NSW GOVERNMENT

An overview of floodplain management plans under the Water Management Act 2000

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Acknowledgments

Floodplain management plans are being developed as part of the *Healthy Floodplains Project*, which is funded by the Australian Government's Sustainable Rural Water Use and Infrastructure Program as part of the implementation of the Murray–Darling Basin Plan in NSW.

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Introduction

Floodplain management plans are being developed for rural floodplains as part of the transition from the floodplain management provisions of the *Water Act 1912* (WA 1912) to the provisions of the *Water Management Act 2000* (WMA 2000).

The first floodplain management plans to be developed under the WMA 2000 will be for five valleys in the northern Murray–Darling Basin, which are the Barwon–Darling, Gwydir, Border Rivers, Macquarie and Namoi (Upper and Lower) valleys.

These six floodplain management plans are being prepared as part of the NSW Healthy Floodplains Project, which is funded by the Australian Government's Sustainable Rural Water Use and Infrastructure Program as part of the implementation of the Murray–Darling Basin Plan in NSW. The NSW Healthy Floodplains Project commenced in 2010 to reform the management of water on floodplains through the development of floodplain management plans as well as the licensing of floodplain harvesting water extractions.

Floodplain management plans provide the framework for coordinating flood work development to minimise future changes to flooding behaviour; improving the environmental health of floodplains, and increasing awareness of risk to life and property from the effects of flooding. Floodplain management plans establish management zones and rules which provide clarity about where flood works can be constructed on the floodplain and to streamline the approval process for new and amended flood works.

This document provides a general overview of floodplain management plans that will be developed under the Healthy Floodplains Project, as well as floodplain management plans that may be developed across rural floodplains of NSW outside of the project. The overview should be read together with other key documents including the floodplain management plans themselves, the technical manual for floodplain management plans, the background document for each floodplain management plan, and the individual report cards which summarise the management zones and rules contained within each floodplain management plan. These documents and other information on the floodplain management planning process can be found on the Department of Industry website www.industry.nsw.gov.au under Plans and Programs > Healthy Floodplains Project

The WMA 2000 and floodplain management plans introduce some new terminology and different management arrangements. These new terms are highlighted in **bold** in the text, and where they are not defined in the WMA 2000, they are explained in the glossary at the end of this overview document.

Floodplain management planning

The floodplain management planning approach has been revised in response to changes to the legislative and policy framework that governs water management in NSW. The floodplain management planning approach has been updated to satisfy the provisions of the WMA 2000, which requires floodplain management plans to:

- identify the existing and natural flooding regimes
- identify the ecological benefits of flooding
- identify existing flood works
- deal with the risk to life and property from flooding.

Floodplain management plans also deal with proposals for new flood works and the modification or removal of existing flood works, and other measures to improve the management of water on floodplains.

Floodplain management planning involves making decisions to coordinate the development of flood works to meet the social, economic, ecological and cultural needs of a floodplain and floodplain landholders.

Transitioning from the WA 1912 to WMA 2000

The floodplain management planning and flood work approval provisions of the WMA 2000 are replacing Part 8 of the WA 1912. Upon transition to the WMA 2000, floodplains designated under the WA 1912 automatically become floodplains under the WMA 2000, floodplain management plans prepared under the WA 1912 become floodplain management plans under the WMA 2000, and existing approvals for controlled works issued under Part 8 of the WA 1912 are converted to WMA 2000 flood work approvals.

The floodplain management provisions of the WMA 2000 relate closely to the provisions of the amended Part 8 of the WA 1912 and as such, the two generations of floodplain management plans are comparable in principle. However, most floodplain management plans made under the WA 1912 cover only small areas where there is intensive irrigation development or where flood events have revealed changes to flooding behaviour caused by flood works. The WMA 2000 floodplain management plans will apply across large floodplains that cover the extent of major flooding in a valley. Floodplain management plans made under the WMA 2000 also include specific rules for different management zones to govern and guide the determination of flood work approvals.

