

GETTING PLANNERS ON-BOARD — THE KEY TO SUCCESSFUL FLOODPLAIN MANAGEMENT

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Introduction

It has been 20 years since the first Floodplain Development Manual was published to guide the management of flood risks in New South Wales. There have been two subsequent versions of the Manual released. While the objectives and general risk management concepts in the Manuals have not substantially changed over this 20 year period, there has been an evolution of management solutions from those with an emphasis on structural engineering to those with an emphasis on non-structural measures, in particular town planning. This evolution has been partly attributed to the realisation that all flood risks cannot be feasibly addressed by engineering solutions and partly due to an increasing rejection of engineering solutions because of environmental impacts.

With the evolution of flood risk management from engineering towards planning based outcomes, the authors question how successful the floodplain risk management system has been in embracing the town planning profession. If current day practice is to be effective in meeting the objectives of flood risk management, the input of town planners is essential. But how aware are town planners of the floodplain management process in NSW, the fundamental nature of flood risks and the role of town planning in managing flood risks? A lack of understanding of such principles would undoubtedly result in poor advice and recommendations. Recent media releases raise questions as to the understanding of these principles by senior politicians responsible for making planning decisions.

This paper explores this issue. It also outlines the results of a questionnaire sent to key planning professionals and presents the findings of enquiries made of town planning educators in NSW. The paper concludes with a discussion of possible approaches to improve the understanding of floodplain risk management by town planners and to encourage their more effective involvement in the process.

Methodology

This paper was primarily informed from our work experiences, literature research and a multiple choice questionnaire survey of town planners in NSW. Limited investigations were also undertaken by internet searches and email enquiries of the extent to which flood risk management is incorporated within curricula of the five universities currently

offering town planning courses in NSW accredited by the Planning Institute of Australia (PIA)¹.

Approximately 46% of the 5400 planners identified in the 2001 Census worked in local government, 30% worked in the private sector, 22% in state or territory government agencies and 2% in the commonwealth government. NSW had the greatest share of planners (35% or 1890 planners).² The survey questionnaire was distributed by email link to a cross section of town planners employed in local and state government and the private sector in NSW, based on a register compiled from professional contacts. A total of 99 responses were received to the survey (5% of town planners in NSW), comprising 64% in local government, 9% in state government, 26% in private sector and 1% in other fields. The responses were from town planners with a range of years of experience: 9% currently attaining qualifications; 38% up to 10 years; 30% with 10 to 20 years and 22% with greater than 20 years experience, since graduation. The responses provide a representative cross section of the town planning profession in NSW.

The Relationship of Floodplain Management and Town Planning

It is difficult, if not impossible, to isolate a definitive and widely accepted definition of what town planning involves. A classic text for town planning students notes "*there are probably as many concepts of planning as there are planners, possibly more.*"³ The provisions of Section 5 of the Environmental Planning and Assessment Act outline the object of the Act which indicates the intent of town planning in NSW is to encourage the following:

- (i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
- (ii) the promotion and co-ordination of the orderly and economic use and development of land,*
- (iii) the protection, provision and co-ordination of communication and utility services,*
- (iv) the provision of land for public purposes,*
- (v) the provision and co-ordination of community services and facilities, and*
- (vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
- (vii) ecologically sustainable development, and*
- (viii) the provision and maintenance of affordable housing, and*

¹ Includes various under graduate and post graduate courses provided by The University of NSW, University of Sydney, University of Technology (Sydney), Macquarie University and University of New England.

² 2001 Census data as extracted from PIA,2004

³ Ratcliffe, J 1974,pg.9

- (ix) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and
- (x) to provide increased opportunity for public involvement and participation in environmental planning and assessment.”

In general, contemporary town planning in NSW involves a multidisciplinary process which analyses the economic, social and environmental opportunities and constraints of an area, the identification of options to manage and/or promote change, confirming a preferred direction with the participation of the community and the endorsement of elected decision makers and formulation of a plan to implement, monitor and review. As outlined in Part 3 of the Environmental Planning and Assessment Act 1979, the process which is applied to achieve the above objects is manifested in the undertaking of environmental studies, the preparation of draft plans (in the form of environmental planning instruments), public exhibition of the draft plans and ultimately adoption by local and/or state governments prior to implementation.

The Floodplain Development Manual⁴ defines flood risk management as:

“Risk management is the set of activities concerned with identifying potential risks, analysing their consequences and devising and implementing responses. This involves management of risks associated with natural and built assets and agricultural uses on the floodplain. In the floodplain context this is done so as to ensure optimal use of the floodplain (considering economic, social, environmental and cultural impacts) whilst controlling flood losses to an acceptable level.”

The flood risk management process is described as “merit based”⁵ intended to tailor solutions to the specific characteristics of individual floodplains and the risks willing to be tolerated by the community. The process outlined in the *Floodplain Development Manual*⁶ is diagrammatically described as follows

