

Wyong Shire Council

# **ORDINARY MEETING**

# **ENCLOSURES**

Wednesday, 24 August, 2011

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# WYONG SHIRE COUNCIL

**ENCLOSURES TO THE** 

## **ORDINARY MEETING**

TO BE HELD IN THE COUNCIL CHAMBER, WYONG CIVIC CENTRE, HELY STREET, WYONG ON WEDNESDAY, 24 AUGUST 2011, COMMENCING AT 5:00:00 PM

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#### 10. FINAL FLOODPLAIN RISK MANAGEMENT PLAN

#### 10.1 Plan Objectives

The objectives of this floodplain risk management plan, broadly, are:

- to reduce the impact of flooding and flood liability on individual owners and occupiers of flood prone property;
- to reduce private and public losses resulting from floods;
- to recognise the benefits flowing from use, occupation and development of flood prone land, cognisant of the first two objectives above.

The framework of the Floodplain Risk Management Plan is set by the NSW Government's Flood Prone Land Policy as enunciated through the NSW Government's "Floodplain Development Manual", (2005), (Reference. 2).

The primary responsibility for management of floodplain risk rests with local government (that is, local councils) with financial and technical assistance from the State Government. Historically, the Federal Government has also provided funds for selected projects.

Wyong Shire Council has undertaken floodplain risk management studies on a waterway by waterway basis over the past 20 years. This Floodplain Risk Management Plan is intended:

- to apply a "continuous improvement" process to Wyong Shire Council's current practice;
- to facilitate integration so that floodplain risk management is consistent across the boundaries of the various waterways;
- to develop a set of floodplain risk management measures that are consistent with Wyong Shire Council's planning documents, understandable by the public, and easier for Wyong Shire Council staff to apply in the development control process.

#### 10.2 Components of the Plan

The components of this Plan follow the investigation and review of alternatives undertaken for the Lower Ourimbah Creek Floodplain Risk Management Study Review (a companion volume to this Plan).

A number of flood studies and floodplain management studies have been undertaken on Ourimbah Creek over the past 20 years.

Drainage works and levee works have been constructed in and adjacent to the study area to enable development to proceed. There has also been considerable infill of existing sub-divisions around Tuggerah Lakes. These are generally representative of the original development in Wyong Shire from the early 1900's.

The most recent floodplain risk management study of the Lower Ourimbah Creek (Ref. 4) did not recommend any additional physical works to reduce flood risk. Given the nature and magnitude of development on the floodplain at that time (2001) and changes to the floodplain in the intervening period to this study (2009), there are no valid considerations to change the 2001 recommendation.

The Lower Ourimbah Creek Floodplain Risk Management Study Review identified eight current (in 2009) floodplain risk management issues.

The identified current issues related to:

- current estimated potential flood damages;
- land use zoning and planning;
- flood warning emergency operations;
- provision for housing for "seniors" and persons with disabilities;
- development of better understanding of flood behaviour;
- voluntary acquisition of flood liable properties;
- public information and education;
- operations and maintenance.

The components of this Plan address these current issues.

#### 10.3 Land Use Zoning and Planning

An overview of Wyong Shire Council's current land use zonings from a floodplain risk management perspective shows that the current zonings are adequate to achieve the aims of the NSW Floodplain Development Manual. However, a significant proviso is that:

- rezoning to more flood risk liable uses does not occur;
- special exemptions are not granted so that developments which would be prohibited under the present zonings are allowed to proceed with re-zoning being undertaken.

Wyong Shire Council is currently using the policy F5 - Floodprone Land Development Policy, which was introduced circa 1986. The Policy has a number of inconsistencies with the objectives of the NSW Government's Flood Policy, including:

- development being assessed as "usually permitted" instead of "on merits".
- intensification of development with potential adverse impacts on surrounding properties;
- increasing of flood damage and flood impact potential as opposed to the stated objectives of the NSW Flood Policy to contain or reduce flood damages and adverse flood impacts.

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In the short term, it is recommended that Wyong Shire Council replace the current "Floodprone Land Development Policy" with a revised policy (as a modification of the current policy) as outlined below.