Overview of the planning process

The development of floodplain management plans is undertaken in partnership between the NSW Department of Industry and the NSW Office of Environment and Heritage and is overseen by an interagency regional panel.

The Office of Environment and Heritage is responsible for development of the content of floodplain management plans based on the advice of a technical advisory group. The technical advisory group is made up of key technical experts from government and other agencies that are involved in water management across NSW.

The Department of Industry is responsible for the consultation and review processes for development of floodplain management plans and is guided by the recommendations of a working group. The working group is made up of key representatives from branches within the department.

The interagency regional panel is responsible for overseeing the development of floodplain management plans on a whole-of-government basis and in consideration of the advice provided by the technical advisory group, the working group and also the comments received from stakeholders during targeted consultation and public exhibition. The interagency regional panel is made up of representatives from the Department of Industry, the Office of Environment and Heritage, and the Department of Primary Industries (agriculture and fisheries interests). A representative from Local Land Services may also attend meetings of the interagency regional panel to provide advice on consultation activities and other matters relevant to their expertise.

Consultation for development of floodplain management plans is undertaken using a two-stage process; targeted consultation with key stakeholders, and then public exhibition of the floodplain management plan.

During targeted consultation key stakeholders are invited to provide feedback on key components of the floodplain management plan. The comments received during targeted consultation are considered by the interagency regional panel before the draft floodplain management plan is prepared and released for public comment during public exhibition.

During public exhibition, the draft floodplain management plan is formally exhibited for a minimum period of 40 days, and public information sessions are held within the plan area to provide information on the development of the draft management zones, the draft rules, and how to make a submission. Feedback and submissions received during this period will be considered by the interagency regional panel before the final floodplain management plan is submitted to the Minister for Regional Water for approval and the Minister for Environment for concurrence.

Basis for floodplain management planning

Floodplain management plans coordinate the development of flood works on floodplains to ensure the orderly passage of floodwater, while minimising the risk to life and property from flooding and protecting flood connectivity to flood-dependent ecological and cultural assets.

Floodplain management plans use a variety of tools and information to do this, including hydrologic and hydraulic modelling, mapping, information about ecological and cultural assets, and information about existing floodplain development.

The floodplain management planning approach is a ten-step process that includes defining the floodplain boundary (Step 1); identifying hydraulic, ecological, cultural and socio-economic aspects of the floodplain to be used in decision-making (Steps 2-6); developing management zones and rules (Steps 7-9); and assessment of socio-economic impacts of the proposed floodplain management plan (Step 10). Community consultation is undertaken during targeted consultation and public exhibition of the draft floodplain management plan. Feedback received from consultation may require one or more of the ten steps to be revisited to develop a more equitable product based on balanced decision-making. Further details on the approach used to develop floodplain management plans can be found in *Rural floodplain management plans: Technical Manual for plans developed under the Water Management Act 2000,* available from the Department of Industry website www.industry.nsw.gov.au

Key outputs from the floodplain management planning approach include the:

- mapped **floodway network**, which consists of areas where a significant **discharge** of floodwater occurs (floodways), as well as areas important for the temporary storage of floodwater during the passage of a flood (flood extent of a large flood)
- management zones, which are areas that have common requirements for managing flood works
- rules that define the types of flood works permitted for each management zone and assessment criteria to determine the acceptable level of the impact of a work. Together, the management zones and rules provide the legal framework to determine flood work approvals under the WMA 2000.

Key considerations of the floodplain management planning approach are the:

- benefits of flooding
- existing flood works and the risks from flooding.

Each key output and consideration is described in more detail in the sections below.

The floodway network

The floodway network is the hydraulic basis for determining the management zones and the rules that govern the type, nature and construction of flood works permitted on different parts of the floodplain.

The floodway network is designed to have adequate hydraulic capacity and continuity to effectively convey floodwater through the floodplain. Hydraulic models are used to simulate the movement of floodwaters in river channels and across the floodplain in large **design floods** – floods that occur in the area approximately every 20 to 30 years – and small design floods – floods that occur in the area approximately every eight years. Hydraulic models show where a significant discharge of floodwater occurs, where floodwater ponds, and areas that preserve floodplain **connectivity**. The floodway network is designed to demonstrate these outputs and is shown as a map in the floodplain management plan.