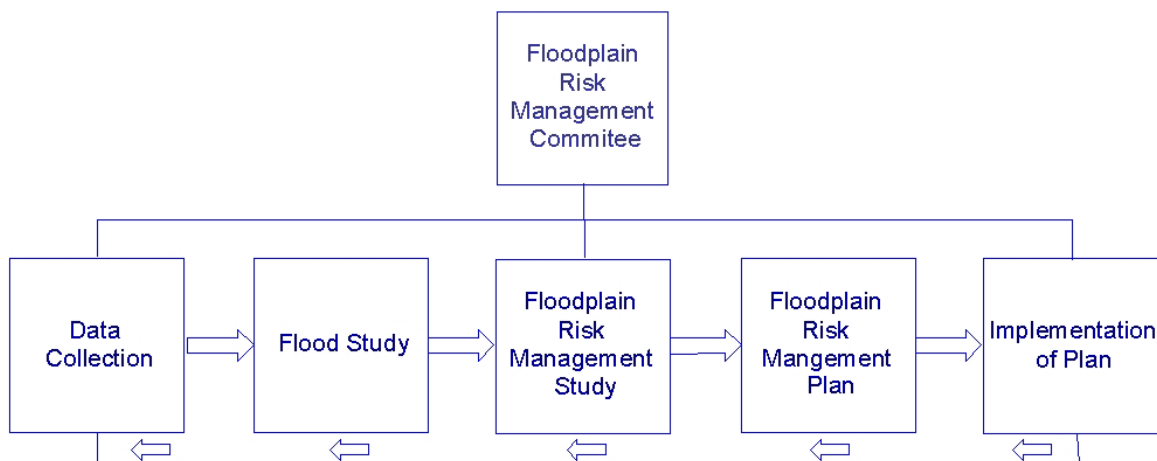


Figure 1: Floodplain Management Process in NSW⁷

⁴ DIPNR, 2005, Appendix B, pg.B-1

⁵ DIPNR, 2005, pg.5

⁶ DIPNR, 2005, specifically Appendix C.

⁷ Adapted from DIPNR, 2005.

The processes of town planning and flood risk management, as intended to be practiced in NSW are similar, if not identical, notwithstanding the scope of their focus. Both involve a goal to maximise the orderly, economic and environmentally sustainable use of land by studying the complex range of issues that influence this, the preparation of plans that are vetted by the community during their formulation prior to adoption by representatives of the community.

The commonality between these processes could be a factor in creating confusion within the town planning profession (as discussed later) and constraining the success of one or the other. The town planning process seeks to balance various considerations, inclusive of flooding, to produce a plan for the management of an area. The flood risk management process balances a similar range of considerations producing a plan seeking only to manage the risks and (to a lesser extent) the environmental consequences associated with flooding of a component of an area. The flood risk management process is intended to produce planning controls⁹ as of course is the town planning process.

From a town planning perspective, the bulk of the flood risk management process is superfluous, as it should be required only to inform the town planning process of one consideration (i.e. flooding) that must be balanced against a multitude. There is an obvious duplication of the plan preparation processes, noting of course that the flood risk management plan is intended to operate independently yet with consistency to other plans.

The flood risk management process in NSW is effectively a town planning process with a narrow focus. This can be effective in determining a balanced set of planning controls for a floodplain consistent with the intended merit based approach, but is theoretically inferior to the production of planning controls through the more comprehensive planning process. To better understand and evaluate how the floodplain management process in NSW relates to the town planning process, its evolution leading to the current merit based approach needs to be firstly understood.

History of Floodplain Management in NSW

The focus of floodplain management in NSW has evolved with a dynamically changing focus from town planning to engineering to town planning based strategies. The changes are generally linked with increasing knowledge of flood hazards, socio-economic realities that influence the community's tolerance of flood risks through different eras and the evolving capability and acceptability of engineering solutions.

Post colonisation of Australia saw the emergence of settlements within the more fertile alluvial plains of the Hawkesbury Nepean River in the outskirts of Sydney. However, the realisation of the risk to property and human life led to Governor Macquarie proclaiming that the Macquarie Towns "*Windsor, Richmond, Wilberforce, Castlereagh and Pitt Town be located on high ground*"¹⁰. This is widely considered as the first flood risk management decision by a public authority in Australia, and was presumably based on a balanced

⁹ DIPNR 2005, pg.5

¹⁰ HNFMAC 1997, pg.11

consideration of the impact of the flood hazard on the growing community and the economic and social necessity to reside in proximity to the river.

Rudimentary planning controls in NSW were gradually introduced in the Local Government Act 1919 following its introduction. In 1945 this Act was amended giving local councils power to control land use, including the use of floodplains, by requiring the Cumberland County Council to prepare and submit to the Minister a planning scheme in respect of all land within the County which covered the Sydney region, ultimately proclaimed in 1951. This was followed by proclamation of the Planning Scheme for the County of Northumberland in 1960, in respect of the Hunter region. During this period minimal specific floodplain management policy was developed, the most notable being the issuing of a brief policy statement by the state government in 1958, following severe flooding in NSW¹¹.

In 1964 the State Planning Authority (SPA) was formed taking over the town planning role for NSW. This led to the publishing of the *Sydney Region Outline Plan* in 1968 which recognised 'flood liable land' as a constraint to the future urban development of Sydney. Following the succession of the SPA by the Planning and Environment Commission in 1974, similar broad planning strategies were prepared for proposed growth centres such as Campbelltown-Camden-Appin and Gosford-Wyong. While all these planning strategies recognised the relevance of flood hazards in the planning process, the management of associated risks was basic, reflective of limited flood predictive modelling capabilities and policy development. Between 1956 and 1976, known flood problems were addressed by engineering works with some successes, however they did not curtail the level of damages "*due to uncontrolled new development in the State's floodplains*".¹²

During the late 1970s to early 1980s, the State Government took a more active role in floodplain management through the Water Resources Commission and the Department of Public Works. Improved flood modelling methodologies and availability of computers led to a flood mapping program across select areas of the state, in particular Sydney. This was met by significant community opposition primarily on the basis of the impact on property values, citing concerns in regard to the accuracy of the maps and the implications for development potential. The latter concern is understandable on the basis that land within the 100 year flood extent was perfunctorily interpreted as unsuitable for development by a Government Circular issued in 1977, which promoted "*the removal of urban development from land within the 1:100 year flood where practical and appropriate*".¹³ At that time, the 100 year flood had become the effective standard for planning purposes.

