



# Floodway Definition

## Summary

This FRM guideline addresses the identification of floodways in the FRM Process as outlined in the NSW Floodplain Development Manual (2005).

## Introduction

The traditional view of floodways is that they are areas of high velocity and depth where the flood hazard is high. This was reinforced by the quantitative approach provided in the 1986 Floodplain Development Manual which linked floodway limits to velocity/depth product (of greater than 1) and/or a flood level increase (of greater than 0.1m) due to blocking a portion of the floodway. This definition was introduced to overcome the definitional problem with earlier Planning and Environment Commission Circulars 15 and 22 and the flood maps which represented floodways as areas inundated in 20 year average recurrence interval (ARI) floods.

Unfortunately, the 1986 definition generally restricted floodways to areas with high velocity and depth. This has meant that a large number of flowpaths (in areas where velocity and depth are relatively low) do not meet this criteria and were not viewed as floodways even though they carried a large proportion of flood flows. This particularly applies to the western floodplains and the estuarine areas of the coastal rivers.

To address this issue the 2005 Manual provides a qualitative rather than quantitative description of a floodway. Floodway areas are defined in the Manual as *“those areas of the floodplain where a significant discharge of water occurs during floods. They are often aligned with naturally defined channels. Floodways are the areas that, even if only partially blocked, would cause a significant redistribution of flood flow, or a significant increase in flood level.”*

The definition does not relate to the velocity or depth of flow but to the significance of discharge (significance is relative to the total flow along an individual flowpath rather than the “hazard”) and the hydraulic impacts of blockage (the impacts on both the floodplain as a whole and the flowpath in question).

## Recommendations

To assist in assessing where floodways exist, the following guidance is provided in relation to the characterisation of floodways and approaches to the assessment of floodways extents.

## Floodway Characterisation

As floodways are primarily defined through hydraulic function their characterisation needs to be along the same lines. Hence floodways areas would be expected to have at least one of the following hydraulic characteristics which relate to impacts of works in these areas. Obstruction of the floodway can:

- divert water to other existing flowpaths
- have a significant impact upon upstream flood levels in the planning level flood
- divert significant amounts of water away from existing flowpaths resulting in the development of new flowpaths and associated adverse impacts

In each case significance depends upon the individual situation and should be based upon the judgement of an experienced hydraulic engineer. This may depend upon the likely impacts and associated ramifications.

In all cases, the assessment of blockage is to be undertaken at a global scale to identify both broad scale and local impacts and is to consider the cumulative impacts of future development. Assessment is not to be limited to a local scale.

Points to note in relation to floodways are that:

- most conveyance of floodwater along a particular flowpath occurs in floodways
- flow velocity in floodways may be relatively high compared to other areas of the floodplain
- blocking the floodway will either raise flood levels or redirect flood flows
- floodways may have very low flow velocities
- floodways are generally areas where development is undesirable due to:
  - the potential to redirect flows
  - the level of potential danger to personal safety
  - significant financial losses due to the damage potential

Floodways need to be examined in a range of events. For example, an area which may be flood storage or flood fringe in the planning level flood may become a floodway in an extreme event or new floodways may develop. These need to be identified and the risk to development identified.

### Approaches to Assessing Floodways in Modelling

There is no definitive method of deriving floodway limits in models. It is generally an iterative process requiring judgement by an experienced modeller/practitioner. However, the following overall limits provide some guidance:

- the minimum width of any floodway in the planning level flood should be assumed to be the top of bank on each side of the main channel of the flowpath.
- in major drainage areas where roadways carry a high proportion of flow the entire road reserve could be considered a floodway. If floodways extend into private property the characteristics outlined above should be used.
- In western rural floodplain floodway limits are documented in Floodplain Development Guidelines or Rural Floodplain Management Studies where available.

An iterative method that can be considered in defining the approximate limits of floodways is reducing conveyance by altering cross sections and examining the impacts in relation to whether:

- there is a significant affect on upstream flood levels and/or
- there is a significant diversion to an existing flowpath and/or
- a significant new flowpath or floodway develops due to the change

This approach may assist in determining the extent of floodway limits.