### LOWER OURIMBAH CREEK FLOODPLAIN - DEVELOPMENT CONTROLS

/T		Flood Haz	Flood Hazard Categories		
Type of Development	Flood Fringe	Flood Frings Flood Storage		Floodway	
-	Û	Low Hazard	High Hazard	rioddway	
LAND ZONED RESID	DENTIAL (1) (3) (4) (5)	(6)			
Concessional (A)			On Merits <sup>*</sup>		
Development <sup>(B)</sup>	On Merits <sup>*</sup>	On Merits <sup>*</sup>	Unsuitable land use	Unsuitable land	
Ancillary structures <sup>(C)</sup>			On Merits	ESE	
LAND ZONED COMMERCIAL / LIGHT INDUSTRIAL / INDUSTRIAL OR SIMILAR (2) (3) (4) (5) (6)					
Concessional (A)			On Merits <sup>*</sup>		
Development <sup>(B)</sup>	On Merits <sup>*</sup>	On Merits <sup>*</sup>	Unsuitable land	Unsuitable land use	
Ancillary structures (C)			On Merits*		
LAND ZONED RECR NON URBAN CONST					
Structures, including buildings and filling	On Merits*	On Merits <sup>*</sup>	Unsuitable land	Unstatable land use	
Other developments permissible in zone, i.e wetlands, playing fields, parks, walkways, etc	On Merits <sup>*</sup>	On Merits <sup>*</sup>	On Merits <sup>*</sup>	Unsuitable land	
REZONING TO MORE INTENSE LAND USE					
	On Merits <sup>*</sup>	On Merits <sup>*</sup>	Unsuitable land use	Unstatable land use	
ALL ZONE TYPES ST	ALL ZONE TYPES SUBDIVISION AND BOUNDARY ADJUSTMENTS				
	On Merits <sup>*</sup>	On Merits <sup>*</sup>	Unsurtable land use	Unsuitable land	

<sup>\*</sup> Merits based assessment refer to Attachment 1

<sup>(1)</sup> Freeboard for all residential development is 500mm.

<sup>&</sup>lt;sup>(2)</sup> Zero freeboard to be applied to industrial and commercial developments floor level. Flood compatible materials to be used to Flood Planning Level.

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- (3) Climate change allowance will be added to the design flood level.
- <sup>(4)</sup> Fencing must not result in any significant obstruction of the flow of floodwaters. Continuous solid fencing will not be permitted in high hazard areas.
- (5) Environmental Improvement works sympathetic to the surrounding environment and Essential Infrastructure (including private and public roads) will be considered on merits in all flood hazard categories.
- <sup>(6)</sup> Mine subsidence areas will have an additional freeboard allowance added to it. Please refer to the Mine Subsidence Board for further information.
- (A) Concessional Development is considered as the following:
  - Dwelling additions up to  $40\text{m}^2$  of habitable floor level at no less than the same level as the existing approved building. The allowance for additions shall be made no more than once for any given property.
  - Additions to Commercial and Industrial Uses of up to an additional 100 m<sup>2</sup> or 20% (whichever
    the less) of the Gross Floor Area of the existing approved building at no less than the same
    level as the existing approved building floor level. The allowance for additions shall be made
    no more than once for any given property.
- (B) **Development** anything greater in size than those listed above in concessional development. Vertical extensions in floodprone land, where the increased habitable floor area is greater than 40m<sup>2</sup> will be assessed as new development.
- (C) **Ancillary structures** structures additional and separate to a residential and/ or commercial development requiring consent, including:
  - swimming pools and associated decking,
  - gazebos,
  - barbeque structures,
  - garages and enclosed sheds The maximum size of residential (enclosed) garages in high hazard flood storage areas that will be considered is at 50 m<sup>2</sup>. This is based on the size of a double car garage and small storage area. Open styled carports are considered more appropriate in this area.

NOTE - Anything that is to be "considered on merits" must be referred to a DA Engineer.

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In the longer term, it is recommended Wyong Shire Council develop a Shire-wide Development Control Plan (DCP) for flood liable lands to ensure:

- consistent terminology between the flood DCP and other planning documents;
- that the general public and Wyong Shire Council's development approval process do not overlook flood risk management issues in assessing development; and
- a consistent approach Shire-wide, in particular for those areas that do not have flood studies or flood level information available.

#### 10.4 Emergency Operations

The emergency operations during flood emergencies are the responsibility of the SES. Local flood knowledge is essentially condensed into the "Local Flood Plan".

Information available from this Lower Ourimbah Creek Floodplain Risk Management Study Review and Plan should be incorporated into the Local Flood Plan, where needed, to address the SES operational requirements.

