UPDATING NATIONAL GUIDANCE ON BEST PRACTICE FLOOD RISK MANAGEMENT

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Abstract

The National Flood Risk Advisory Group (NFRAG), a reference group of the Australian and New Zealand Emergency Management Committee (ANZEMC), has worked with the Australian Emergency Management (AEM) Institute to update national best practice in flood risk management through the development of *AEM Handbook 7: Managing the floodplain: best practice in flood risk management in Australia (2014).*

To support this national best practice manual NFRAG is developing a range of technical guidelines and supporting the development of jurisdictional administrative guidance to outline responsibilities across each state and territory. This guidance relates to the development of:

- practical technical specifications for mapping and modelling outputs and outcomes from flood investigations, and
- the provision of practical guidance to assist management of flood risk in relation to:
    - The breakdown of the floodplain in relation to flood hazard to update the advice in *Appendix J of Floodplain management in Australia: best practice principles and guidelines*, prepared for the Standing Committee on Agriculture and Resource Management (SCARM) of the Agriculture and Resource Management Council of Australia and New Zealand (SCARM Report No. 73, 2000).
    - The breakdown of the floodplain in consideration of the additional hazard resulting from isolation of an area from flood free land in a flood event.

This paper will discuss progress on the development of these guidelines and how the guidelines will work with AEM Handbook 7 to inform flood risk management practice across Australia.

Introduction

Flooding is a natural phenomenon that occurs when water covers land that is usually dry. Flooding can have devastating impacts upon communities.

The *National strategy for disaster resilience*, adopted by the Council of Australian Governments on 13 February 2011 (COAG 2011) recognised that a national coordinated and cooperative effort is required to enhance Australia's capacity to withstand and recover from emergencies and disasters. A disaster resilient community is one that works together to understand and manage the risks it confronts. Disaster resilience is the collective responsibility of all sectors of society, including all levels of government, business, the non-government sector and individuals. If all these sectors work together with a united focus and a shared sense of responsibility to improve

disaster resilience, they will be far more effective than the individual efforts of any one sector.

The goal of increased resilience to floods requires the management of the flood impacts to both existing developed areas of the community, and in areas that may be developed in the future. Generally this involves a combination of flood mitigation, emergency management, flood forecasting and warning measures, land-use planning, and infrastructure design considering the local flood situation and the associated hazards. Decision makers in these areas, insurers and the general public need access to information on flood risk to make informed management and investment decisions.

Effective flood risk management can enable a community to become as resilient as practical to floods. This is achieved through planning and preparing for, responding to and recovering from floods. This requires a coordinated multidisciplinary approach and the active engagement of the community as outlined in Australian Emergency Management (AEM) *Handbook 7: Managing the floodplain: best practice in flood risk management in Australia (AEMI 2014) (*which recently replaced *AEM19 Managing the Floodplain)*.

AEM Handbook 7 provides guidance on best practice principles as presently understood in Australia, rather than describing current practice. The term 'best practice principles' is used in its broadest sense to mean the underlying principles that need to be considered when formulating management plans, leading to effective and sustainable land use across Australia's floodplains. It is supported by other AEM series manuals *Flood Preparedness* (AEM20), *Flood Warning* (AEM21), *Flood Response* (AEM22) and *Emergency Management Planning for Floods Affected by Dams* (AEM23).

AEM Handbook 7 is available at: https://ema.infoservices.com.au/collections/handbook

Free download of the document requires login to the website and a print on demand service is available for a fee. As at the end of March 2014 more than 200 copies have been downloaded or ordered.

Best Practice as outlined in AEM Handbook 7

Occupation of floodplains and management of the associated risks is a balancing act. It involves acknowledging that occupying the floodplain comes with an inherent risk and understanding what adverse impacts the community is prepared to accept in return for the benefits of living on the floodplain.

Best practice promotes the consideration and, where necessary, management of flood impacts to existing and future development within the community. It aims to improve community flood resilience using a broad risk management hierarchy of avoidance, minimisation and mitigation to:

- reduce the health, social and financial costs of occupying the floodplain
- increase the sustainable benefits of using the floodplain
- improve or maintain floodplain ecosystems dependent on flood inundation.

Key principles on which the best practice approach is based are discussed in Section 1.2 of *AEM Handbook 7* and include:

- a cooperative approach
- a risk management approach

- a proactive approach
- a consultative approach
- an informed approach
- supporting informed decisions
- recognition that all flood risk cannot be eliminated
- recognition of individual responsibility

AEM Handbook 7 outlines that achieving best practice relies upon:

1. The development of sustainable governance arrangements for managing flood risk, so that responsibilities for managing this risk are assigned and clearly understood.
2. Making information on flood risk readily available so that the government, risk managers and community can make informed risk management and investment decisions.
3. Understanding flood behaviour and risk and the recognition of the impacts of floods on the community and enabling effective decisions to be made on its management.
4. An ability to understand and maintain the natural flood functions of flow conveyance and storage of the floodplain to enable effective flood risk management and minimise environmental impacts.
5. Managing flood risk to improve community resilience to flooding, and to handle the potential growth of this risk through development and redevelopment, and future changes to floodplain topography and climate.

Floodplain Management Entities (FMEs)

FMEs are the government body with primary responsibility for managing flood risk at a local level. They may be local or state government entities and this varies between jurisdictions. *AEM Handbook 7* acknowledges that FMEs in different jurisdictions have different types and scales of flood problems and are at varying positions on the pathway to best practice on the various elements of flood risk management practice.

FMEs therefore may need to focus on different areas to improve flood risk management practice within their service area or jurisdiction. Figure 1 presents an example of the different elements supporting best practice and different stages on the pathway to best practice for these elements.

Flood Risk Management Framework

The flood risk management framework (Figure 2) links the understanding of flood risk to its management. Understanding of flood risk is generally developed for all or part of an individual floodplain or catchment. Risk management is generally undertaken within FME administrative boundaries, which may span multiple catchments and involve a range of different types of flood problems or may only be part of a catchment.

The framework provides a robust, fit-for-purpose approach that provides flexibility for FMEs with different levels of resources and information, to manage flood risk and work to improve their knowledge and management practices considering the scale and complexity of the flood threat faced by their community.

