New South Wales

Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025

under the

Water Management Act 2000

I, the Minister for Water, make the following plan under the *Water Management Act 2000*, section 50.

Minister for Water

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Part 1 Introduction

Note—Respect is paid to the traditional owners of this country, who are acknowledged as the first natural resource managers within the Floodplain.

1 Name of Plan

This Plan is the Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025.

2 Commencement

This Plan commences on 1 July 2025.

3 Floodplain to which Plan applies

This Plan applies to the Murrumbidgee Valley Floodplain (***the Floodplain***) as shown on the Plan Map, being a floodplain within the following water management areas—

(a) Lachlan Water Management Area,

(b) Lower Murray-Darling Water Management Area,

(c) Murray Water Management Area,

(d) Murrumbidgee Water Management Area.

Note—The Murrumbidgee Valley Floodplain is land declared by the Regulation, section 252, to be a floodplain.

4 Management zones to which Plan applies

(1) The Floodplain is divided into the following management zones as shown on the Plan Map—

(a) Management Zone A,

(b) Management Zone B,

(c) Management Zone C,

(d) Management Zone CU,

(e) Management Zone SP.

(2) For the Regulation, section 45(b), Management Zone SP is Management Zone D.

5 Interpretation

(1) The dictionary in Schedule 3 defines words used in this Plan.

Note—The *Interpretation Act 1987* contains definitions and other provisions affecting the interpretation and application of this Plan.

(2) A number in brackets following the name of a gauge is the gauge number.

(3) Appendices included in this Plan do not form part of this Plan.

6 Maps

(1) A reference to a map adopted by this Plan is a reference to the map of that name published on the Department's website.

Note—The following maps are available on the Department's website—

(a) the Ecological Assets Map,

(b) the Floodway Network Map,

(c) the Peak Flood Flow Distribution (2012) Map,

(d) the Plan Map.

(2) A map that amends or replaces a map adopted by this Plan has effect only if this Plan is amended to give effect to it.

Part 2 Vision, objectives, strategies and performance indicators

7 Vision statement—the Act, s 35(1)(a)

The vision of this Plan is as follows—

(a) to contribute to a sustainable, healthy and working floodplain,

(b) to manage the development of new flood works and amendments to existing flood works,

(c) to protect the passage of floodwater through the Floodplain,

(d) to recognise the need to minimise the risk to life and property from the effects of flooding.

8 Objectives—the Act, s 35(1)(b)

The objectives of this Plan are as follows—

(a) to facilitate the orderly passage of floodwater through the Floodplain,

(b) to establish a framework for the granting or amending of flood work approvals for flood works located in the Floodplain,

(c) to contribute to the minimisation of the risk to life and property from the effects of flooding in the Floodplain,

(d) to maintain flood connectivity to wetlands, other floodplain ecosystems, and areas of groundwater recharge in the Floodplain,

(e) to contribute to the protection of water quality to support flood-dependent ecosystems and social, cultural and economic values in the Floodplain,

(f) to contribute to the protection of the following flood-dependent assets and flood-impacted assets in the Floodplain—

(i) Aboriginal cultural values,

(ii) ecological assets, ecological values and other floodplain ecosystems,

(iii) heritage sites.

9 Strategies—the Act, s 35(1)(c)

(1) The strategies for reaching the objectives of this Plan include the following—

(a) to delineate a floodway network that accurately represents the passage of floodwater in the Floodplain,

(b) to establish management zones with rules and assessment criteria for the granting or amending of flood work approvals in the Floodplain,

(c) to identify areas of the Floodplain where flooding may impact life and property,

(d) to identify flood-dependent ecological assets, other floodplain ecosystems and ecological values in the Floodplain,

(e) to establish rules and assessment criteria for flood work approvals that–

(i) ensure adequate flood connectivity is maintained in the Floodplain,

(ii) contribute to the minimisation of the risk to life and property from the

effects of flooding in the Floodplain,

(iii) contribute to the protection of water quality in the Floodplain,

(iv) protect Aboriginal cultural values in the Floodplain,

(v) protect ecological assets, ecological values and other floodplain ecosystems in the Floodplain,

(vi) protect heritage sites in the Floodplain.

(2) Each strategy may contribute to achieving one or more of the objectives of this Plan.