It is clear that the SES, while having the required expertise in emergency management, have limited expertise in interpreting flood studies and flood behaviour. Council and its technical advisers, through the process of creating flood studies and flood risk management plans, have the expertise in the flood aspects, but not the emergency operations.

There is an opportunity, through the Local Emergency Management Committee, in co-ordination with the SES, to provide flood information from Council's flood studies and flood records to assist the SES in amplifying the "Local Flood Plan" It should be appreciated that, much of the information that is available or can be gleaned from the available information is not immediately obvious to the lay person or non-specialist.

#### 10.5 Provision for Housing for Seniors

The NSW Government has issued a State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004, which:

- aims to increase the supply and diversity of residences available to the target population;
- make efficient use of existing infrastructure and services;
- sets aside local planning controls that prevent development of housing for seniors.

It is clear, from the experience of flood evacuation of the Wyong Nursing Home (adjacent to the Wyong River) and the 2001 and 2009 evacuations in Grafton, that evacuation of nursing homes and seniors residences is considerably more complicated than the general population. In the case of nursing homes, the people requiring evacuation are often frail, confused, frequently disorientated by the evacuation and require on-going medical and domestic assistance. Further, the displaced persons need to be placed in

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similar facilities for the duration of the flood evacuation. Such "similar facilities" are usually not close at hand.

Thus, it would be prudent to place housing for seniors, people with disabilities and associated medical facilities, on land that is less flood susceptible, compared to the general population. Implementation of such a policy would require:

- housing for seniors and the like to be above the 0.5% AEP flood or the PMF event, if the 0.5% AEP flood cannot be adequately defined;
- consideration of the flood hazard on access roads, ensuring there is flood free vehicular access up to the 0.5% AEP flood event;
- Wyong Shire Council's land use zoning recognise the need to apply high levels of flood protection for housing for seniors, nursing homes and medical facilities that are expected to operate during a flood emergency;

Wyong Shire Council should request the NSW Government to incorporate flood liability considerations into the Planning Policy, such that flood liability of subject sites is treated similarly to "Bush Fire Prone Land".

#### 10.6 Development of Better Understanding of Flood Behaviour

The reviews of earlier flood studies (in Chapter 4) and the provisional hazard for the PMF event (Figures 9 and 10) illustrate that the flood information of Lower Ourimbah Creek needs refinement. Specifically, the discrepancies in the hydrological modelling needs to be resolved and further hydraulic modelling is necessary to define flow patterns in a two dimensional sense.

With regard to the catchment hydrology, it is noted that better rainfall data can be collected with the available gauges. However, there is no high flood flow measurement available. The previous flood studies have relied on flow gauging at low flow levels at Station 211005, "Ourimbah Creek at Tuggerah", (which has been decommissioned) and extrapolation of the low flow data. The issue of lack of high flow gauging will not be rectified simply by recommissioning of Station 211005. High flow measurement is required, typically where flow is confined, such as Main Northern Railway Line or Wyong Road. Until some high flow measurements are available, there is little benefit in attempting to review the catchment hydrology.

The flood studies to date have deficiencies in addressing particular two-dimensional flow patterns through the study area. The following are of particular concern:

- the interaction with Wyong River and Mardi Creek and Tuggerah Lake (both east and west of Ourimbah Creek) and the impacts such interconnections have on flood hazard;
- that two dimensional flow patterns might indicate that some areas classified as "flood storage" near the Pacific Highway, would be more accurately defined as "floodway";

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that the overtopping of the Main Northern Railway near Catamaran Drive is modelled in 2D so that flood hazard can be accurately assessed in the Catamaran Drive area, and the industrial areas immediately east of the Main Northern Railway. (It is noted that the CELLS model (Ref. 7) covered this area, but the model was not run for the PMF situation.)

In the consultant's view, the above deficiencies are not seen as sufficient to delay implementation of a Floodplain Risk Management Plan. Simply, the Floodplain Risk Management Plan can be reviewed and adjusted as better information becomes available.

The lack of high flow measurements is an on-going concern. Without such measurement, the link between the hydrologic models and the riverine models is uncertain. Hence, it is particularly difficult to identify if the discrepancies in the flood results are sourced either from the catchment hydrology or the riverine hydraulics. To progress, Wyong Shire Council should:

- actively approach the NSW Government to ensure government agencies treat both Wyong River and Ourimbah Creek as "high priorities" for funding opportunities;
- alternatively, undertake a trial to determine if high flow measurement can be undertaken by Wyong Shire Council staff in a cost effective fashion.