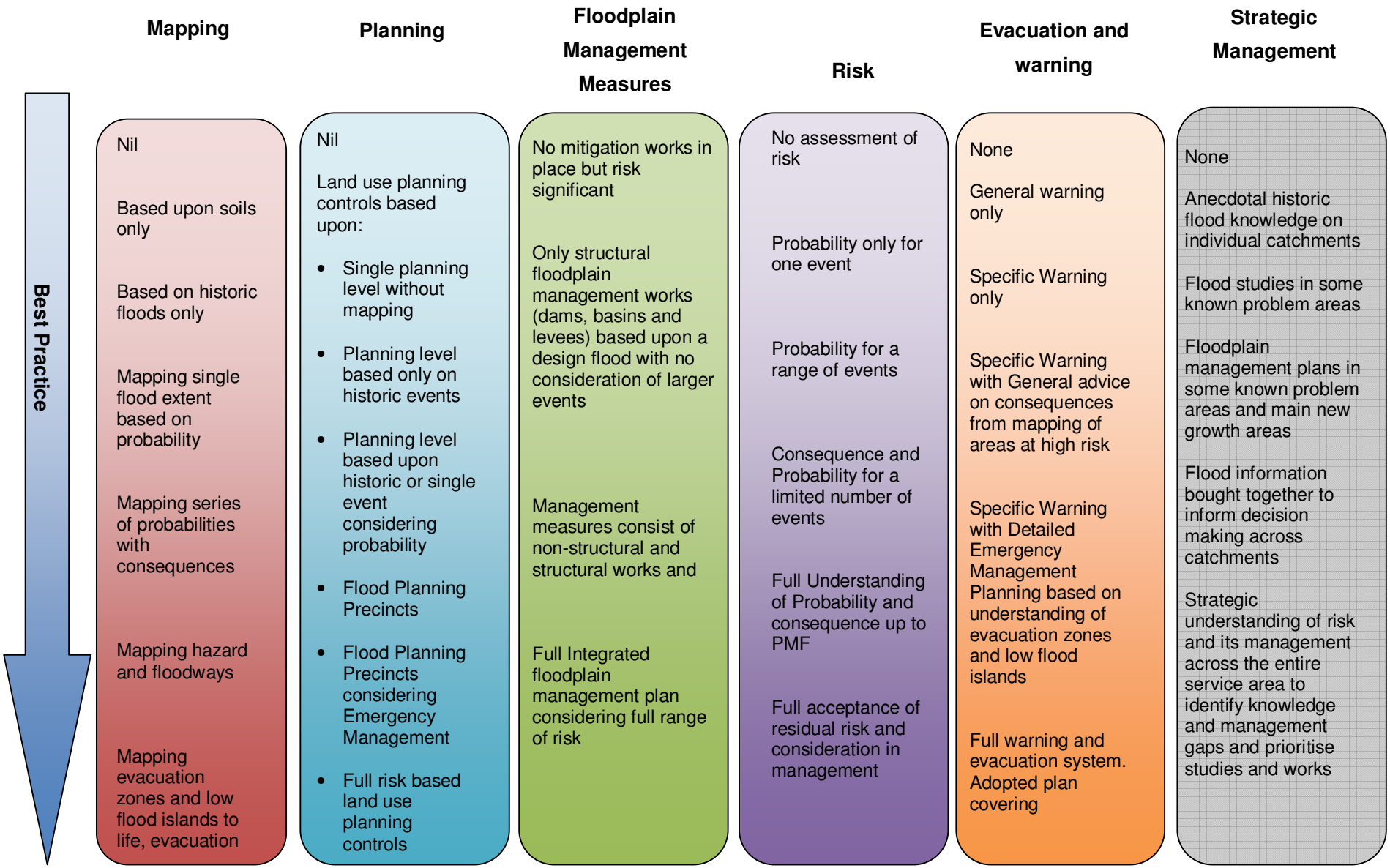

Figure 1: Floodplain Management Framework (Source *Babister and Retallick, 2013*)

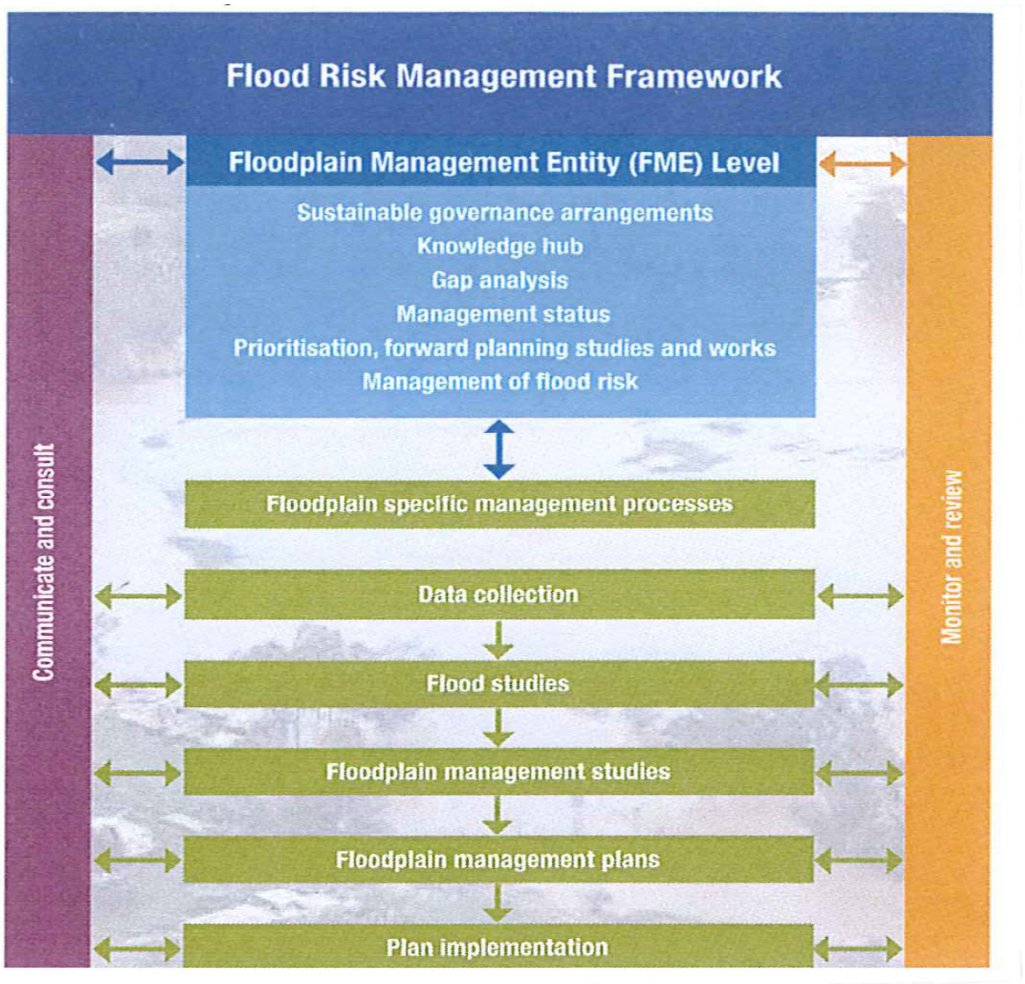

Figure 2: Flood Risk Management Framework (Source *AEM Handbook 7 Figure 3.1*)