In response to community reaction, the NSW State Government adopted a new Flood Policy in 1984¹⁴ which primarily espoused a "merit based" approach to flood risk management and the devolving of responsibility from State to Local Government. The Policy was aimed at balancing the economic and social consequences of not developing floodplains (due to the forfeiting of potential urban land and the assumed immediate financial impact on those already occupying the floodplain) with the inevitable risk to human life and property. In contrast with the 1977 Circular, the Policy stated that "*flood*

¹¹ HNFMAC, 1997 Pg.11

¹² NSW State Government, 2001, pg.i

¹³ HNFMAC, 1997 Pg.11

¹⁴ NSW State Government, 2001, pg.i

liable land is a valuable resource and should not be sterilised by unnecessarily precluding its development”.¹⁵

To assist Councils and to minimise the potential financial consequences of the 1984 Flood Policy, the Floodplain Development Manual was introduced in 1986. In addition, State Government agencies retained technical expertise and an advisory role indirectly controlling some activities through the allocation of flood mitigation funding. Most importantly, the Local Government Act was amended to indemnify Councils for matters relating to flooding conditional upon compliance with the Manual. Consistent with the principles of the merits based approach, the 1984 Flood Policy specifically noted “*deletion of the 1 in 100 definition of flood prone land and a cessation to floodplain mapping*”.¹⁶ That is the 100 year flood ceased to technically apply as a blanket standard across NSW. (As discussed further below, this change, which was a key foundation of the 1984 policy, appears to have been largely overlooked by most town planners and some senior politicians, for the last 20 odd years).

The 1986 Manual was updated with the publishing of the Floodplain Management Manual in January 2001, although never gazetted and given limited recognition. Anecdotal reports note political concerns in regard to the perception in the community and development industry that an increased reference to the need to analyse floods up to the probable maximum flood (PMF) as an attempt to replace the 100 year flood standard with the PMF. This perception lacked recognition of the disbandment of the 100 year flood standard and a continued application of the merit based approach which required standards to be developed by local councils.

In 2005, the current Floodplain Development Manual was published and gazetted to replace both the 2001 and 1986 Manuals. As noted in the current Manual¹⁷, its gazettal effectively provided for replacement of the 1986 Manual as referred to in Section 733 of the Local Government Act 2003, which provides current indemnity provisions for local councils in regard to flooding. The current Manual claims the change in the structure and responsibilities of government agencies as necessitating the revision to the 2001 Manual and providing the opportunity to clarify the intent of the Policy. The reluctance to gazette the 2001 Manual within the 4 years after publishing and the name change replacing “*Management*” with “*Development*” suggests a more complex political basis for the change.

Each version of the Manual accompanies an alternate NSW Flood Policy. Each Policy version remains almost the same in detail, and effectively identical in regard to their objectives and the overriding merits based principle. One subtle inclusion within the latest version of the Policy is the qualification of the merits based approach (in bold – our emphasis):

“a merit based approach to selection of appropriate flood planning levels (FPLs). This recognises the need to consider the full range of flood sizes, up to and including the probable maximum flood (PMF) and the corresponding risks associated with each flood, whilst noting that with few exceptions, it is neither feasible nor socially or economically justifiable to adopt the PMF as the basis for FPLs. FPLs for typical

¹⁵ NSW State Government, 1986, pg 2.

¹⁶ NSW Government, 1986, Appendix A, pg.33.

¹⁷ DIPNR 2005, pg.i

residential development would generally be based around the 1% AEP flood event plus an appropriate freeboard (typically 0.5m),¹⁸

Notwithstanding that the floor level control for most residential development could legitimately be determined to be the 100 year flood plus a freeboard, the policy inclusion conflicts with the intent to allow FPLs to be determined by local councils, having regard to the circumstances and merits of each floodplain. Further, such a Policy expectation could create difficulties in distinguishing special residential forms such as housing for older persons or persons with disabilities, which may require alternate standards to address risks associated with their particular vulnerability. Nonetheless, the Manual which supports the NSW Flood Policy provides a similar process to achieving the objectives of the Policy when compared to earlier versions of the Manual, and still reflects contemporary principles for floodplain management in NSW.

The Policy inclusion highlighted above indicates that those drafting the inclusion believe the merits process (as originally espoused) cannot be relied upon to consistently deliver the Policy outcomes or, alternatively, that process is still not fully understood.

Contemporary Principles of Floodplain Management in NSW

Notwithstanding some of the nuances that have been noted above, the 1986, 2001 and 2005 manuals have remained largely consistent and reflected best practice.

With regard to floodplain management policy across all the Australian States, there is no doubt that NSW has, for over twenty years, been at the forefront of floodplain management and is close to world best practice.¹⁹ NSW has consistently received the lion's share of Commonwealth Government funding for flood mitigation works which reflects not only the significant flood problems within NSW, but also the commitment of the NSW Government and its local councils to implement best practice floodplain management and to limit inappropriate floodplain development.

A key component of the NSW Manuals and Policies has been the recognition that hazards vary within different localities in a floodplain and with different flood frequencies. In addition, different land uses have differing susceptibilities to flooding. Consequently, a single flood standard or flood planning level (FPL) cannot effectively control land uses in the floodplain in most NSW valleys. The application of the merits approach will yield a variety of FPLs applicable to the land uses and spectrum of flood hazards present in the floodplain. The authors have previously developed an approach to land use planning within floodplains which recognises these various hazards and susceptibilities and over the last ten years this approach has been successfully implemented by many local councils.²⁰

This approach contrasts with the singular FPL approach that applied in NSW prior to 1984. That approach produced rigid planning outcomes which led to a number of problems:

- creation of a 'hard edge' to development at the FPL;

¹⁸ DIPNR 2005, pg.2

¹⁹ Smith, D, 1999.

²⁰ Romano P, Grech P & Bewsher D, 1999.