#### 10.7 Public Information and Education

Two mechanisms are proposed to improve flood awareness and flood preparedness in the Ourimbah Creek area downstream of the Pacific Highway (the subject area for this study).

The two mechanisms are:

- use of Section 149 Certificates from Wyong Shire Council to indicate that, where a property is within the PMF flood extent, it will be subject to Wyong Shire Council's policies regarding development of floodprone land. The Section 149 Certificates could also indicate Wyong Shire Council may have further information relating to:
  - o design flood levels at the site;
  - o approximate ground level data at the site;
  - flood hazard and hydraulic categories for Wyong Shire Council's adopted Flood Planning Levels;
  - o freeboard requirements.
- use of area specific brochures to indicate flood liability and to provide information such that individual land owners can form their own individual flood plans and evacuation routes.

Assistance from technical staff will be required to prepare the area specific flood information from the available flood studies.

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#### 10.8 Operations and Maintenance

Over the past 25 years, Wyong Shire Council has installed various works and measures to assist in floodplain risk management and to assist the general development within the Shire.

The installed works and measures, with respect to the Lower Ourimbah Creek floodplain, which require on-going maintenance, are:

- the two levee systems protecting the Tuggerah Business Park and the Berkeley Vale Industrial Area:
- the floodgate structure in the levee protecting the Berkeley Vale Industrial Area (located on the western side of the Main Northern Railway Line);
- the automatic rainfall gauges and water level stations installed by Wyong Shire Council through the local government area, which form the basis of the flood warning system; and
- various open drainage systems.

With respect to levee systems, the levees should be included in Wyong Shire Council's asset management system and checked every 12 months by visual check for damage, and crest level survey to ensure the levee crest is at design levels.

With respect to floodgates, the maintenance regime should be:

- annual check for smooth operation of gates and repair of structural defects and corrosion;
- check to ensure the gate and culvert are clean and free of debris each time a "Flood Watch" warning is issued by the Bureau of Meteorology. OHS issues associated with inundated infrastructure must be considered during development of the maintenance regime.
- check to ensure the integrity of each gate after flood, where the gate operated, to ensure the gate functions correctly and has not been damaged within the flood.

Maintenance of the automatic rainfall and water level gauges requires special expertise in instruments and radio communications. Wyong Shire Council currently has an experienced technical telemetry team to carry out this work, however, the ongoing resourcing of this unit must be maintained.

Wyong Shire Council relies on a large number of open drains to provide trunk drainage functions. Excessive vegetation growth in these drains will reduce the capacity of such drains to achieve their desired intent (conveyance and to reduce overbank flooding). On-going active vegetation management is required to ensure that the drainage capacity is not reduced by vegetation growth.

The above maintenance activities are an essential part of the successful operation of an integrated floodplain risk management process and plan.

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It should be appreciated that the floodplain management works and measures do not operate regularly on a day to day basis, but rarely, when floods occur. Thus, maintenance must be undertaken to ensure the smooth operation of these works and measures on the rare occasions (during floods) when their operation is required.

It is appreciated that the above maintenance activities are a small part of Wyong Shire Council's operations and the works are generally not in the public view. The temptation to delete the maintenance work to satisfy budgetary constraints or public perceptions should be strongly resisted, since the floodplain risk management process relies on successful operation of these components.

#### 10.9 The Floodplain Risk Management Plan

This section outlines the recommended Floodplain Risk Management Plan. The section has been prepared on the format of "Floodplain Risk Management Issue" and "Response", drawn from Sections 10.3 to 10.8 inclusive.

Table 10.1 identifies "Management Issue Categories", "Response" together with a priority ranking, project duration and projected cost.

#### Floodplain Risk Management Issue

Wyong Shire Council's Policy F5 - Floodprone Land Development Policy is dated and needs updating. It would be advantageous to develop these requirements into a DCP, rather than maintain it as a Policy.

#### Response

Modify Wyong Shire Council's Policy F5 - Floodprone Land Development Policy to remove inconsistencies. Develop a new DCP covering flooding as a Wyong Shire Council-wide DCP with specific mention of local areas where floodplain risk management studies have been completed.