Informing Decision Making

Best practice promotes the understanding of flood behaviour so that the flood risk to the community can be understood, effectively communicated and, where practical and justifiable, mitigated. It facilitates informed decisions on managing risk, and economic investment in development and infrastructure on the floodplain. This does not require a sophisticated or consistent understanding of flood behaviour across all areas of Australia, as this is neither practical nor necessary.

It encourages an FME to collect, improve and disseminate the best available information on flood behaviour, and associated risks to the community, decision makers and other agencies with a responsibility for managing flood risk so flood risk can be better understood and managed. This information may be derived from floodplain specific studies and other sources (e.g. historic events), and by applying approaches of different degrees of sophistication that are fit-for-purpose for the situation.

Working toward Best Practice

The degree of effort required to achieve best practice will vary depending upon: the area of interest; the complexity of the flood situation; current knowledge of flood risk compared to the information needs of government and the community to understand and manage risk; and current flood risk management practices.

The techniques used to address gaps in knowledge and management can vary within a catchment, with more sophisticated techniques used in areas with concentrated exposure to risk or more complex flood behaviour and simpler techniques used in areas where flood behaviour is more simplistic or development is less concentrated. The degree of sophistication necessary to improve knowledge and inform management may also vary depending upon the exposure of the community to flood risk.

Improvements in knowledge and management of flood risk are likely to occur over time, depending on need and available resources. Efforts on better understanding risk and on managing this risk are likely to be concentrated on where flood problems are known to exist and need management, where knowledge is insufficient to understand and manage risk, where existing exposure is high, or where growth of exposure due to future development is likely to be high.

Supporting management

Best practice promotes sustainable urban and rural land use planning practices that are cognisant of flooding, and limit growth in residual risk. It also facilitates the treatment of risk (where practical, feasible and cost-effective) to limit the exposure of the existing community to flooding. Treatment may involve a combination of flood mitigation, emergency management, flood warning and community awareness – together with infrastructure design, and strategic and development scale land-use planning.

Linking *AEM Handbook 7* to Flood Risk Management Guides

AEM Handbook 7 provides broad advice on all important aspects of managing flood risk in Australia. As part of the development of *AEM Handbook 7*, NFRAG identified the importance of developing technical guidance to support consistency in flood risk management practice, whilst providing for flexibility needed by jurisdictional management. Therefore AEM Handbook 7 was written to allow for flexibility in practice between jurisdictions. To provide this flexibility it was designed to be able to be used, where desired, to provide a basis for best practice within a State or Territory when used within a framework of administrative and technical guidance.

The development of technical guidance can either be at a national level, through the work of a group such as NFRAG, or at a jurisdictional level. Guidance developed nationally may be used directly by a jurisdiction or may inform the development of jurisdictional guidance in this area. Alternatively a jurisdiction can have its own guidance. This provides the flexibility in practice necessary to deal with the specific flood risk management issues faced within each jurisdiction.

NFRAG, led by the NSW NFRAG Representative and with administrative support from the Ministry of Police and Emergency Services (MPES), sought funding to facilitate the development of practical and well informed advice in this area through the National Emergency Management Program (NEMP) managed by the Attorney General's Department. The application was successful and the project was commenced in late 2013.

This paper provides an update of the development of the first set of technical guides at a national level to support *AEM Handbook 7*. These relate to:

1. The development of practical specifications for mapping and modelling outputs and outcomes. This project also supported the program for consistent flood mapping and modelling developed by the Risk Assessment Mitigation and Measurement Subcommittee of the ANZEMC and endorsed by the Standing Council of Police and Emergency Managers in light of the significant flooding in the eastern states.
2. The provision of guidance in relation to flood hazard to update advice given in *Appendix J of Floodplain management in Australia: best practice principles and guidelines*, prepared for the Standing Committee on Agriculture and Resource Management (SCARM) of the Agriculture and Resource Management Council of Australia and New Zealand (SCARM Report No. 73, 2000). *AEM Handbook 7* replaces the SCARM document.
3. The provision of guidance on breaking down the floodplain in consideration of the additional hazard resulting from the isolation of an area from flood free land during a flood event. This project builds upon guidance developed in New South Wales on classifying flood emergency response problems at a community scale.

The different projects being completed as part of this stage of the project are being undertaken in parallel through different consultancies. These projects are being informed by the input of NFRAG representatives and a number of key industry professionals through a workshop and associated consultation.

The development of these guidelines is scheduled to be complete in the first half of 2014. The guidance and the associated information are to be made available on a web with a linkage to *AEM Handbook 7.* The individual projects are discussed below.

Development of Practical Specifications for Mapping and Modelling Outcomes and Outputs

The project aimed to develop a flexible technical specification that covered studies dealing with small and large communities and with simple and complex flood situations in consideration of the needs of the different end users of flood information. This is consistent with the National Strategy for Disaster Resilience and *AEM Handbook 7*, which promotes access to information for improved decision making, as illustrated in Figure 3.

This project built upon the analysis of end user needs undertaken under the leadership of the Attorney General's Department. The project was broken down into three stages.