- ▶ distribution of development within the floodplain in a manner which did not recognise the risk to life or the economic cost to flood damage;
- ▶ unnecessary restriction of some land uses from occurring below the FPL, whilst allowing other inappropriate land uses to occur immediately above the FPL;
- ▶ polarisation of the floodplain into perceived 'flood prone' and 'flood free' areas; and
- ▶ lack of recognition of the very significant flood hazard that may exist above the FPL (and as a consequence, failure to implement controls to manage some vulnerable land uses).

A key tenet of the merits approach has been that land use planning decisions are made in a climate where the resultant flood risk is determined at a level acceptable to the community. In order to achieve this, the NSW process necessitates regular engagement with the community and coordinated by the floodplain management committee process as described in the Manual. This ensures that the decision as to what constitutes an acceptable flood risk is made in a comprehensive and transparent manner. This process of determining an acceptable level of risk, together with other components of the NSW Manuals, are consistent with risk management guidelines set out in AS/NZS4360:2004.

Whilst the merits approach and the floodplain risk management process outlined in the Manuals are well recognised and widely acclaimed, the documents themselves, particularly the 2001 and 2005 Manuals, are not easily read or understood, especially by newcomers. Anecdotally, many town planners and engineers, despite their professional backgrounds and training, find the documents difficult to digest and it can take numerous readings of various sections in the Manual to appreciate key themes and approaches. Whilst it is always easy to criticise documents produced by committees, it is nevertheless the authors' view that the format of the Manual continues to be a barrier to the effective engagement of town planners in the flood risk management process.

Necessity for an Engineering and Town Planning Partnership

As outlined above, town planning involves a multi-disciplinary process where town planners inevitably rely on the specialist input of other professions. Flood engineers have an essential role in informing the planning process of the nature of flood hazards. The division of professional responsibility for forming recommendations within floodplain risk management plans is an interesting issue. Is this task best undertaken by an engineer skilled in analysing and understanding the flood hazard or by a town planner skilled in evaluating competing economic, social and environmental issues? As concluded later in this paper our view is that the flood risk management process requires a close collaboration between town planners and engineers.

Our experience is that at present the preparation of floodplain risk management plans in NSW is a process typically dominated by engineers, while the flood issues at the development application stage are jointly dealt with by town planners and engineers. Our survey revealed that in response to the question "*what happens where you currently work,*" 56% of respondents stated engineers while 39% stated jointly town planners and engineers deal with flood related issues. Only 4 % stated that flood issues were dealt with solely by planners and 5% were dealt with by other professionals. Definitive interpretation of this question would require further research but a possible conclusion would be that our experience is reflective of current practice.

In contrast to current practice, our survey reveals that the majority of town planners in NSW (95%) consider that engineers and town planners should be jointly responsible for floodplain management. Only 3% and 2% of respondents considered it was a role solely for engineers or town planners, respectively. No respondent chose the “don’t know” answer. For town planners to have an increased role in floodplain management, it is essential that they have an appropriate level of understanding of the topic.

The reasons why planners and engineers often fail to work cooperatively to prepare floodplain risk management plans was not explored by our survey. Nevertheless the authors suggest the following causes for a lack of cooperation between engineers and planners, particularly in the state and local government sectors:

- ▶ different ‘language’ used by planners and engineers leading to communication difficulties;
- ▶ lack of numerical standards makes a merits assessment difficult for engineers to understand;
- ▶ lack of understanding by planners of the technical complexities of computerised flood simulation and the recognised safety standards;
- ▶ perception by planners that the Manual was written “by engineers for engineers”;
- ▶ lack of understanding by engineers of the role of environmental planning instruments and their contents; and
- ▶ separation of engineers and planners in organisational structures.

Town Planners’ Understanding of Floodplain Management

Since 1984, the NSW flood policy has not included a specific standard flood or “flood planning level.” Both the 2001 and 2005 Manuals have defined flood prone land to be inclusive of the whole of the floodplain (i.e. up to the probable maximum flood), as means of ensuring that Floodplain Risk Management Plans consider all flood risks, but all Manuals have consistently promoted the principle of a merits based approach, culminating in the setting of standards and flood mitigation measures in a Flood Risk Management Plan specific to individual floodplains.

The results to the survey question “Are you familiar with NSW State Government Flood Policy?” are summarised by **Figure 2**.

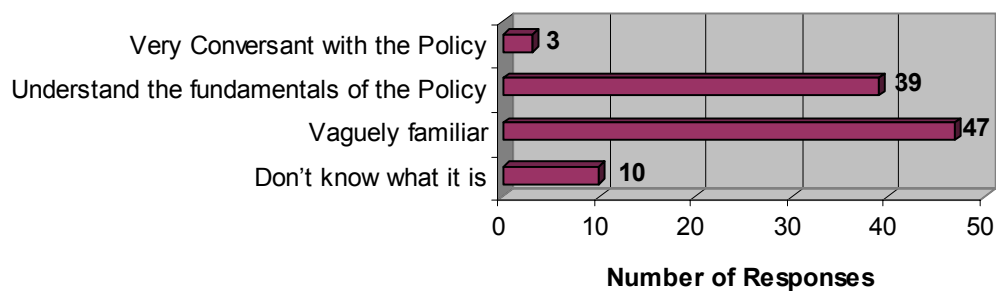


Figure 2: Familiarity with NSW Flood Policy

The results to the survey question “Are you familiar with the NSW Floodplain Development Manual?” are summarised by **Figure 3**.

