together all available, relevant information about flooding into a single website so the community could have better access to the information it needs and be better prepared for floods.*

*This paper sets out how the Victorian Flood Web Portal was researched, designed and tested taking into account community needs, existing resources and internet capabilities to develop a comprehensive, practical and user friendly reference point for all matters related to flooding. It also shows how this resource can be expanded in the future and be adapted for national application.*

## **1. INTRODUCTION**

The Bureau of Meteorology provides a national flood warning service but responsibility for disseminating those warnings to the public varies from state to state. As does responsibility for modeling and mapping flood extents, preparing community flood response plans, responding to floods and co-ordinating recovery. While landuse control generally rests with local government, the way in which that is done in relation to flooding and the way information is available to the public varies between organisations. In Victoria, Melbourne Water plays a significant role in all aspects of floodplain management in Metropolitan Melbourne but responsibilities are shared differently between Catchment Management Authorities, Water Supply Companies and local government in regional Victoria.

Furthermore, the community has an important role to play in flood preparedness, response and recovery but is often not aware of its flood risks let alone knowing what actions to take. While a lot of information about flooding is available to the community through the internet, this information is not always in an obvious location or may be missing helpful contextual information.

In light of this, organisations with roles in floodplain management in Victoria saw the wisdom in creating a web portal which provided a single, intuitive, informative interface to all available relevant flood information and supplemented this with additional information where necessary. A steering committee was established comprising representatives from Bureau of Meteorology, Department of Sustainability and Environment, Department of Justice, Victoria State Emergency Service, Education Department, Department of Human Services, Municipal Association of Victoria, Glenelg Hopkins Catchment Management Authority (CMA), Goulburn Broken CMA, North Central CMA, Shepparton Council and Melbourne Water. Goulburn Broken CMA was appointed as the project manager.

The team of Molino Stewart for technical content and Jadelynx (formerly Acumentum) for web design were commissioned to create the web portal in consultation with stakeholders.

## 2. CONTEXT

The internet continues to grow as an information resource and tool used within our community and it is noted that the Bureau of Meteorology's site has been the most visited government website in Australia for several years running. Officers from the NSW State Emergency Service, Victoria State Emergency Service and the Bureau of Meteorology have also told the author that hits on their respective websites "go through the roof" during major flood events.

While the opportunity must therefore be taken to provide comprehensive flood information on the internet it must be remembered that:

- ◆ Floods and storms can interrupt power supply and cut access to the internet
- ◆ Not everyone uses the internet for seeking information
- ◆ Few people know that flooding is an issue for them
- ◆ Not everyone knows what information about flooding they need
- ◆ Information must be kept up to date
- ◆ Even when presented with information about flooding not everyone will internalise the risks to them
- ◆ Not everyone will be motivated to carry through with recommended actions

With regard to the last two points, several researchers, such as Boura (1998) and Paton et. al. (2003), have demonstrated that there is not a strong and causal link between people being aware of a hazard and acting appropriately for that hazard. Research suggests a complex psychology at play with multiple barriers to people understanding and internalising flood risks and being motivated to manage those risks. Having a well designed web page with excellent information telling people that they need to prepare a flood plan and even one that takes them through the steps of flood plan preparation is no guarantee that they will be motivated to do so.

Unless all of the above list is considered in the design of the webpage, it could become a large repository of information which is either not accessed or accessed but ignored. Even then the website should not be relied upon as the principal means of community education.

What is needed is a comprehensive flood education strategy which will find ways of overcoming barriers and increasing motivation. The website then becomes a tool in that strategy. Its objective becomes one of maximising the points and means of entry for those needing to take action in response to their flood risks and making it relevant, up-to-date and user friendly so that users can quickly find and understand what they need to know.

## 3. METHODOLOGY

Assuming that an education strategy outside of the web portal will be used to point people to the portal, the project could then be thought of one which:

Connects *people* to *information* via a *website*.

In designing the website we considered each of these three elements

### 3.1. People

A community telephone survey was used to gather information about potential users of the webportal. One hundred residents were randomly selected from streets with know flood risks in Melbourne and regional Victoria. Some localities were chosen which had flooded within the previous six months.

They were asked questions to gauge their awareness and understanding of their flood risks, their preparedness for floods, from whom, where and how they would seek information about their flood risks as well as when and why they would seek that information.

A summary of key findings from the survey follows.