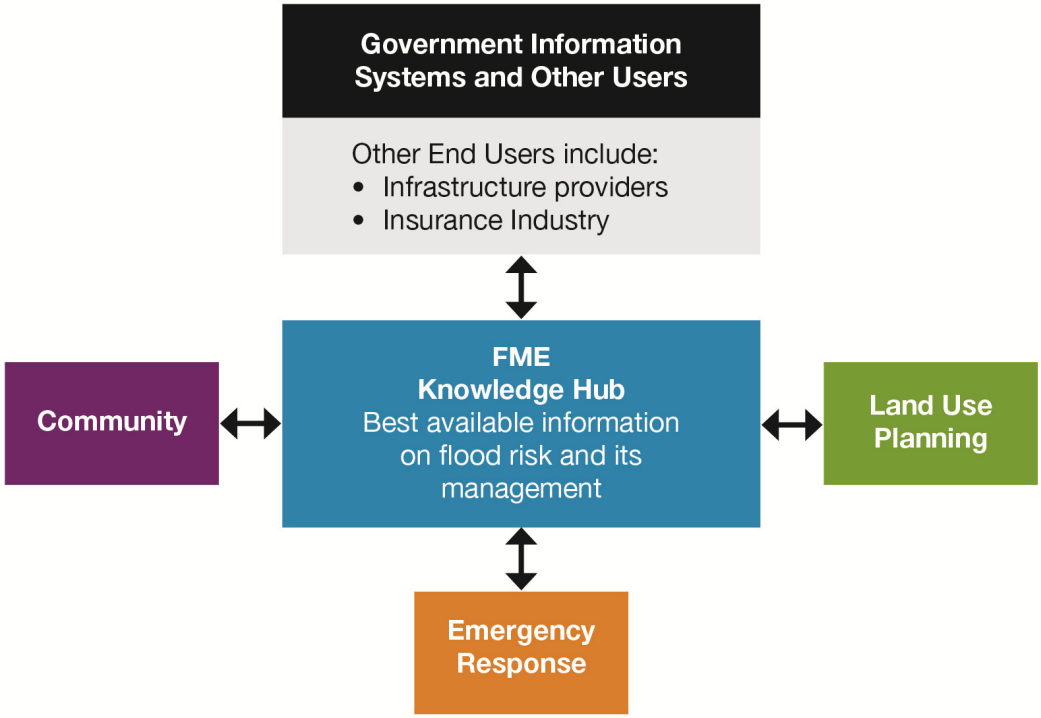

Figure 3: Communicating information on flood risk (Source *AEM Handbook 7 Fig 3.3*)

Stage 1 – Comparing Model Capability to End User Needs

This project examined end user needs (from flood risk management, emergency management, flood prediction, strategic planning, development controls, strategic decision makers, insurers, response managers, and the community) to the types of outputs generally available from studies using different modelling techniques typically used to examine different types of flood problems (from simple to complex) and the scale of the community at risk (small to large).

A primary key for differences between end user needs from studies was found to be whether the flood emergency response requires sophisticated logistical information due to the scale of the evacuation problem relative to the time available to undertake the evacuation.

The report on Stage 1 of the project *Development of Practical Specifications for Mapping and Modelling Outcomes and Outputs. Stage 1 – Comparing Model Capability and End User Needs* (WMAwater 2014) is discussed in detail in *Comparing modelling approaches to end user needs* Babister et al (2014), a separate paper to this conference. This stage was used to inform the development of technical specifications in Stage 2 of the project.

Stage 2 – Development of General Technical Specifications

Stage 2 of this project involved the development of general technical specifications that can be used by floodplain management entities as the basis for developing specifications for individual flood studies and floodplain risk management studies and associated guidance for using these specifications. It is likely that several different base specifications will be developed targeted at simple and complex projects for flood studies and management studies that can be added to, subtracted from, or joined to suit the project aims.

It involved examining briefs from different jurisdictions and different types of projects with the aim to simplify these briefs so that they provided for a clearer specification of the project and the requirements for outcomes and outputs. The briefs needed to allow for a variation in complexity of the flood behaviour and the community scale and allow for variations in the scope.

A preliminary table of contents for a flood study specification involves the following sections:

- Introduction. This section outlines who is funding the study and where it is being undertaken and provides high level advice on why the study is being undertaken. For example in NSW this may relate to the NSW Flood Prone Land Policy and Floodplain Development Manual (DIPNR 2005).
- Background and Study Area. This section outlines the study area, describes the catchment, flood history, discussion of the impacts of flooding on the community and the flood emergency management problem, outlines any software preferences for deliverables, and how the outcomes from the study are to be used and for what end users.
- Available information. This section provides a series of tables to complete to reference relevant information for use in the study, a brief description of these and outlining their accessibility for tendering and the project. If information is openly available for review during the tender period, particularly electronically, this ensures that it can be more effectively considered by the consultant in preparing their proposal. The tables cover available flood related studies and data, other relevant documentation including local policies and emergency management plans, types of data available for use in the study.
- Current Guidance and References. This section enables reference to current guidelines, manuals and reference documents that are to be considered or adhered to during the study.
- Objectives. This section aims to state what the project will achieve in relation to flood risk management within the study area and how this broadly fits within flood risk management within the floodplain management entity. These may include aspects such as better understanding of the: flood behaviour in the area; impacts of a range of flood events on the community; flood risk in the study area; and the effectiveness of current management measures. They also include facilitating information sharing on flood risk across government and with the community.

  It may also identify the key end users of the information from this study, such as:
  - Emergency management planners
  - Land use planners (strategic planning and development control planning)

- Flood risk management professionals
- Engineers involved in designing, constructing and maintaining mitigation works
- Strategic decision makers (including elected officials)
- Insurers
- Hydrologists and meteorologists involved in flood predictions and warnings
- The community

- Scope of Work. This section is broken down into sections on data collection, consultation, flood behaviour analysis (include hydrology and hydraulic modelling), table specifying modelling events, model calibration and verification, an assessment of flood function, and flood hazard assessment. It also allows for optional elements including flood emergency management aspects, flood damage assessment, preliminary advice on considerations for land use planning controls for floods, and preliminary identification of management options. One of the key elements in reporting will be limitations of studies in terms of where results are applicable and what the results are fit for purpose to achieve.
- Deliverables. This section outlines the deliverables to be provided and their format. This includes model results, model files and model setup summary file, mapping outputs – both for reports and for GIS, reporting requirements and other deliverables.
- Hold points. Advice on key hold points for review, such as agreement to calibration and validation of flood behaviour before proceeding to working on design events.
- Limitations. This section is proposed to get the tenderer to outline any limitations the project may have in meeting the objectives and any specific end user needs requirements.
- Management including timings and meetings.
- Tendering provisions. Including standard information to be provided and formats (including task breakdowns) with tenders to make tenders easier to compare on a like for like basis.
- Tender assessment

Specifications will be extended to include management study components dependent upon available budget.