#### 2. Floodplain Risk Management Issue

Considerable amounts of flood information can be gleaned from existing flood records and flood studies that could be included in the Local Flood Plan for use in future flood emergencies.

#### Response

Wyong Shire Council, through the LEMC and technical staff, work with the SES to extract available flood data. The responsibility to incorporate such information into operational requirements rests with the SES.

#### 3. Floodplain Risk Management Issue

The NSW Government's State Environmental Planning Policy(SEPP) (Housing for Seniors or People with a Disability) 2004, aims to increase the supply and diversity of housing for the target

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population. One component of the SEPP allows the relaxation of local planning controls which would otherwise prevent housing for the target population proceeding.

The SEPP contains extensive consideration of bushfire risk, but no mention of flood related risk.

#### Response

Wyong Shire Council to lobby to State Government to request changes to the SEPP to include appropriate consideration of flood risk.

#### 4. Floodplain Risk Management Issue

Public information and education on flood risk within the study area is limited and can be improved, given current knowledge of flood and flood behaviour.

#### Response

Section 149 Certificates, as issued by Wyong Shire Council, should indicate if subject property is flood liable in the PMF event and thus development is required to be in accordance with Wyong Shire Council floodplain risk management policies.

Other information such as predicted flood levels, existing house floor levels and flood hazard categories, may be available from Wyong Shire Council, subject to the property location.

Current flood knowledge can be developed to provide specific flood risk information on an area by area basis, as opposed to the historic trend of developing generalized flooding information and brochures. Such site specific information would allow individual occupiers to set up their own flood plans for flood level monitoring, evacuation and flood preparedness.

#### 5. Floodplain Risk Management Issue

Wyong Shire Council has constructed a number of levees to provide flood protection and installed a number of automatic gauges for rainfall and river levels in the Lower Ourimbah Creek catchment.

These works and measures require regular inspection and maintenance to ensure they operate effectively on the rare occasions that they are required to do so. Structures such as levees are generally only required to operate on rare occasions, and as such, can be forgotten or not included in works programs.

#### Response

Formalise inspection, maintenance and reporting requirements within Wyong Shire Council through an appropriate department (such as the Local Emergency Management Committee – LEMC) to ensure the inspection and maintenance activities are undertaken.

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#### 6. Floodplain Risk Management Issue

Technical advances in numerical hydraulics and the relatively cheap provision of topographical data by Aerial Laser Survey (ALS) has created a situation where the inconsistencies between the various flood studies and the surrounding waterways can be addressed.

The lack of any high flow measurements in Ourimbah Creek remains a significant impediment to resolving the inconsistencies between the catchment hydrology and river models in the study area.

#### Response

In the longer term, develop an hydraulic model linking Ourimbah Creek to Wyong River, Mardi Creek and Tuggerah Lakes.

Actively pursue NSW government agencies to undertake some high flow measurements along Ourimbah Creek when floods occur, or alternatively, undertake a trial program to confirm if such measurements can be effectively undertaken using Wyong Shire Council's in-house resources.

Table 10.1 below indicates the appropriate priority and projected cost of each response above.

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**Table 10.1** 

Ourimbah Creek Floodplain Risk Management Plan

Risk Management Issue	Response	Priority	Duration	Projected Cost
1. Land Use Planning	1. Revise Interim Policy	Immediate	1 month	Council cost only
	2. Develop flooding DCP	High	6 months	Council cost only
2. Transfer of Flood Knowledge	1. Council, through its LEMC, assist SES to condense local flood knowledge in the Local Flood Plan	High	3 months	Council cost only
3. NSW Government State Planning Policy (Housing for Seniors)	Request changes to include flood risk	High	2 months	Council cost only
4. Public Information and Education	1. Ensure flood risk notation on Section 149 Certificates is up to date	High	2 months (and on-going)	Council cost only
	2. Develop site specific flood information brochures	High	6 months	\$20,000 plus on-going \$4,000 every four years
5. Inspection and maintenance of existing infrastructure	of Develop inspection and maintenance procedures	High	On-going	Council cost only
6. Development of Flood Knowledge	1. Update the hydrologic and hydraulic studies	Medium to Low	18 months	860,000
	2. Obtain high flow measurement	High	On-going	Subject to floods occurring

# Proposed Section 96 Application for WARNERVALE GP SUPER CLINIC

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Warnervale GP Super Clinic B5 Sparks Road Warnervale NSW