### 3.1.1. Before a Flood

- ◆ 25% of those that chose not to participate in the survey in Melbourne said it was because they did not speak English but this was not raised in the regions
- ◆ 53% of people thought that they could flood and experience of previous floods was the sole basis for opinions of those that thought they could flood as well as those that thought they could not
- ◆ No one indicated that their estimation of the property flood risk comes from flood maps, flood studies or advice from council or CMA.
- ◆ 73% of the respondents owned or were buying the property with the other quarter renting or leasing.
- ◆ 85% said they would look for flood information when buying but only 60% would when extending or rebuilding and only just over half (55%) would look if they were making outside improvements.
- ◆ 83% of all respondents said they would look for information if they received a letter saying their property could flood
- ◆ With regard to the sort of information that people would like:
  - 65% wanted information about flood risk and behaviour
  - 4% wanted to know what damage flooding could cause
  - 14% wanted to know what they could do to prepare for floods or reduce damages.
  - 10% wanted to know what government agencies were doing to prevent flooding
  - Only one person wanted to know what development controls applied.
- ◆ 77% expected council to be able to provide this information. The CMA and SES were each nominated by 6% and 5% respectively. Real estate agents were nominated by 8%.
- ◆ 56% indicated that they would use the internet to source flood information.
- ◆ Nearly 20% indicated that they would seek the information in person while 16% indicated telephone and 3% radio.

### 3.1.2. During a Flood

- ◆ People said they would look for flood threat information if flooding was occurring:
  - 16% if it were elsewhere in Australia
  - 37% if it were flooding in Victoria
  - 100% if a flood warning was issued locally.
- ◆ The information which people wanted about flooding varied including where, when, how high, comparison with historical or planning level floods, loss of access and utilities, how they should respond, who would help.
- ◆ Council was again seen as the most likely source of this information (63%), with only 21% nominating the SES and 9% BOM and 4% CMA.
- ◆ Only about half nominated the internet as a source of information with 22% expecting to get this information over the telephone, 21% from the radio and 13% in person

### 3.1.3. After a Flood

- ◆ 80% of participants said they would look for information about flooding after a flood in their town or suburb
- ◆ 95% said they would look for information if their property had been flooded.
- ◆ Information people said they would seek:
  - how to cleanup
  - how to get assistance
  - information on insurance
  - why they were flooded
  - what is being done to prevent it happening again.
- ◆ 78% expect Councils to provide that information with only 6% nominating the CMA and 10% the SES. No one nominated DHS which currently has some of the most comprehensive and most web accessible information in this regard. Others also nominated included the local water authority.
- ◆ 54% nominated the internet as a source of this information with 18% expecting to get the information over the phone, 12% in person and 5% from the radio

### 3.1.4. Internet Access

- ◆ 80% of respondents have said they have access to the internet.
- ◆ The majority have access to the internet at home with the remaining generally only having access at work.
- ◆ One person nominated the library as their internet access point and another an internet café.
- ◆ 73% of people with internet access use it to look for information. Those that don't use it to look for information mostly have the internet at home.
- ◆ Almost all of those who do not have access to the internet were 60 and over.
- ◆ Those with access that don't use it to look for information were generally 50 and over.

### 3.1.5. Interpretation

These survey results suggest that:

- ◆ Providing information about flooding and flood risks on the internet is worthwhile but will not be accessed by a large proportion of the population
- ◆ Having the web portal accessible to council staff as a reference when fielding counter or telephone inquiries will increase significantly the number of people getting access to the information on the flood web portal
- ◆ Having links from council websites to the flood web portal would direct more people to it
- ◆ The webportal should include information which makes it clear to users that historical flooding and their location in the landscape are not reliable indicators of flood risk.
- ◆ There needs to be an effective means to direct people to the web portal when they do not think that they are at risk of flooding but actually are
- ◆ Property purchase is the time when people are most interested in flood risks before a flood and a significant proportion also said they would seek such information if they were making outside improvements, building or renovating
- ◆ Sending people a letter saying their property was flood affected is likely to direct inquiries to the web portal
- ◆ People need specific information about the flood risks to their property
- ◆ Some provision should be made to help those whose English reading is not strong to understand the fundamentals of their flood risks through the web portal.

Not all of the listed suggestions are practical, particularly given that some councils themselves are refusing to acknowledge the flood risk in their local government area and proactively advising residents of their flood risks is often seen as being too politically sensitive. However, the list does provide useful guidance in not only the design of the web portal but the supporting strategies which can direct people to the portal.