NFRAG has agreed to take ownership of the specifications and to bring back advice on lessons learnt in their use so that these can be improved over time.

Stage 3 – Development of Advice on Selecting and Developing a Specification

Stage 3 of this project relates to the development of advice to assist in specification development considering the key end users of the study and the flood situation. This involves developing a document to inform selection of base specifications considering complexity of the flood situation, scale of community and end user needs, making recommendations on what options may need to be considered for inclusion and checking deliverables against end user needs.

Development of Guidance on Flood Hazard

AEM Handbook 7 does not provide specific guidance on quantification and classification of flood hazard to replace the guidance in Appendix J in SCARM (2000). Instead, this guidance is to be covered by a supplementary flood risk management guide on flood hazard.

The project to review flood hazard analysis methods is currently being finalised. The project has reviewed the content of SCARM Appendix J, collated and reviewed available information on contemporary flood hazard analysis by an international literature search and made recommendations for content of the supplementary guide to AEM Handbook 7 for flood hazard.

Hazard analysis is used in floodplain management to:

- Understand the variation in hazard across the floodplain in terms of the physical behaviour and timing of flooding.
- Assess the changes to flood hazard resulting from structural mitigation options. Flood hazard may be altered by decreasing flood depth, reducing velocity, reducing the degree of isolation or duration of flooding, and reducing rate of rise of floodwaters.
- Provide information on hazard constraints (and limitations it the ability to manage these) to consider in both strategic and development scale land use planning.
- Provide information for emergency management planning.

The magnitude of flood hazard can be variously influenced by the velocity and depth of floodwaters and their combination, the degree of isolation during a flood event, the effective warning time, and the rate of rise of floodwater.

The advice developed considered the vulnerability of communities when interacting with flood flows and highlighted the various issues that need to be managed. Classification of flood hazard has been indexed by referencing the flood hazard value against meaningful vulnerability thresholds relating the hazard to potential risk to life. Vulnerability curves have been recommended relating flood hazard to the stability of people and various categories of vehicles when exposed to flood flows. Hazard has also been indexed against the structural stability of buildings when exposed to, and impacted by, floodwaters.

The report strongly acknowledges that the rate of rise of flood waters and duration of isolation by flooding may add significantly to the degree (danger level) of flood hazard. However, the report defers analysis of these aspects to the separate parallel work by Cardno Pty Ltd on examining the use of flood emergency response classifications to differentiate between the severity of the isolation problems of communities during flooding.

The Water Research Laboratory (WRL) of the School of Civil and Environmental Engineering at UNSW Australia provided advice on this guidance building upon their long history of internationally recognised work in this area. Work from *Australian Rainfall and Runoff (ARR) Revision Project 10: Appropriate Safety Criteria for People* (Cox et al., 2010) and *Australian Rainfall and Runoff Revision Project 10: Appropriate Safety Criteria for Vehicles - Literature Review* (Shand et al. 2011) was referenced for people and vehicle stabilty. Similar rigorous review and analysis of available international literature on building stability was completed as part of the current project.

People Stability

Safety criteria for people stability have been comprehensively reviewed as part of the ARR revision process. The people stability criteria as recommended in Cox et al., 2010 are reproduced in Figure 4. These criteria are recommended for all flood hazard assessments where the stability of people in flood flows is relevant.

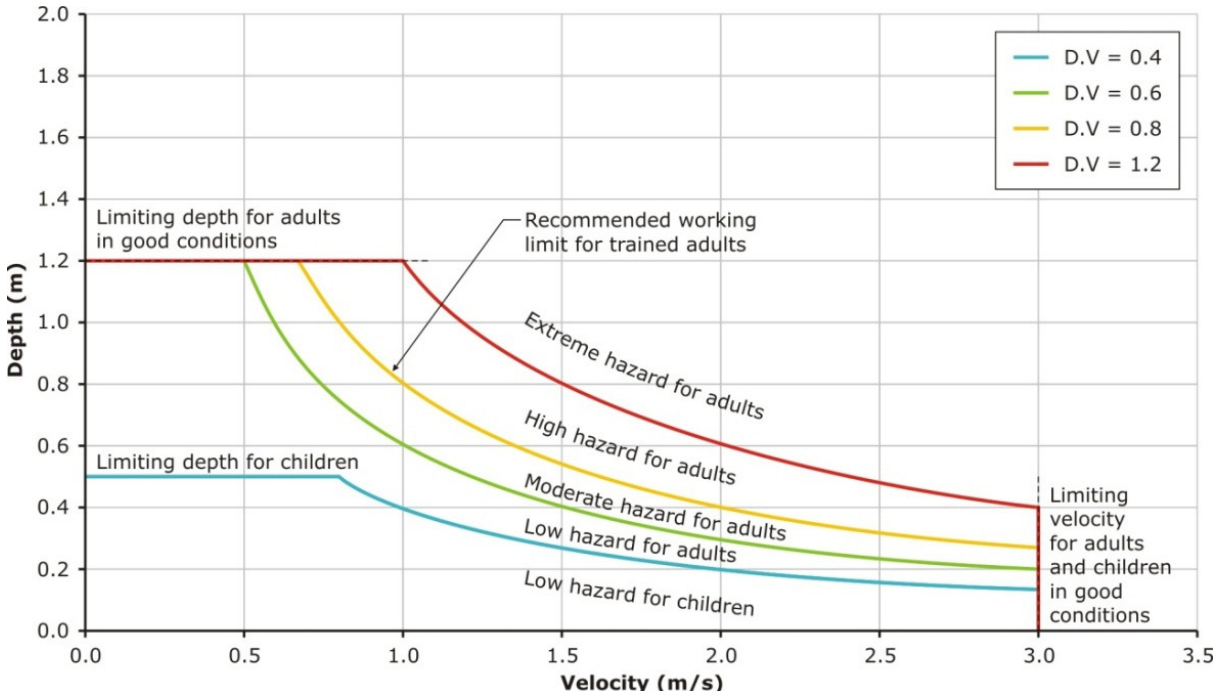

Figure 4: Thresholds for People Stability in Floods (After *Cox et al., 2010*)

Vehicle Stability

Similarly, safety criteria for vehicle stability have been comprehensively reviewed as part of the ARR revision process. Draft safety criteria for vehicle stability proposed by Shand et al (2011) are reproduced in Figure 5. These criteria are recommended for all flood hazard assessments where the stability of various classes of vehicles in flood flows is relevant.