10 Performance indicators—the Act, s 35(1)(d)

(1) The performance indicators used to measure the success in achieving the objectives of this Plan are as follows—

(a) the extent to which the Floodway Network Map and the management zone boundaries as shown on the Plan Map accurately represent the passage of floodwater in the Floodplain,

(b) the extent to which flood works, approved in accordance with Part 7, and constructed or modified after the commencement of this Plan—

(i) have altered the hydraulic behaviour of floodwater in the Floodplain,

(ii) have altered flood connectivity to the following flood-dependent assets in the Floodplain—

(A) Aboriginal cultural values,

(B) ecological assets and ecological values,

(C) heritage sites,

(iii) have contributed to the protection of water quality in the Floodplain,

(iv) have altered flow connectivity to other floodplain ecosystems,

(v) have altered the condition of Aboriginal cultural values in the Floodplain,

(vi) have altered the condition of heritage sites in the Floodplain,

(c) the extent to which this Plan has accurately identified flood-dependent ecological assets, ecological values and other floodplain ecosystems in the Floodplain,

(d) the extent to which this Plan has identified appropriate sources which list flood-dependent Aboriginal cultural values in the Floodplain,

(e) the extent to which this Plan has identified appropriate sources which list flood-dependent heritage sites in the Floodplain.

(2) One or more performance indicators may be measured to evaluate each of the objectives and strategies of this Plan.

(3) In evaluating the effectiveness of the strategies in meeting the objectives of this Plan, the following are to be considered—

(a) the extent to which the strategies and provisions in this Plan have been effectively implemented and complied with,

(b) the extent to which external influences on the Floodplain have affected progress

toward achieving the objectives.

Example—External influences may include long-term and short-term climate trends and land use change.

Part 3 Flooding regimes—the Act, s 29(a)

11 Natural flooding regime

(1) The natural flooding regime in the Floodplain was characterised by flood events that occurred before the construction of weirs, dams, roads and railways, river regulation, land use changes and flood work development in the Floodplain (***natural flooding regime***).

(2) The frequency, duration, nature and extent of the natural flooding regime is summarised in Table 1—

Table 1—Natural flooding regime

Frequency	Several historical flood major flood events have occurred in the Murrumbidgee River catchment prior to construction of major water infrastructure (pre-1928 — construction of Burrinjuck dam). Notable flood years which had significant flooding events 1852, 1891, and 1925 with floods recorded at Gundagai, Wagga Wagga and Darlington Point. Each event reached above 9m in height at Hampton Bridge in Wagga Wagga. Another 25 flood events have been recorded at Wagga Wagga (1844–1928) above 8m in height, with some years having multiple events, for example the year 1894 had 5 flood events greater than 8m in height.
Duration	Floods in the Floodplain receded slowly due to the small capacities of the major channels and the slow rates of rise and fall of floods. Slow moving floodwaters on flat slopes often lead to long duration flooding. Flood damage from major floods was caused by long periods of inundation, which accompanied the slow rates of rise and fall of floods.
Nature	The natural flooding regime in the Floodplain is complex. The river originates in the alpine area of Kosciuszko National Park and flows through the Monaro High Plains and the low-lying plains of the western Riverina, joining the River Murray south of Balranald. The mid-to-lower Murrumbidgee flooding regime is influenced by various factors including rainfall patterns, snowmelt from the Snowy Mountains, and the river's hydrological characteristics. Major tributaries that contribute to flooding flows include the Tumut River, the Yass River, and several other tributaries within the upper catchment as well as the Lachlan River which confluences and interacts during some flood events with the Floodplain upstream of Balranald. Downstream of Wagga Wagga the Floodplain is characterised by extensive billabong systems, breakout zones, floodways and anabranches to the main channel which become active during flood events. Between Wagga Wagga and Narrandera major anabranches include Beaver Creek, Old Man Creek and Sandy Creek which re-join the main channel upstream of Narrandera. Approximately 10km downstream of Narrandera a major anabranch, the Yanco Creek, branches off to the southwest joining Billabong Creek, which flows into the Edward River/Kolety an anabranch of the Murray River. Downstream of Darlington Point the system includes anabranches such as Uri Creek which is active during low flows within the Murrumbidgee