Management Zones

Each floodplain management plan will include a number of management zones, which are areas of the floodplain that have common requirements for coordinating the approval of flood works. Management zones contain specific rules which define the types of flood works that may be constructed within that management zone.

There are three basic categories of management zone:

- Management Zone A includes major drainage lines and other areas where a significant discharge of floodwater occurs during flood events. These areas are generally characterised by high flood flow, velocity and depth.
- Management Zone B includes areas of the floodplain that are important for the conveyance of flood water during large flood events and for the temporary pondage of floodwaters during the passage of a flood. The outer boundary of Management Zone B may be defined by the inundation extent of the large design flood.
- Management Zone C contains elevated areas or areas protected by existing flood work development.

The extent of each management zones may vary between floodplain management plans, and some floodplain management plans may contain more than these three basic categories of management zone. For instance, an additional management zone may be delineated to provide extra or different rules to protect flooding behaviour in environmentally sensitive areas or to be more comparable to existing floodplain management arrangements.

Benefits of flooding

The WMA 2000 requires that floodplain management plans identify the ecological benefits of flooding in the area. Floodplain management plans meet this requirement by identifying **ecological assets**, which are defined as wetlands and other floodplain ecosystems, including watercourses that are dependent of flooding to maintain their ecological character and areas of groundwater recharge. Ecological assets provide or support ecological values, such as flood-dependent fauna, vegetation communities and areas of conservation significance.

Floodplain management plans also identify **cultural assets**, both Aboriginal and non-Aboriginal, which are dependent on flooding or are vulnerable to the effects of erosion associated with the redistribution of flood flow or to ground disturbance caused by the construction of flood works. Cultural assets include **heritage sites** and can also include non-material cultural heritage, such as Aboriginal cultural practises connected with flooding, that have been recognised on government heritage databases.

The ecological and cultural benefits of flooding are recognised in the design of the floodway network, the development of management zones, and the setting of the rules that govern flood work approvals.

Existing flood works and risks from flooding

The WMA 2000 requires that floodplain management plans identify existing works and deal with risk to life and property from flooding.

Floodplain management plans outline the types of works that have been constructed on the floodplain and provide information on the number of flood work approvals that have been issued for the floodplain.

Floodplain management plans include a map that shows the area that is enclosed by major levee systems. This map does not show every flood work on the floodplain, but rather provides an indication of those areas where land is protected from flood risk to some extent by existing flood works.

Floodplain management plans also outline at a general level the types of risks to life and property from flooding. Consideration of the footprint of existing flood works is an important part of developing rules and management zones in each floodplain management plan.

Rules for granting or amending flood work approvals

Floodplain management plans include rules which govern the granting or amending of flood work approvals. These rules and are a fundamental component of each floodplain management plan.

There are three basic types of rules in floodplain management plans:

- rules governing the physical nature of the flood works that can be built
- rules governing whether an application for a flood work approval must be advertised
- rules that include criteria for assessing the impacts of flood works.

Rules that govern the physical nature of the flood works that can be built are most common in parts of the floodplain that include floodways or areas where it is important to maintain connectivity between ecological and cultural assets and flood flows. In these areas, flood work approvals may be issued only for certain flood works that are critical for domestic or farm operations, such as infrastructure protection works or stock refuges, and only works of a specified size or enclosing a specified area.

Rules governing whether an application for a flood work approval must be advertised are more common in areas of the floodplain that are important for the conveyance and temporary storage of floodwaters, and where there is also some flood work development. In these areas, advertising may not be required for minor flood works, infrastructure protection works or stock refuges, but may be required for more significant flood works such as levees. Advertising allows landholders whose properties may be affected by a proposed flood work to have an opportunity to comment prior to determination of the application by WaterNSW.