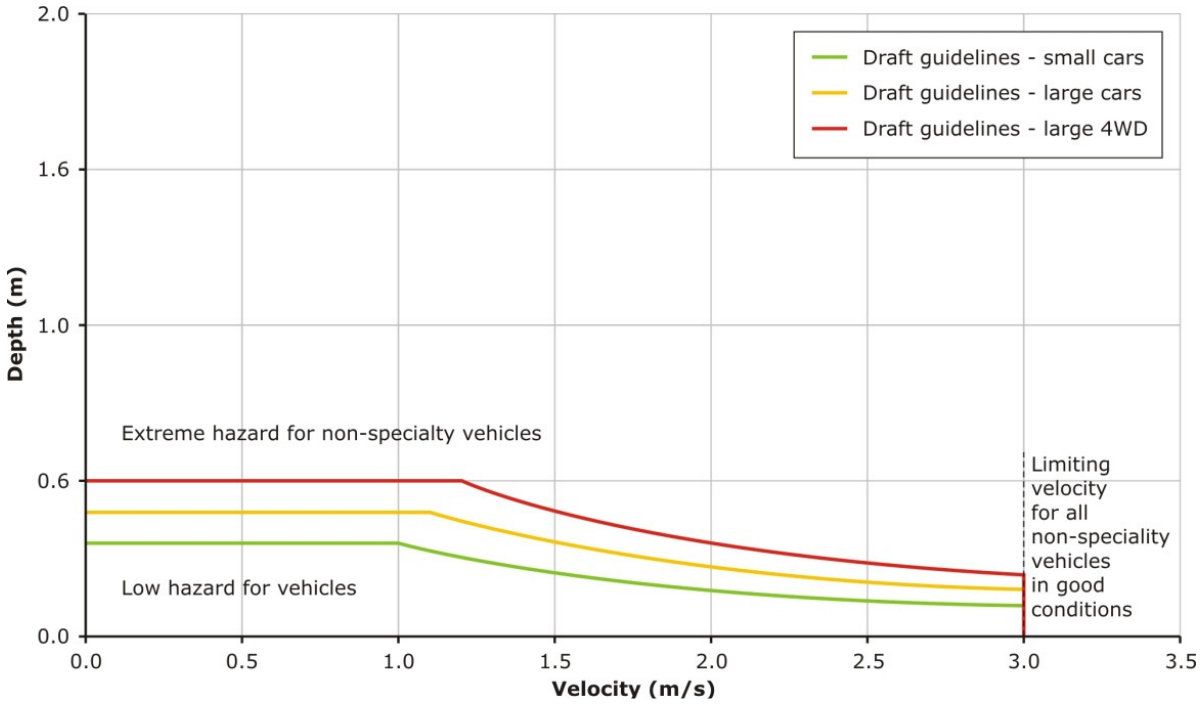

Figure 5: Thresholds for Vehicles Stability in Floods (After *Shand et al. 2011*)

Building Stability

A thorough examination of building stability during flood has been completed as part of this project. Proposed stability criteria for buildings are presented in Figure 5. There is considerable variability in the range of criteria specified in literature for the stability of buildings of varying construction types exposed to floodwaters. While the considerable variability is acknowledged, the analysis of building damage leading to collapse reported by Mason et al. (2012) for the Lockyer Valley floods in January 2010 is compelling. This work shows that buildings constructed for Australian conditions are vulnerable to damage and collapse under flood hazard conditions at the lower end of the scale, toward the green curve in Figure 6.

The green curve is proposed as a lower threshold for buildings constructed without consideration of flood forces. The hazard zone between the green curve and the upper limit red curve identifies flood hazard conditions where it is considered possible to design and build a structure capable of withstanding flood forces if required. Purpose built structures in such flood affected locations should be designed by suitably qualified engineers specifically to withstand the full range of anticipated flood forces which include: hydrostatic forces; buoyancy forces; hydrodynamic forces including impulsive, uplift and debris impact forces; damming of waterborne debris; wave actions; and erosion and scour.