	River. In higher flows, waterways such Bringagee Creek and Gum Creek will become active flow paths. Between Maude and Balranald, the Lowbidgee is a broad deltaic floodplain consisting of a complex of wetlands, billabongs, lakes/lagoons, floodways and anabranches which become flooded from overland flow. Flooding characteristics varied extensively across the Floodplain due to variations in geomorphology, hydrology and land use across the catchment.
Extent	The Murrumbidgee River flood plain atlas (Sinclair Knight and Partners, 1978) and the Murrumbidgee Valley floodplain atlas [cartographic material]: Yanco, Colombo & Billabong Creeks (NSW Department of Water Resources, 1987) show the extent of flooding observed in the 1956 and 1974 flood events and are indicative of the extent of flooding under the natural flooding regime.

12 Existing flooding regime

(1) The existing flooding regime in the Floodplain is generally characterised by changes that have occurred since the construction of the following—

(a) the Snowy Mountain Scheme,

(b) Blowering Dam,

(c) Burrinjuck Dam.

(2) Changes to the flooding regime in the Floodplain have generally coincided with river regulation, mainly the construction of weirs and regulators that allow water to be managed for irrigation delivery, land use change and flood work development.

(3) The frequency, duration, nature and extent of the existing flooding regime is summarised in Table 2—

Table 2—Existing flooding regime

Frequency	Murrumbidgee River has experienced a number of major historical flood events including in the years of 1931, 1956, 1974, 1975, 1989, 2010, 2012, 2016 and most recently in 2022. Post-development, major floods recorded at the Murrumbidgee River at Wagga Wagga gauge (410001) include 1975 (0.7% AEP), 2010 (13% AEP), 2012 (2.5% AEP), 2016 (20% AEP) and 2022 (11% AEP). The 2012 flood is considered representative of large floods post-development in the Floodplain. River regulation has affected the frequency of inundation in the Floodplain, with the magnitude of small to medium floods on the Murrumbidgee River having significantly reduced.
Duration	The duration of some flood events has changed due to floodplain development and land use changes, which have altered the nature of flooding in the Floodplain. Floods in the Floodplain recede slowly due to the small capacities of the major channels and the slow rates of rise and fall of floods. Slow moving floodwaters on flat slopes often lead to long duration flooding. Flood damage from major flooding is caused

by long periods of inundation, which accompanies the slow rates of rise and fall of floods.

Nature

The existing flooding regime in the Floodplain is complex. The river originates in the alpine area of Kosciuszko National Park and flows through the Monaro High Plains and the low-lying plains of the western Riverina, joining the River Murray south of Balranald. The mid-to-lower Murrumbidgee flooding regime is influenced by various factors including rainfall patterns, snowmelt from the Snowy Mountains, the river's hydrological characteristics, and regulation. Major tributaries that contribute to flooding flows include the Tumut River, Yass River, Gudgenby, Naas, Molonglo, Queanbeyan, Cotter and several other tributaries within the upper catchment as well as the Lachlan River which confluences and interacts during some flood events with the Murrumbidgee floodplain upstream of Balranald. The waterway is highly regulated with two major dams Burrinjuck Dam on the Murrumbidgee River and Blowering Dam on the Tumut River in the upstream catchment. Several weirs and channel infrastructure are also present in the catchment. These structures transfer and store water for irrigation, for example the Yanco Creek weir. During large floods the weirs and many low or below ground channels are mostly overtopped, however above ground canals, other embankments and levees can form barriers to flood water and reduce inundation and floodplain connectivity.

The mid-to-lower Murrumbidgee is a low gradient losing system and is characterised by extensive billabong systems, breakout zones, floodways and anabranches to the main channel which become active during flood events. Between Wagga and Narrandera major anabranches include Beaver Creek, Old Man Creek and Sandy Creek which re-join the main channel prior to Narrandera. Approximately 10km downstream of Narrandera a major anabranch the Yanco Creek branches off to the southwest joining Billabong Creek, which flows into Edwards River an anabranch of the Murray River. This anabranch is also regulated by Yanco Weir which can divert water down this waterway for irrigation.