Rules that include criteria for assessing the impacts of flood works apply in all parts of the floodplain. These rules assist WaterNSW to undertake technical assessments to determine whether the flood work will significantly redistribute or otherwise alter flood behaviour, or have impacts on floodplain connectivity, ecological and cultural assets, or drainage on neighbouring properties.

Taken together, the rules are designed to provide for flood work development in those parts of the floodplain where flood works have the lowest risk of adversely impacting flooding behaviour, the floodplain environment or other landholders.

Mandatory conditions

Mandatory conditions are the mechanism by which the rules in floodplain management plans are imposed as conditions on individual flood work approvals. Floodplain management plans include provisions that require flood work approvals within the plan area to include such conditions as are needed to implement the provisions of the plan.

Floodplain management plans also describe standard conditions that apply to flood work approvals within the plan area. These conditions require that the holder of a flood work approval notify WaterNSW if there has been a breach of the conditions of their approval, to provide details of the construction of an approved flood work, or that flood works are decommissioned to an appropriate standard.

Mandatory conditions are imposed on flood work approvals at the commencement of a floodplain management plan and cannot be removed or altered unless the plan is amended.

Plan amendments

Floodplain management plans provide clear guidance to floodplain landholders on the types of works that may be constructed on the floodplain, where such works may be constructed, and the criteria against which applications for flood work approvals are assessed. Such guidance will, in most cases, remain valid over the ten-year life of each floodplain management plan.

During the term of each floodplain management plan, amendments may be required as a result of further studies undertaken or additional aspects implemented. These potential amendments are listed within each floodplain management plan.

Floodplain management plans may also be amended if proposed amendments are deemed to be in accordance with the public interest or as a result of a decision by the NSW Land and Environment Court.

Glossary of terms

Many of the terms in this document are defined in the *Water Management Act 2000,* and therefore are not listed here. Terms that are not defined elsewhere are listed below to help with understanding of this document.

connectivity refers to the capacity of in-stream biota to move longitudinally in a river system and laterally across the floodplain and not be impeded by barriers (e.g. weirs, dams, culverts). Connectivity is important for in-stream aquatic processes and biota and the conservation of natural riverine systems.

cultural asset is an object, place or value that is important for people to maintain their connection, beliefs, customs, behaviours and social interaction.

design flood is a flood of known magnitude or annual exceedance probability (AEP), that can be modelled or is an historic event. A design flood is selected to design floodway networks which are used to define management zones for the planning and assessment of the management of flood works on floodplains. The selection is based on an understanding of flood behaviour and associated flood risk. Multiple design floods may be selected to account for the social, economic and ecological consequences associated with floods of different severities.

discharge (or flow) is the rate of flow measured in volume per unit of time (e.g. megalitres per day = ML/day).

ecological assets are a wetland or other floodplain ecosystem, including watercourses that depend on flooding to maintain their ecological character. Areas where groundwater reserves are recharged by flood waters are also considered to be ecological assets. Ecological assets are spatially explicit and are set in the floodplain landscape.

floodplain management plan is a plan made under the WMA 2000 which sets out rules for the types of flood works that may be constructed on the floodplain and the locations where and circumstances under which they may be constructed.

floodways are those areas of the floodplain where a significant discharge of floodwater occurs during floods. They are often aligned with naturally defined channels. Floodways are areas that, even if only partially blocked, would cause a significant redistribution of flood flow or a significant increase in flood levels. In the context of a floodway network, floodways can collectively include flowpaths to preserve floodplain connectivity and floodplain pondage.

heritage sites are cultural heritage objects and places as listed on Commonwealth, state and local government heritage registers.

management zones are areas in the floodplain that have specific rules to define the purpose, nature and construction of flood works that can occur in those areas. The rules specify for each management zone the types of flood works that can be applied for; if a flood work application is required to be advertised; and the assessment criteria that must be satisfied to approve the work. Together, the management zones and rules provide the legal framework for WaterNSW to determine flood work applications.

mandatory conditions are conditions that are required to be imposed on a flood work approval by a floodplain management plan.