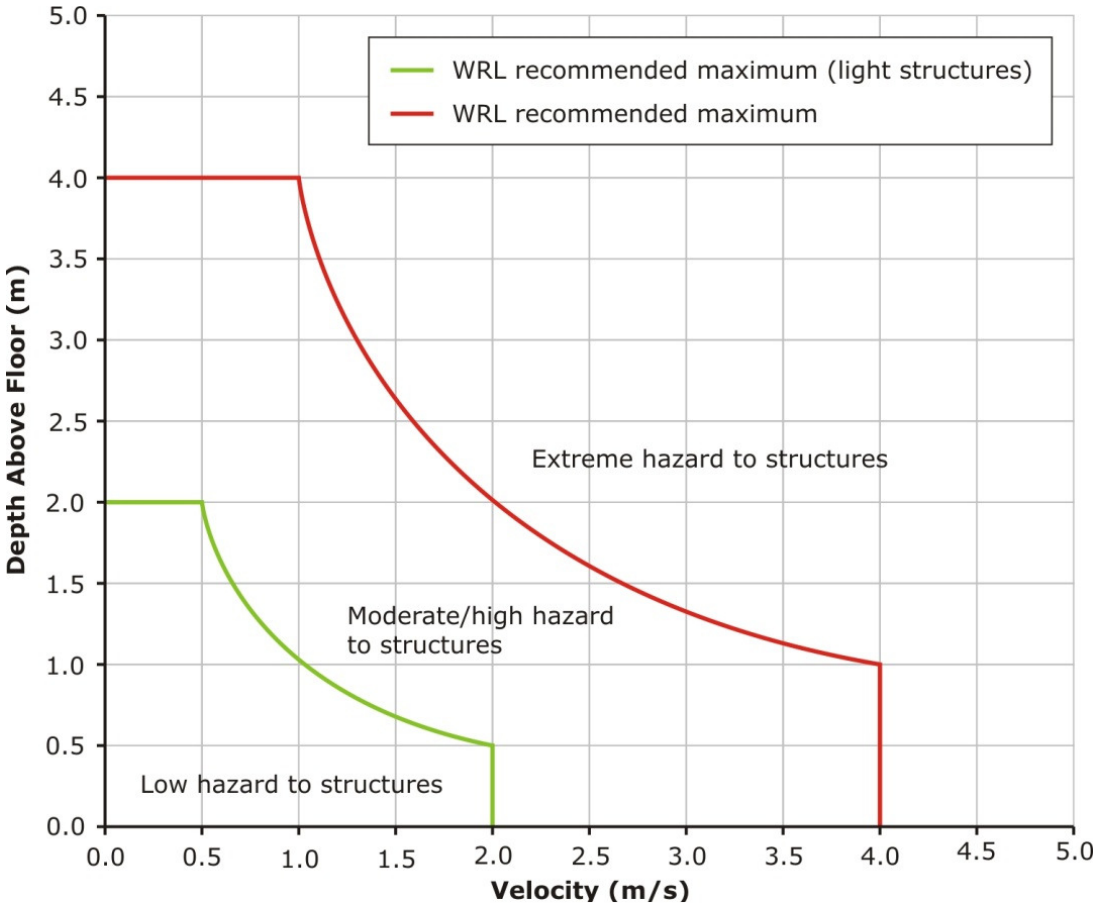

Figure 6: Proposed Thresholds for Building Stability in Floods (After Smith et al. 2014)

General Flood Hazard Curves

When dealing with specific floodplain management or emergency management analysis there may be a clear need to use the specific thresholds as described above. However, particularly in preliminary or scoping analyses, there is also an acknowledged need for a combined set of hazard vulnerability curves, which can be used as a general classification of flood hazard on a floodplain to feed into a constraints analysis. A suggested set of curves based on the referenced thresholds presented above is provided in Figure 7.

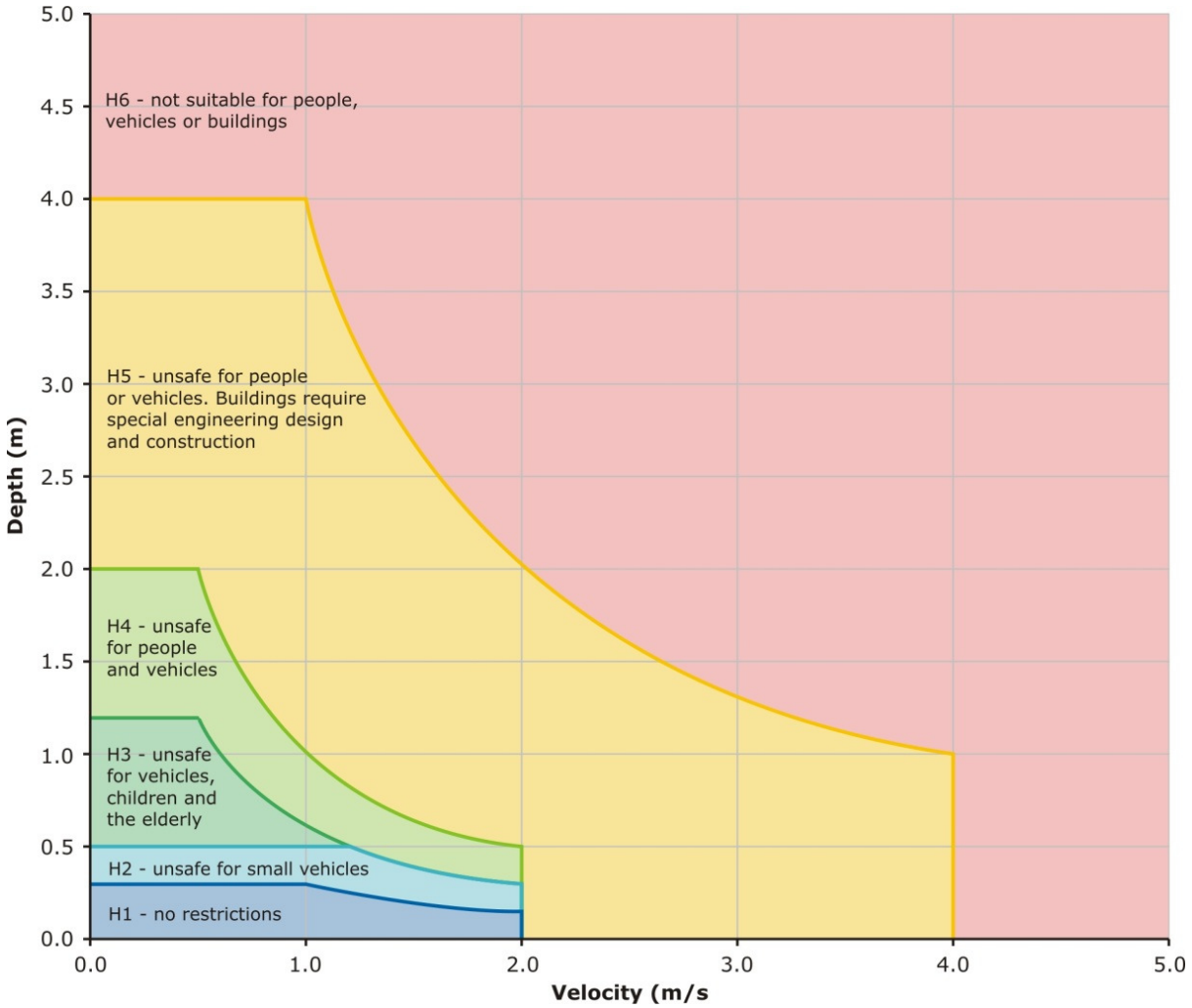

Figure 7 Combined Flood Hazard Curves (After Smith et al. 2014)

Discussion of Figure 7 at the most recent NFRAG workshop recommended using nomenclature relating the management issues to nominal categories identified as classifications H1 to H6 was more appropriate than using an arbitrary scale of different degrees of hazard.

The thresholds between categories are referenced back to meaningful vulnerability criteria as summarised in Table 1:

Table 1 Combined Hazard Curves – Vulnerability Thresholds

Hazard Classification	Description
H1	Relatively benign flow conditions. No vulnerability constraints.
H2	Unsafe for small vehicles.
H3	Unsafe for all vehicles, children and the elderly.
H4	Unsafe for all people and all vehicles.
H5	Unsafe for all people and all vehicles. Buildings require special engineering design and construction.
H6	Unconditionally dangerous. Not suitable for any type of development or evacuation access. All building types considered vulnerable to failure.

Identifying Differences in Isolation by Floodwaters

Flooding can isolate parts of the landscape and cut-off routes to evacuation centres on flood-free land (above the probable maximum flood, PMF, which provides an estimate of the upper limit of the scale of flood behaviour for a location). This can result in a dangerous situation, because people may see the need to cross floodwaters to access services, employment or family members. Many flood fatalities result from the interaction of people, often in vehicles, with floodwaters. Any situation that increases people's need to cross floodwaters increases the likelihood of an injury or fatality.