Downstream of Darlington Point the system includes anabranches such as Uri Creek which is active during low flows within the Murrumbidgee River. In higher flows, waterways such Bringagee Creek and Gum Creek will become active flow paths. Between Maude and Balranald the Lowbidgee is a broad deltaic floodplain consisting of a complex of wetlands, billabongs, lakes/lagoons, floodways and anabranches some of which can be inundated through controlled diversions from Maude and Redbank weirs or via overbank flooding from the river. River regulation has affected the frequency and duration of floodplain inundation, with the magnitude of small to medium floods on the Murrumbidgee River having significantly reduced. Much of the Lowbidgee floodplain and associated wetlands no longer experience a natural flooding regime.

Changes to the nature of flooding following river regulation, land use change, and flood work development include the following—

(a) alteration of the direction and depth of flood flows in some areas,

(b) alteration of river, creek and overland flow path flood volume carrying capacity in some areas,

(c) increase in the velocity of flood flow, with flows getting to the lower reaches of the floodplain faster.

Extent — The Floodway Network Map is a general spatial representation of the existing flooding regime, which shows the modelled inundation extent of the small and large design floods.

13 Floodway Network

The floodway network for the Floodplain is shown on the Floodway Network Map.

Part 4 Ecological, Aboriginal cultural and heritage benefits of flooding—the Act, ss 29(b) and 30(f)

Division 1 Structure of Part

14 General

This part—

(1) in Division 2, identifies—

(a) ecological benefits of flooding in the Floodplain,

(b) flood-dependent ecological assets, other floodplain ecosystems and ecological values in the Floodplain.

(2) in Division 3, identifies—

(a) Aboriginal cultural benefits of flooding in the Floodplain,

(b) flood-dependent Aboriginal cultural values in the Floodplain.

(3) in Division 4, identifies—

(a) heritage benefits of flooding in the Floodplain,

(b) flood-dependent heritage sites in the Floodplain.

Division 2 Ecological benefits of flooding and flood-dependent ecological assets and values

15 Ecological benefits of flooding

The ecological benefits of flooding in the Floodplain include the following—

(a) maintaining or improving the structure and condition of habitat for waterbirds, fish and other amphibious fauna,

(b) recharging groundwater reserves and drought refuges,

(c) contributing to nutrient, sediment and carbon cycling,

(d) improving opportunities for floodplain and aquatic fauna to migrate, reproduce and feed,

(e) supporting recruitment of floodplain vegetation, including flowering, seeding and germination,

(f) suppressing the growth and intrusion of invasive vegetation weed species,

(g) improving wetland ecosystem resilience.

16 Ecological assets and values

(1) The flood-dependent ecological assets and other floodplain ecosystems in the Floodplain are shown on the Ecological Assets Map

(2) The ecological values in the Floodplain are the following (***ecological values***)—

(a) areas of state and national conservation significance that are dependent on flooding, including—

(i) areas reserved under the *National Parks and Wildlife Act 1974*, and

(ii) wetlands of national importance listed in the Directory of Important Wetlands in Australia,

(b) habitats for flood-dependent fauna, including—

(i) drought refuges, and

(ii) observed waterbird breeding habitat sites,

(c) water-dependent fauna species, including—

(i) fish species,

(ii) frog species,

(iii) amphibious mammal species,

(iv) turtle species,

(v) reptile species,

(vi) aquatic snail species,

(vii) waterbird species.

Division 3 Aboriginal cultural benefits of flooding and flood-dependent Aboriginal cultural values

17 Aboriginal cultural values—the Act, s 5(2)(e)

(1) The Aboriginal cultural benefits of flooding in the Floodplain include the following—

(a) continuing Aboriginal cultural practices connected with flooding, including—

(i) harvesting traditional flood-dependent resources, and

(ii) cultural activities connected with and dependent on floods,

(b) preserving Aboriginal cultural values,

(c) maintaining potential for Aboriginal cultural renewal,

(d) maintaining Aboriginal spiritual connection with the floodplain landscape.

(2) Aboriginal cultural values in the Floodplain that are flood-dependent assets include the following places that—

(a) are, or could be, used for cultural activities and that benefit from flooding,

Example—Fish traps made of stone or sticks.

(b) are recognised for their spiritual or cultural significance,

(c) have been culturally modified, including—

(i) scarred trees, and

(ii) tree carvings,

(d) contain resources that are or were used in cultural activities,

(e) are associated with places that are used for contemporary cultural activities.