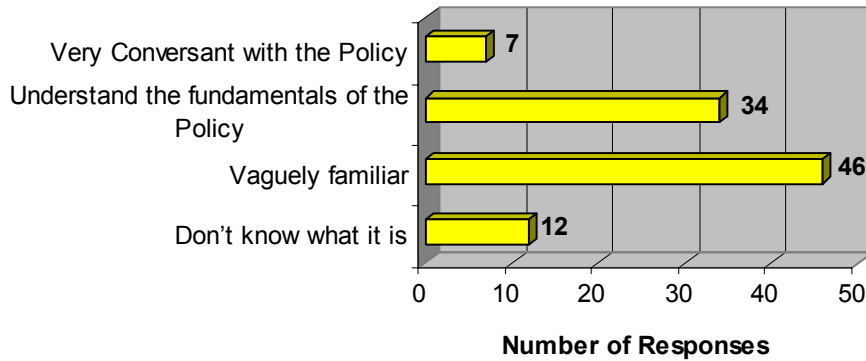


Figure 3: Familiarity with Floodplain Development Manual

The results to the survey question “What do you understand is the flood standard in NSW?” are summarised by **Figure 4**.

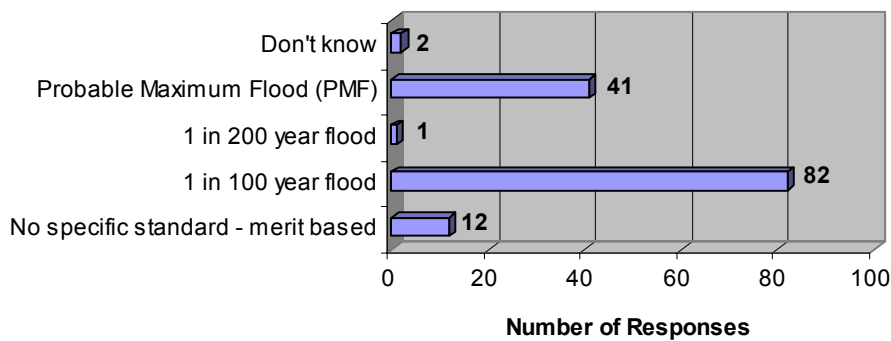


Figure 4: Knowledge of NSW Flood Standard

The majority of respondents indicated that they either did not know or were only vaguely familiar with the Policy or Manual. As could be expected due to a lack of familiarity with these documents, the dominant response (83%) in the survey nominated the 1 in 100 year flood and only 12% of respondents nominated that there was no specific standard.

A cursory review of the curricula of town planning courses in NSW indicates that at best floodplain management is taught at a superficial level and flood policy is not addressed when examining legislation and government policy issues. This is in part understandable due to the specificity of the topic but there are no apparent opportunities to study the topic

unless through individual research, such as with the preparation of dissertations or theses.

It is significant to note that the merits based approach which has been fundamental to floodplain management in NSW since 1984 is poorly understood by the planning profession. There is a clear need for an improvement in the knowledge of floodplain management in the town planning profession, but this is only likely to occur, in any substantial way, if it becomes an issue that the profession considers to be important enough to vigorously embrace, and mechanisms are in place for this to occur.

Engagement of Town Planners in Practice

The interaction of town planning, since its legislative introduction in NSW in 1945, with floodplain management has in the main been limited or superficial. While 43% of respondents indicated in the survey that town planners either solely or in conjunction with engineers dealt with flood related issues, this is likely to be mostly at the development assessment level where the technical advice of engineers is of overriding importance. In our experience, the process involving the preparation of policy documents such as floodplain risk management plans is normally controlled by engineers and while town planners may be involved, the translation of policy recommendations into planning controls or strategies follows a torturous and sometime seemingly never ending and separate path. This may be in part due to the lack of understanding of floodplain management by town planners but also due to confusing planning policy associated with the issue.

Since 1945 there have been numerous manifestations of floodplain management policy in planning strategies and controls at both the state and local government levels. A comprehensive identification of such strategies and controls and an analysis of the manner in which these have effectively applied flood risk management principles are beyond the scope of this paper. In this paper we look at only one example of recent planning policy, being Ministerial directions issued under section 117 of the Environmental Planning and Assessment Act 1979 regarding considerations required in the preparation of local land use zoning plans (local environmental plans) and recent changes to the Environmental Planning and Assessment Act introducing a standard format for such plans.

A review was undertaken as part of the NSW planning reforms and new Section 117 ministerial directions have recently been issued by the Department of Planning²¹. Direction 15 deals specifically with flood prone land and has the following two objectives:

“To ensure that the development of flood prone land is consistent with the NSW Government’s Flood Prone Land Policy and the principles of the Floodplain Development Manual, 2005.

To ensure that the provisions of an LEP on flood prone land is commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land”.

Many Floodplain Risk Management Plans recommend planning controls which adopt the Manual’s definition of flood prone land (including all that we have been involved with). For

²¹ NSW DoP, 2005

example the Georges River FRMP²² was prepared and adopted by four local councils in accordance with the Manual and includes a recommendation that planning instruments be amended to adopt the Manual's definition of flood prone land. To prevent the implementation of the recommendations of the FRMP would therefore be contrary to Government Policy.

The Environmental Planning and Assessment Act has recently been amended to facilitate the reproduction of local planning instruments (local environmental plans or "LEPs") into a standardised format, commonly referred to as the "LEP template". Section 33A of the Act deals with the prescribing of a "standard instrument" for LEPs and other environmental planning instruments ("EPIs"). Section 33B of the Act provides the Minister the power to establish a program for the repeal of existing EPIs and their replacement with contemporary standard instruments.