On reflecting upon some of these findings an important conclusion was reached that people need to be directed to the web portal when making important decisions about their property (purchase, extension, renovation). Ideally, reference to the web portal could become part of the process for dealing with property, development and building inquiries within councils but this may need to be a longer term goal given the diversity of approaches within councils to floodplain management.

It was decided that the portal itself should include information about why consideration of flooding is important when making property decisions and an explanation of how flooding works and how to build and renovate in a way that is "floodsmart".

It was also decided that people need to be directed to relevant parts of the web portal via prompts which do not require them to appreciate their flood risks beforehand. The home page therefore has prompts/buttons which people can easily identify with as shown in Figure 1. It encourages people who have no idea of their flood risk as well as those who do to look further by prompting:

Flood information for people who....

- ◆ are buying a property
- ◆ are renting or leasing a property
- ◆ are building, renovating or extending
- ◆ are landscaping or improving a yard
- ◆ are living or working in a floodprone area
- ◆ have heard a flood warning
- ◆ have been affected by a flood

In other words, it lets people start with something which they know to guide them to what they do not know and probably did not realize that they needed to know.

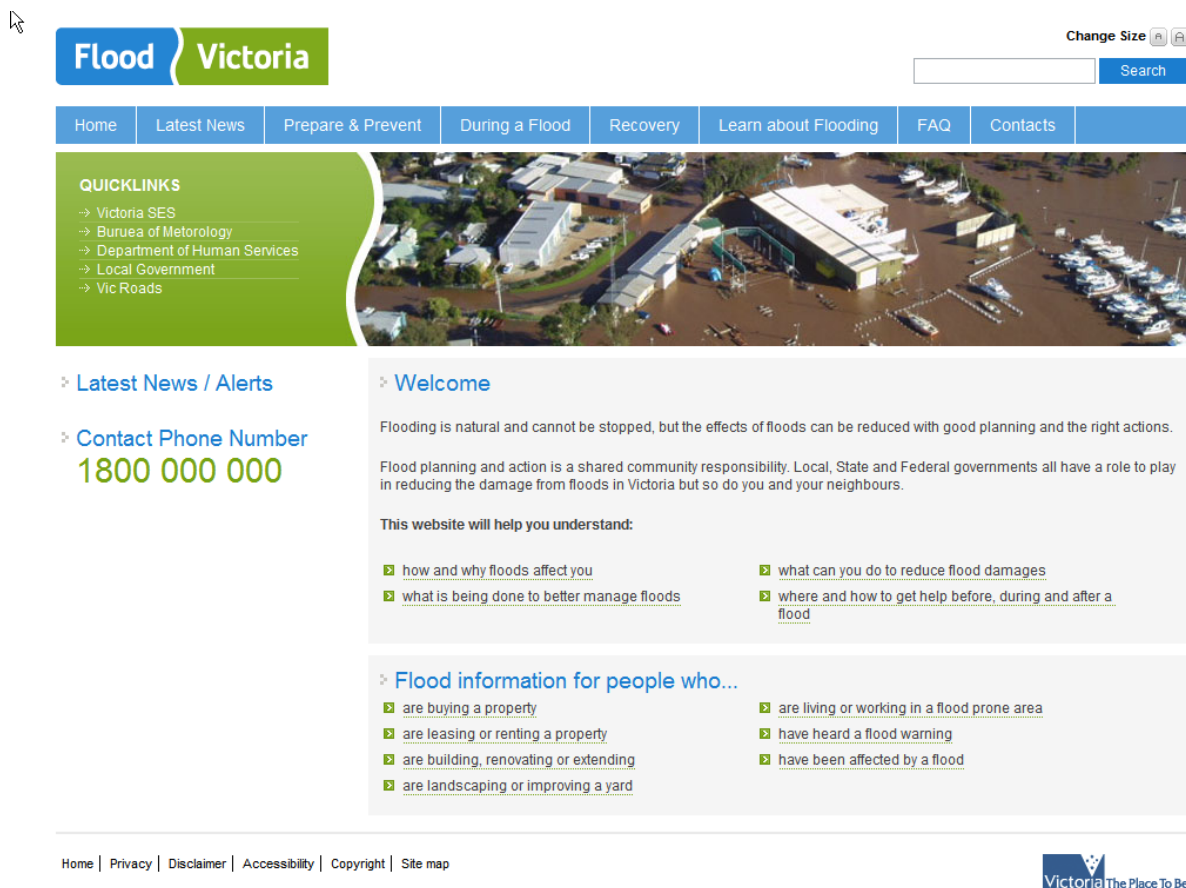


Figure 1 Flood Victoria Home Page

### 3.2. Information

It was recognised that there is already some very good information on the internet about flooding and that there was little benefit in that information being reproduced. Furthermore, some information such as weather forecasts and flood warnings are dynamic and considerable resources would be required to keep the information up to date.