Division 4 Heritage benefits of flooding and flood-dependent heritage sites

18 Heritage sites—the Act, s 5(2)(f)

At the commencement of this Plan, no flood-dependent heritage sites had been identified in the Floodplain.

Part 5 Existing flood works—the Act, ss 29(c) and 30(f)

Division 1 Structure of Part

19 General

This Part identifies—

(1) in Division 2—existing flood works in the Floodplain.

(2) in Division 3—the benefits of flood works in terms of the protection they give to life and property.

(3) in Division 4—the ecological, cultural and socio-economic impacts of flood works, including cumulative impacts.

Division 2 Flood works in the Floodplain

20 Types of existing flood works

The following types of existing flood works in the Floodplain are identified—

(a) access roads,

(b) infrastructure protection works,

(c) levees,

(d) stock refuge works,

(e) storages,

(f) supply channels,

(g) other earthworks and embankments.

21 Approved existing flood works

At the commencement of this Plan, there are 48 flood work approvals for 89 existing flood works in the Floodplain.

Note—A single flood work approval may authorise several flood works. Some structures can be used for multiple purposes, for example, levees and embankments can also be used as roads or infrastructure protection works.

22 Management of existing flood works

Existing flood works in the Floodplain are managed as follows—

(a) through the application, assessment and granting of flood work approvals in accordance with this Plan,

(b) through exemptions provided under the Regulation, and

(c) through compliance action in accordance with the offence provisions under the Act.

Division 3 Benefits of flood works

23 Benefits for protection of life and property

The following benefits of existing flood works in terms of the protection they give to life

and property are identified—

(a) infrastructure to access and convey licensed water entitlements and basic landholder rights,

(b) preventing injury during floods,

(c) protecting access to and from property,

(d) protecting crops, goods, livestock, possessions and property from the damaging effects of flooding,

(e) protecting high value infrastructure from the damaging effects of flooding,

(f) protecting life during floods.

24 Ecological benefits

The following benefits of existing flood works in terms of benefits they have on flood-dependent ecological assets are identified—

(a) increased localised flooding frequency and duration due to diverting and retaining floodwaters, especially where flooding regimes have been affected by river regulation,

(b) increased localised groundwater recharge due to diverting and retaining floodwaters, especially where groundwater recharge has been affected by changes to flooding regimes.

25 Aboriginal cultural benefits

(1) The benefit of existing flood works, in terms of the benefits they have on flood-dependent Aboriginal cultural values, is increased localised flooding frequency and duration due to diverting and retaining floodwaters, especially where flooding regimes have been affected by river regulation.

(2) The benefit of existing flood works, in terms of the benefits they have on flood-impacted Aboriginal cultural values, is decreased erosion by diverting away floodwaters.

26 Heritage benefits

(1) The benefit of existing flood works, in terms of the benefits they have on flood-dependent heritage sites, is increased localised flooding frequency and duration due to diverting and retaining floodwaters, especially where flooding regimes have been affected by river regulation.

(2) The benefit of existing flood works, in terms of the benefits they have on flood-impacted heritage sites, is decreased erosion by diverting away floodwaters.

Division 4 Impacts of flood works

27 Ecological impacts

The following ecological impacts of existing flood works are identified—

(a) changed flood connectivity, including changes that—

(i) disconnect flood-dependent ecological assets from flooding by obstructing the passage of floodwater,

(ii) divert floodwater away from flood-dependent ecological assets,

(iii) increase the duration for which flood-dependent ecological assets are flooded to an extent that exceeds the flooding requirements of the asset,

(iv) reduce access to food resources, nesting and refuge habitat for fauna which rely on flood-dependent ecological assets,

(b) restricted native fish passage, including changes that—

(i) disconnect flood-dependent ecological values from flooding by obstructing the passage of floodwater,

(ii) strand fish on the floodplain when floodwater recedes,

(iii) reduce access to habitat and food resources during floods,

(iv) reduce the abundance and distribution of native fish,

(c) reduced groundwater recharge during floods due to reduced flooding extent and duration,

(d) net reduction of floodwater available to flood-dependent ecological assets due to river regulation.