The LEP template came into effect on 31 March 2006 with the gazettal of the Standard Instrument (Local Environmental Plans) Order. The template contains no compulsory clauses or map requirements specifically relevant to addressing flood hazards. However, the Department of Planning Circular (Circular PF 06-008, dated 3 April, 2006) and Department of Planning LEP Practice Notes (PN06-001 and PN06-03, both dated 12 April 2006 and PN06-002, dated 12 April 2006 and corrected 18 April 2006) issued in conjunction with the gazettal of the Order provides a number of relevant advices, including that Councils can:

- ▶ prepare additional local provisions that address local planning issues, such as flood planning provisions developed in accordance with the Floodplain Development Manual;
- ▶ add local objectives to the core zone objectives;
- ▶ define terms relevant to a local provision in certain circumstances;
- ▶ suggest new definitions to the Department of Planning that could be suitable for inclusion in the standard dictionary; and
- ▶ include hazard overlays that apply in addition to zones and may apply to land in several different zones.

The Georges River FRMP recommendations, inclusive of the definition of flood liable land, are consistent with the Manual and State Government Policy. The amendments to the zoning plan are consistent with the guidelines for the Template LEP. Notwithstanding, and possibly for the reasons discussed above, the Minister responsible for the ultimate approval zoning plans, stated in a recent 2GB Sydney radio interview (as discussed further below), that any such plan that makes reference to the probable maximum flood would not receive his approval.

To not allow the amendments would be contrary to the LEP Template guidelines and the State Government Flood Policy. This could affect indemnity safeguards afforded to local councils under Section 733 of the Local Government Act, which refers to acting in accordance with the Manual. The other important consideration to note is that the changes do not have any major implications in regard to development potential but are very important in regard to flood awareness and emergency management, which are critical to reducing flood risks.

²² Bewsher Consulting, 2004

Despite the conflicting policy context, town planners implicitly recognise the importance of addressing the full extent of flood risks in the planning process. In response to the question “Should strategic planning and development assessment decisions take into consideration flood risks?” nearly all respondents to our survey (89%) considered that flood mitigation should be mandatory. Thirteen respondents (13%) answered “The public should be made aware of the risks, but flood mitigation (e.g. elevated floor levels) should not be mandatory”. No respondent answered “not at all” or “don’t know”.

The respondents were also asked to nominate if the mitigation of flood risks should be limited, with eight possible answers of which more than one could have been chosen. The results to this question are depicted on **Figure 5**.

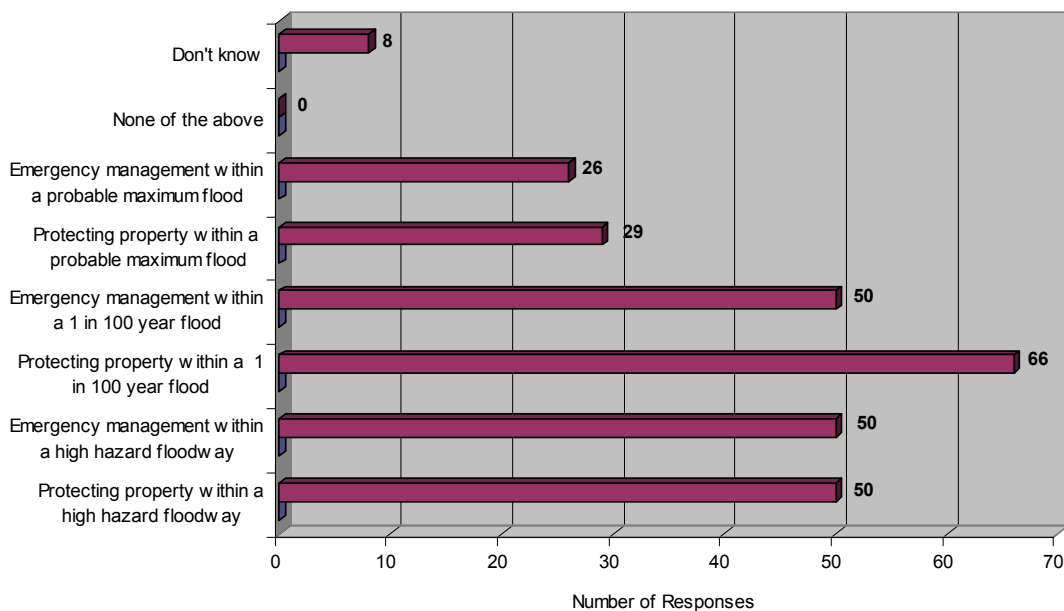


Figure 5: Limitation to Flood Mitigation

The two most common responses to the survey question “should the general public be made aware of flood risks” indicated that the majority of planners believe that the relevant authority should proactively inform the community of all known flood risks, that is, up to the probable maximum flood. **Figure 6** summarises the responses to this question.

This is not to say that planning controls should restrict all development within the floodplain (up to the probable maximum flood). However if town planners are to be engaged in a meaningful process of evaluating flood risk strategies in accordance with the merits based approach, they can not be required to presume the outcome or confront conflicting government policy.