The decision was made that where suitable web based information already existed, the web portal would provide links to those sites. New content for the site would only be created where suitable information did not exist or a particular emphasis needed to be placed on the information or it had to be placed in context for the users of the information.

From leads provided by the steering committee and through internet research of national and international websites, a report was prepared indicating what static and dynamic flood information was available of relevance to Victoria.

A basic web portal map was created (Figure 2) in consultation with the steering committee which identified what information needed to be accessible through the portal in the long term. It was recognised that some of that information does not currently exist and budget limitations would not allow it to be created in the short term. Through consultation with the steering committee, the information was prioritised.

The intention is that over time additional content and links will be provided in the web portal and current information will be updated.

In summary it was found that there were several sources of useful information about flooding generally, or specifically for Victoria. The information is not always easy to find because the websites on which it sits are either large or not particularly intuitive to use. By providing links to them from the web portal it is hoped that a quicker and more intuitive path to the information will be found. Sites of note include:

### 3.2.1. Before a flood

The Victoria SES website has some general information as well as specific information for locations where it has rolled out its FloodSmart education program.

The Department of Planning's Planning Maps Online and the Department of Land's Interactive Map both allow you to search for properties and ascertain whether they have been mapped as flood affected. Neither are particularly intuitive to use and don't really explain what the flood mapping means. The challenge for the web portal will be to lead people to this information and explain what it means.

### 3.2.2. During a flood

The Bureau of Meteorology has comprehensive flood warning information during an event. Vicroads provides information about road closures and utility and service providers information about service disruptions. As most of this information will be dynamic, is it more appropriate for it to be posted and updated on the respective agency websites with the flood portal providing links to those points.

### 3.2.3. After a flood

The Department of Human Services home page has a permanent link to an emergency management page as well as "latest news" links following floods which provide flood recovery information, including health, safety, water and electricity supply, counseling and financial issues. Some of the fact sheets are available in some community languages.

## 3.3. Website

### 3.3.1. Examples

The research into available web content regarding flooding also evaluated the design of the websites and particularly looked at how easy it was to find information about flooding. This aspect of the research extended beyond Australia and also into natural hazards other than floods. The best examples were presented to the steering committee to provide it with an indication of best practice web design for providing natural hazards information.

The steering committee selected some of the features of these sites to guide the design of the web portal architecture shown in Figure 2. It has been given the domain name floodvictoria.