28 Aboriginal cultural impacts of existing flood works

The following Aboriginal cultural impacts of existing flood works are identified—

(a) changed flood connectivity, especially changes that—

(i) disconnect flood-dependent Aboriginal cultural values from flooding by obstructing the passage of floodwater,

(ii) divert floodwater away from flood-dependent Aboriginal cultural values,

(iii) increase the duration for which flood-dependent Aboriginal cultural values sites are flooded to an extent that exceeds the requirements of the values,

(b) increased flood velocity which damages flood-impacted Aboriginal cultural values, such as by scouring or erosion.

Example—Burial sites may be susceptible to damage caused by increase flood velocity.

29 Heritage impacts of existing flood works

The following heritage impacts of existing flood works are identified—

(a) changed flood connectivity, especially changes that—

(i) disconnect flood-dependent heritage sites from flooding by obstructing the passage of floodwater,

(ii) divert floodwater away from flood-dependent heritage sites,

(iii) increase the duration for which flood-dependent heritage sites are flooded to an extent that exceeds the requirements of the sites,

(b) increased flood velocity which damages flood-impacted heritage sites, such as by scouring or erosion.

Example—Cemeteries may be susceptible to damage caused by increase flood velocity.

30 Socio-economic impacts of existing flood works

The following socio-economic impacts of existing flood works are identified—

(a) diverted passage of floodwater onto adjacent properties,

(b) increased flood levels on adjacent and downstream properties,

(c) increased flood velocity which causes scouring and erosion,

(d) loss of crops and infrastructure during floods,

(e) restricted access to and from property and other disruptions to daily life.

31 Cumulative impacts of flood works

(1) The following positive cumulative impacts of existing flood works are identified—

(a) if flood works are constructed in a coordinated manner, the passage of floodwater to flood-dependent assets and return to the river are unobstructed,

(b) risks to life and property from the damaging effects of flooding are reduced, both on the landholding and neighbouring properties.

(2) The following negative cumulative impacts of existing flood works are identified—

(a) if flood works are constructed in an uncoordinated manner, the passage of floodwater to flood-dependent assets and return to the river are obstructed,

(b) risks to life and property from the damaging effects of flooding are increased, both on the landholding and neighbouring properties.

(3) This Plan manages the potential cumulative negative impacts of existing and proposed flood works through provisions that—

(a) identify existing flood works in the Floodplain to be used in the hydraulic modelling, and

(b) use hydraulic modelling to understand the cumulative impacts of existing flood works across the Floodplain, and

(c) establish management zones within the Floodplain, and

(d) establish rules for the granting and amending of flood work approvals that consider the cumulative impacts of additional flood works across the Floodplain.

Part 6 Risks from flooding—the Act, s 29(d)

32 Risk to life and property

The risk to life and property from the effects of flooding include the following—

(a) loss of life,

(b) physical injury and illness,

(c) damage to, or loss of, goods, possessions, livestock and crops,

(d) property damage, including—

(i) contents damage, such as carpets and furniture,

(ii) structural damage, such as walls, floors and windows, and

(iii) external damage, such as high value infrastructure and motor vehicles,

(e) loss of wages and additional financial costs incurred during clean-up operations,

(f) increased levels of emotional stress,

(g) mental illness,

(h) disruption to daily life, such as restricted access to and from property.

33 Consideration of risk to life and property

This Plan deals with the risk to life and property from the effects of flooding by—

(a) establishing management zones in Part 1 which categorise areas of the Floodplain according to the risk of constructing flood works in those areas, and

(b) establishing a floodway network in Part 3 which—

(i) identifies areas in the floodway network where the risk to life and property is greatest, including—

(A) areas of greater flood discharge, and

(B) areas that are prone to inundation in times of flooding, and

(ii) raises awareness of flood risk by providing the Floodway Network Map, and

(c) considering existing flood works in the Floodplain in Part 5 and including existing flood works in the process of delineating the floodway network and designing management zones, and

(d) applying rules in Part 7 which identify areas where certain kinds of flood works are permitted, restricted or prohibited.

Part 7 Rules for granting or amending flood work approvals—the Act, s 30(a) and (b)

Note 1—For the Act, section 95(3), a flood work approval may not be granted in contravention of the provisions of any relevant management plan.

Note 2—Under the Act, section 92(5), the Minister may require an applicant for a flood work approval to provide additional information within a specified time if of the opinion that additional information would be relevant to consideration of the application.