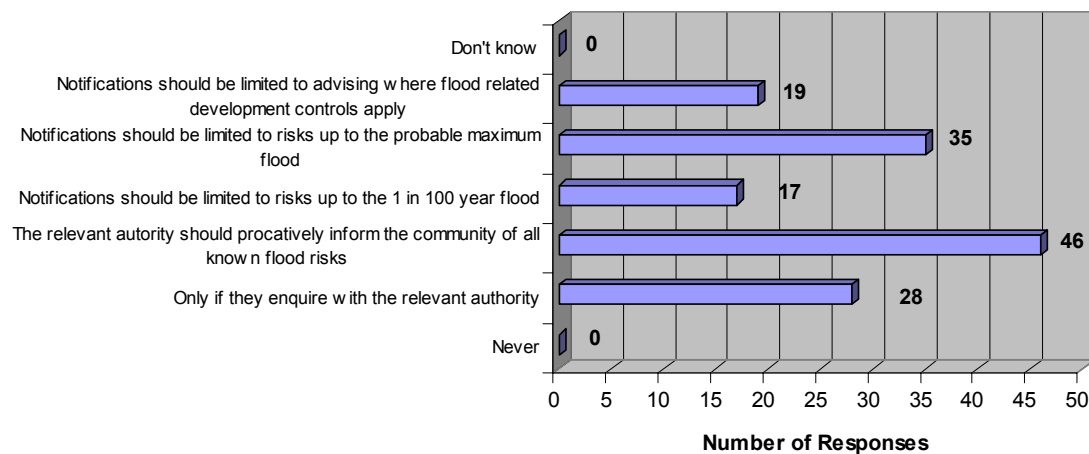


Figure 6: Notifying the Public of Flood Risks

Implications of Town Planners not being Engaged in the Process

In the context of contemporary floodplain management, which is increasingly focusing on non-structural risk mitigation measures such as planning controls, the implications of not embracing the town planning profession in the flood risk management process are significant. Such implications include:

- ▶ Difficulty in implementing non-structural recommendations of flood mitigation strategies. Our unequivocal experience, and anecdotal comments from similar practitioners, is of a typically slow and difficult process of implementing Floodplain Risk Management Plans, and in particular recommendations for planning controls contained in such plans (especially when such recommendations have not been developed in conjunction with the planners responsible for implementing the recommendations). This can often be linked to a misunderstanding of the intent and importance of the recommendations.
- ▶ Inaccurate and misleading information being disseminated to public. Town planners are regularly responsible for providing flood related information through mechanisms such as general property enquiries, the development assessment process and issuing of certificates that outline the zoning and planning controls applying to land.²³ It is inevitable that if town planners are not adequately informed on the topic then information disseminated to the public will be poor and possibly inaccurate;
- ▶ Indecision and inertia to proactively reduce flood related risks. The process leading to the preparation of a Flood Risk Management Plan is often associated with a heightened awareness of the importance of flood mitigation amongst Councillors,

²³ Planning Certificates issued under section 149 of the Environmental Planning and Assessment Act, 1979.

Council staff and the Flood Risk Management Committee. This awareness of potential risks, liabilities and flood issues in general often fades once the plan is completed and can become a significant impediment to the implementation of approved plans. One such example is the implementation of schemes to promote flood-compatible redevelopment of floodprone areas²⁴ as a cost-effective and practical means of reducing flood losses where structural options are prohibitively expensive or have adverse environmental impacts. Having seen such redevelopment schemes embraced in flood risk management plans, it has been the authors' experience that implementation is often extremely difficult because of a lack of awareness of the flood problems and the lack of ownership of the recommendations contained in the Plan, particularly by town planners not engaged in the preparation of the Plan.

In addition to the above, it could be assumed that a limited understanding of the principles of floodplain management by the planning profession would engender an equally limited understanding of these principles by senior politicians responsible for floodplain management in NSW. Recently Blacktown City Council notified all property owners of flood affectation between the 1 in 100 flood and PMF extents. This led to front page articles of outrage in the local press and an interview of the Minister of Planning Frank Sartor by Ray Hadley of the 2GB Sydney radio station during August 2006.

In response to a question requiring clarification of the probable maximum flood the Minister explained that it had a probability of 1 in 100,000 years which was more serious than a "Noah" type flood as even Noah came along some time between now and 100,000 years ago. While noting that the Manual refers to both the 100 year and probable maximum floods the Minister advised that "*for planning purposes we only ever use the 1 in 100 year.*" In response to the question "*whose Manual*", the Minister responded "*it is not the Department of Planning's...its some Manual somewhere...there's a Manual*" notwithstanding that the current Manual was published by the Department of Infrastructure and Planning, a conglomeration of departments that existed prior to the current Department of Planning.

The Minister's responses seemingly highlight both the political sensitivity and/or misunderstanding of floodplain management issues at the highest level. The authors' comments above are not intended as a criticism of the Minister per se, but indicate that as the failure to have planners 'on-board' in the flood risk management process occurs at all levels, inappropriate views will no doubt filter through to the advice given to the Minister.

As outlined above the plan making process in NSW requires consideration of the current Manual which in turn mandates a consideration of all flood risks on flood prone land (defined as land susceptible to flooding by the PMF event²⁵). This starting point is fundamental and sensible and necessitates considering all flood related risks. These can sometimes be extraordinary for floods with probabilities rarer than the 100 year flood but need to be considered with risks up to the 100 year flood, noting that these more frequent risks are more readily accepted by the community²⁶. However, recent public debate misrepresents the requirement to investigate risks within the PMF extent as a predetermined outcome that all land within the PMF will be sterilised from development.

²⁴ Bewsher, D and Grech, P, 2000

²⁵ DIPNR 2005, pg.21.

²⁶ Ribbons, S and Bewsher, D, 1995.

Together with the political sensitivities of identifying properties as flood affected, the misunderstanding of floodplain management principles in NSW is a considerable force in constraining the ability to achieve support for the implementation of Floodplain Risk Management Plans by elected decision makers. Unless the floodplain management process in NSW is embraced by town planners and is clearly understood, effectively implemented and confidently communicated to elected decision makers, it is unlikely to wholly fulfil its objectives.