Floodplain areas can be classified in regards to isolation and access considerations. An example of the breakdown of a floodplain considering these classifications is provided in Figure 8. This classification provides the basis for understanding the nature, seriousness and scale of the problem. This can be developed and used in a way that informs:

- Emergency response management planning and associated emergency response for floods
- Land use planning decision making by identifying an additional development constraint to consider in both strategic land use planning and development controls
- Flood risk management by identifying additional hazard that needs to be considered in management and may lead to consideration of management measures to improve flood warning and emergency response (for example, increasing the capacity of evacuation routes)
- High level decision makers so this can be considered in decision making
- The community to inform response in a flood event.

As NSW already had guidance in this area, a review of lessons learnt from this guidance is being undertaken (Cardno 2014) to assist with the scope and development of national guidance. This considered preliminary discussions at a national workshop and has identified the need for a national guideline to provide advice in this area, using the NSW guidance as a starting point but considering lessons from its application. Some of the issues that needed to be considered included:

- Improved clarity on the use of the classifications. When the NSW guideline was written pre-2007, it focused heavily on informing emergency management planning, whereas this advice is important for a broader audience, as outlined above.
- Improving the clarity of definitions in consultation with emergency service agencies. This includes using diagrams in describing categories and having a separate classification for communities protected by levees.
- Identifying a means of using the available information from existing studies to be able to retrofit preliminary classifications where desired and appropriate.
- Using the probable maximum flood or equivalent extreme flood as the basis of deciding upon classification. However, if either wasn't available, using the highest available flood to provide some guidance on classification but identifying the limitations and using this with caution. For example, high flood islands for a smaller event may become low flood islands for an extreme flood, which may influence management decisions.
- Clarify the scale at which the guideline is to operate. The NSW guidance is designed for use at a community scale but has been applied in a variety of other scales. The use at smaller scales has not always met the strategic intent of the guidance.
- Consider how to use in overland flooding given its difference in scale.

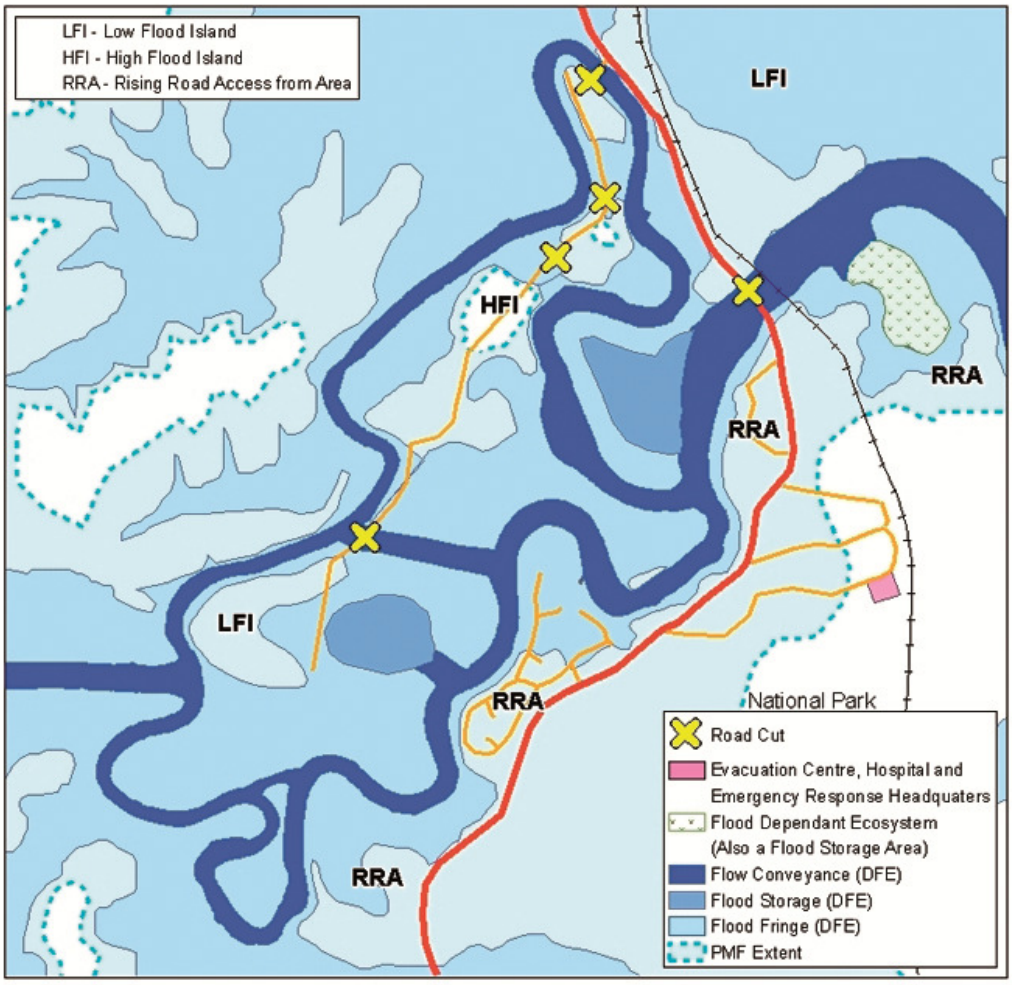

Figure 8 Example of Areas with Different Emergency Response Classification (After Figure 5.3 AEMI 2014)

Conclusion

AEM Handbook 7 is now complete and available through the AEMI website at: https://ema.infoservices.com.au/collections/handbook. It aims to provide the basis for best practice is flood risk management in Australia. *AEM Handbook 7* has been designed to be able to be used by jurisdictions in conjunction with administrative and technical guidance.

NFRAG is continuing to work on improving practice by developing practical guidelines and technical specifications to support the effective management of flood risk. This supports the use of *AEM Handbook 7*, where desired, as part of the policy framework for flood risk management in individual States and Territories as outlined in this paper.

The guidelines and technical specifications being developed are scheduled to be completed in 2014. Guidelines and relevant background information will be made available on the web with a linkage to *AEM Handbook 7*.

NFRAG has applied for funding from the National Emergency Management Program for next financial year to continue to the development of additional guidance.

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