Division 1 General

34 Structure

(1) This part deals with the following—

(a) the construction of new flood works,

(b) the modification of existing flood works,

(c) the approval of existing flood works.

(2) This part deals with the matters in subsection (1) by applying rules for granting or amending flood work approvals as follows—

(a) in Division 2—for Management Zone A,

(b) in Division 3—for Management Zone B,

(c) in Division 4—for Management Zone C,

(d) in Division 5—for Management Zone CU,

(e) in Division 6—for Management Zone SP.

35 Definitions

In this Part—

Aboriginal cultural value enhancement work means a flood enhancement work for the purpose of improving flood connectivity to flood-dependent Aboriginal cultural values.

Aboriginal cultural value protection work means a flood work that is for the purpose of protecting Aboriginal cultural values in times of flooding.

borrow is an area of land where material is excavated, or removed, to construct a flood work at another location which results in a depression or hole in the ground.

ecological enhancement work means a flood enhancement work to improve flood connectivity to ecological assets for the purpose of enhancing ecological values.

existing development conditions means the level of development at the commencement of this Plan, excluding works on the landholding to which the application relates which are not authorised or exempt under the Act.

flood flow direction means the direction in which a flood flows for the relevant area as shown on the Peak Flood Flow Distribution (2012) Map.

flood wave means a rise in flows associated with flooding, culminating in a peak and followed by a recession to lower flows.

flow connectivity means the unimpeded passage of overland flow through the floodplain.

heritage site enhancement work means a flood enhancement work that is for the purpose of improving flood connectivity to a flood-dependent heritage site.

heritage site protection work means a flood work that is for the purpose of protecting a heritage site in times of flooding.

infrastructure protection work means a flood work that is for the purpose of protecting houses, stock yards and other major infrastructure in times of flooding, such as machinery sheds.

natural flooding regime—see section 11.

natural surface level means the average undisturbed surface level nearby a flood work.

peak discharge calculation location is a section of the Floodplain where flow is calculated for the purpose of assessing the change in flow behaviour due to proposed flood works.

primary access road means a road providing access from a public road to a permanently occupied fixed dwelling via a direct route.

spoil means waste material, such as soil, that is produced during the construction or modification of a flood work.

stock refuge means a flood work that is for the purpose of protecting stock in times of flooding.

supply channel means a channel that is for the purpose of conveying water but does not include a tailwater drain.

Note—Tailwater drain is defined in the Regulation, section 39B(2).

windrow means a row or line of cut vegetation or other material.

Division 2 Granting or amending flood work approvals in Management Zone A

Subdivision 1 Flood works in Management Zone A

36 Application

This subdivision applies to approvals to construct or use flood works other than flood enhancement works in Management Zone A.

37 Requirements for flood works

A flood work approval must not be granted or amended unless, in the Minister's opinion, the following apply—

(a) the approval is for the following types of flood work—

(i) an Aboriginal cultural value protection work,

(ii) an access road,

(iii) a heritage site protection work,

(iv) an infrastructure protection work,

(v) a stock refuge,

(vi) a supply channel, and

(b) the flood work described in the application complies with the specific requirements for the work under this subdivision, and

(c) the flood work described in the application satisfies the assessment criteria in section 52, and

(d) the cumulative impact assessment under section 54 has been completed.

38 Specific requirements for Aboriginal cultural value protection works

A flood work approval for an Aboriginal cultural value protection work must not be granted or amended unless, in the Minister's opinion—

(a) where no more than 20ha of the landholding is in Management Zone A—the work encloses no more than 10% of the landholding, or

Example—For a landholding of 100ha and where 20ha of the landholding is in Management Zone A, the Aboriginal cultural value protection work must enclose no more than 10ha.

(b) otherwise—the work encloses no more than 2ha or 1% of the landholding, whichever is greater, and

Example—For a landholding of 100ha and where 30ha of the landholding is in Management Zone A, the Aboriginal cultural value protection work must enclose no more than 2ha or 1ha (1%), whichever is greater.

(c) the work blocks no more than 5% of the width of Management Zone A, measured perpendicular to the flood flow direction at the location of the work.