Embracing Town Planners

It would be unrealistic to assume there is any one single approach to increase the understanding and involvement of town planners with the flood risk management process in NSW. We suggest that there are a number of possible means to achieve this, inclusive of the following:

- ▶ **Education system** — Organisations such as the NSW Floodplain Management Authorities could liaise with the universities providing town planning courses to encourage inclusion of flood risk management within the core or elective curricula. A support network could be established to assist the universities with technical expertise from practitioners.
- ▶ **Legislative changes** — There is a need to explore changes to relevant planning legislation providing clearer and more relevant guidance of what flood related information should be included on certificates that outline the zoning and planning controls applying to land and the manner in which flood risks and related government policy is to be considered in the plan making and development assessment processes.
- ▶ **Guidelines directed to Town Planners** — While the Manual provides an important cornerstone to appropriate flood risk management principles, its format has led to it being poorly understood by town planners and providing limited guidance to the specific tasks associated with the planning process in NSW. The project nearing completion by the NSW Department of Natural Resources, involving the preparation of Planning Guidelines for the Councils within the Hawkesbury Nepean River Floodplain, is recognition of the need for such guidelines. A relatively successful and relevant model is provided by the bushfire risk management guidelines applying in NSW and prepared in collaboration with the Department of Planning.²⁷
- ▶ **Involvement in continuing professional education** — Consistent with most professions the lead representative body of town planners in Australia (the Planning Institute of Australia) requires members to participate in a continuing professional development scheme. In addition, the Institute introduced a certification grade for members in 2006 which requires the completion of specified courses. Such schemes and courses could provide an opportunity for practitioners in floodplain management to provide information to town planners. This is in addition to providing articles for town planning journals or presentation at conferences.
- ▶ **Preparation of floodplain risk management strategies** — There is a need for greater encouragement of town planners to take an active (even lead) role in

²⁷ RFS et al, 2001.

preparation of Floodplain Risk Management Plans when the context requires a greater emphasis on planning solutions.

- ***Audits of flood related information dissemination processes*** — A review of such processes in local and state government can provide a useful starting point. Ensuring planning controls and information provided to the public and town planners reflect a sound and consistent understanding of flood risks is essential to avoiding confusion and misunderstanding which can lead to political reaction which is inconsistent with desirable flood risk management endeavours.

While the above measures may assist in engaging the town planning profession, more fundamental changes to the floodplain management and town planning processes as they operate in NSW should ideally be explored. A meshing of these processes which allows for the input of the flood study directly into the environmental study and planning instrument preparation process of the Environmental Planning and Assessment Act, could result in a more meaningful and expedient delivery of the core objectives of the Manual. The simultaneous progression of these processes may also be a means of more convincingly informing the community that the identification of all flood risks (that is up to the PMF) does not necessarily translate to planning restrictions. The preparation of floodplain risk management plans would remain necessary to deal with some flood awareness measures (where not directly covered by the town planning system), and emergency management and structural solutions would need to remain.

Conclusion

The floodplain risk management process in NSW as set out in the Manual and the Government's Flood Policy, is recognised as among the best in Australia, if not the world. Nevertheless, recent events associated with the public debate about implementation of flood related development controls in Blacktown have highlighted problems in the process which have been emerging in recent years as we become more dependent of town planning measures to mitigate the State's flood problems.

A recent survey of town planning professionals together with anecdotal evidence and the experience of the authors, suggests that the current system is failing to adequately embrace the town planning profession and that town planners themselves have a generally poor understanding of the Government's flood policy and its implementation. This lack of understanding includes planners in the private sector and also those in the public sector at local and State Government levels. This appears to have resulted in poor advice about the current flood policy being given to senior politicians responsible for making planning decisions in NSW.

Some decades ago, engineering solutions provided effective flood mitigation in many urban areas of NSW. The development of Government policy for flooding was dominated by engineers and more often than not, engineers took the lead role in the implementation of the flood risk management process within councils. However, over the last two decades, town planning solutions have become increasingly important and on many urban floodplains, they often provide the most important and practical means of reducing existing, continuing and future flood risks to acceptable levels. Such town planning solutions include the development of appropriate planning controls, the proactive release of flood information to the local communities as a means of raising flood awareness, the facilitation of flood compatible redevelopment schemes and the development of rezoning

and strategic planning proposals which recognise and are compatible with the underlying flood risks. Nevertheless, the development of these town planning measures and their eventual implementation within State Government legislation, council policies and council planning instruments are being hampered by an inability to effectively engage town planners in the floodplain risk management process. The reasons for this are outlined in the paper and include the historical context discussed above, the format of the flood Manual and the scope of under-graduate town planning courses in NSW, to name but a few.

The strategic planning undertaken as part of the flood risk management process is conducted outside of the normal planning process within the Environmental, Planning and Assessment Act under which most town planners operate. This parallel town planning process leads to some confusion among town planners and a perception that both the Manual and the flood risk management planning process are the domain of engineers. Future steps to better integrate the two planning streams and/or better educate both engineers and planners about the two processes can only help engender joint cooperation between engineers and planners in both planning processes.

The recent public comments made by Minister Sartor in relation to floodplain development controls indicate that some key principles in the Government's flood policy which has remained essentially the same for nearly 25 years, are still not properly understood by town planners at all levels, including those advising the Minister. In the opinion of the authors, this highlights the pressing need to 'get planners on board' and so continue to achieve successful floodplain management in NSW in the coming years.

Post Script

This paper was prepared in January 2007 prior to the release of the "Guideline on Development Controls on Low Flood Risk Areas-Floodplain Development Manual", issued jointly by the NSW Departments of Planning and Natural Resources. This Guideline is effectively an addendum to the Manual and deals with:

- ▶ *the setting of flood planning levels for residential development;*
- ▶ *advice placed on Section 149 Planning Certificates;*
- ▶ *revisions to the Section 117 Direction No. 15 which specifies matters that draft local environmental plans are required to be consistent with; and*
- ▶ *notification by the Minister that the Guideline must be considered in conjunction with the Manual for the purposes of indemnity afforded by Section 733 of the Local Government Act.*

While an evaluation of the Guideline is beyond the scope of this paper, the authors' preliminary view is that it does not contribute to the resolution of the issues identified in this paper.

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