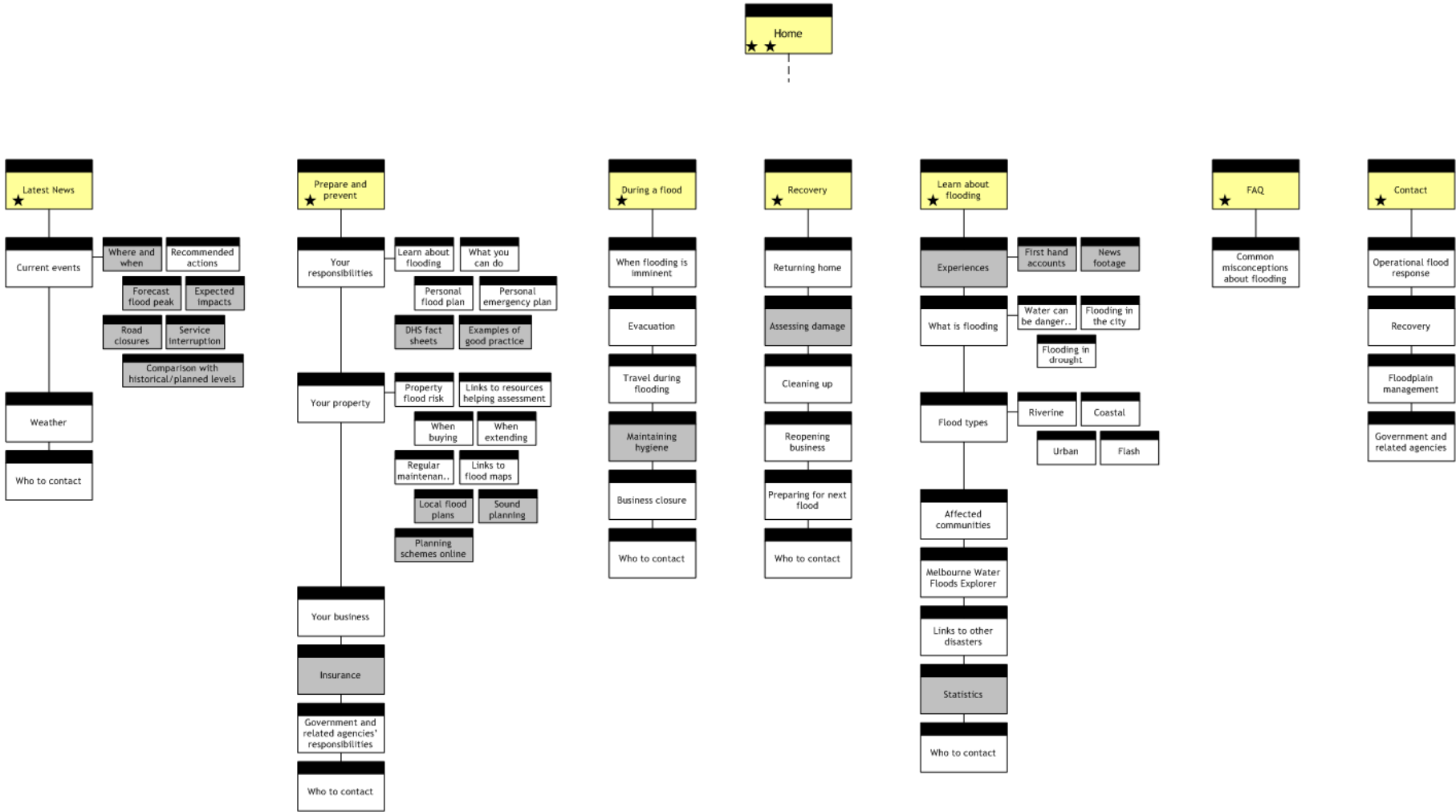


Figure 2 Web Portal Map

### 3.3.2. The Web Portal

A key feature of the web portal design was the provision of several pathways to the same information.

For example the home page shown in Figure 1 has a menu bar across the top which takes you to different categories of information, the “quick links” provide links to websites which have comprehensive and dynamic flood information, the “latest news/alerts” link takes you to information about current flood warnings while the links on the main section of the home page provide links based on categories of information or how people identify themselves. Often some of the same information is accessed by the different links but it allows people to take the path which is most intuitive for them in the circumstances which have lead them to the website.

Members of the public were invited to use the website with the designers observing how they used it and afterwards interviewing them to get feedback on how easy it was to use and comprehend. Improvements were made to the design in response to this feedback.

### 3.3.3. ScenarioBuilder®

It was recognised by the web designers Jadelynx that the use of its proprietary product ScenarioBuilder® could be used to provide added value to the website. An application was therefore built on the website which allowed anyone to anonymously conduct an assessment for a property by answering a series of questions about the location of the property, their relationship to it (purchaser, owner, occupier) and what they were wanting to do (use it for a residence, business, renovate, redevelop). Scenario builder then provides information about the known flood risks to the property, what they mean in practical terms and what steps can be taken to manage those risks. This aspect of the web portal was still under development at the time of writing.

## 3.4. The Future

The basic web portal design is now complete and is with the Steering Committee for finalisation. Part of that process includes making arrangements for hosting and continually updating the web portal. Current indications are that it will be mainly funded by the CMAs and Melbourne Water.

## 4. CONCLUSIONS

The research associated with the project has shown that the internet can play an important role in providing people with useful information about their flood risks and how to manage them. For it to be most effective in fulfilling that role it needs to provide information in a way which is accessible, relevant and easy to understand. Good use can be made of much existing information on the internet by guiding people to the information that they need through a well designed web portal as well as programs and processes outside of the internet which encourage people to access information about flooding when making major decisions about properties.

## 5. ACKNOWLEDGMENTS

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## 6. REFERENCES

Boura, J (1998) Community Fireguard: Creating partnerships with the community to minimise the impact of bushfire, *Australian Journal of Emergency Management*, Vol. 13, pp. 59-64.

Paton, D., Smith, L., Johnston, D., Johnston, M., & Ronan, K., (2003), *Developing a model to predict the adoption of natural hazard risk reduction and preparatory adjustments*, (Research Project No. 01-479): EQC Research Report.