Example—If Management Zone A is 100m wide, measured perpendicular to the flood flow direction at the location of the Aboriginal cultural value protection work, the Aboriginal cultural value protection work must not block more than 5m of Management Zone A.

39 Specific requirements for access roads

A flood work approval for an access road must not be granted or amended unless, in the Minister's opinion, the access road—

(a) is no higher above the natural surface level than—

(i) for a primary access road—50cm,

(ii) otherwise—30cm,

(b) is constructed with causeways that—

(i) are no higher than the natural surface level,

(ii) are located at low points of the floodway,

(iii) occur at least once every 200m, and

(iv) total at least 10% of the total length of the access road that is in Management Zone A,

Example—For an access road that is 1km in length, but 500m is in management Zone A and 500m is in another management zone, causeways in Management Zone A must total at least 50m.

(c) is constructed with a borrow that—

(i) is associated with the construction and maintenance of the access road,

(ii) is located on the downstream side of the access road, and

(iii) is no lower than 15cm below the natural surface level.

40 Specific requirements for heritage site protection works

A flood work approval for a heritage site protection work must not be granted or amended unless, in the Minister's opinion—

(a) where no more than 20ha of the landholding is in Management Zone A—the work encloses no more than 10% of the landholding, or

(b) otherwise—the work encloses no more than 2ha or 1% of the landholding, whichever is greater, and

(c) the work blocks no more than 5% of the width of Management Zone A, measured perpendicular to the flood flow direction at the location of the work.

41 Specific requirements for infrastructure protection works

A flood work approval for an infrastructure protection work must not be granted or amended unless, in the Minister's opinion—

(a) where no more than 20ha of the landholding is in Management Zone A—the work encloses no more than 10% of the landholding, or

(b) otherwise—the work encloses no more than 2ha or 1% of the landholding, whichever is greater, and

(c) the work—

(i) blocks no more than 5% of the width of Management Zone A, measured at the location of the work, and

(ii) is perpendicular to the flood flow direction.

42 Specific requirements for stock refuges

A flood work approval for a stock refuge must not be granted or amended unless, in the Minister's opinion—

(a) the area of the stock refuge is no more than 10ha and no other stock refuge is nearby,

(b) the total area of stock refuges on the landholding is no more than 5% the landholding, and

(c) the stock refuge blocks no more than 5% of the width of Management Zone A, measured perpendicular to the flood flow direction at the location of the stock refuge.

43 Specific requirements for supply channels

(1) A flood work approval for a supply channel must not be granted or amended unless, in the Minister's opinion, the supply channel—

(a) is below the natural surface level,

(b) is constructed to ensure the adequate passage of floodwater and prevention of

diversion of floodwater from natural flow paths, and

(c) is constructed to ensure the spoil associated with the construction and maintenance of the supply channel—

(i) forms a windrow that—

(A) is parallel to the flood flow direction

(B) blocks no more than 5% of the width of Management Zone A, measured perpendicular to the flood flow direction at the location of the supply channel, or

(ii) is no higher than 10cm above the natural surface level.

(2) The Minister may require that a structure be put in place at a low point of the supply channel to meet the requirements of subsection (1)(b).

Subdivision 2 Flood enhancement works in Management Zone A

44 Application

This subdivision applies to approvals to construct or use flood enhancement works in Management Zone A.

45 Requirements for flood enhancement works

A flood work approval for a flood enhancement work must not be granted or amended unless, in the Minister's opinion, the following apply—

(a) the approval is for the following types of flood work—

(i) an Aboriginal cultural value enhancement work,

(ii) an ecological enhancement work,

(iii) a heritage site enhancement work,

(b) the flood enhancement work described in the application complies with the specific requirements for the work under this subdivision, and

(c) the flood enhancement work described in the application satisfies the assessment criteria set out at sections 52 and 53.

46 Specific requirements for Aboriginal cultural value enhancement works

A flood work approval for an Aboriginal cultural value enhancement work must not be granted or amended unless, in the Minister's opinion, the work is for the purpose of improving flood connectivity to a flood-dependent Aboriginal cultural value.

47 Specific requirements for ecological enhancement works

A flood work approval for an ecological enhancement work must not be granted or amended unless, in the Minister's opinion—

(a) the work is for the purpose of improving flood connectivity to a flood-dependent ecological asset, and

(b) the flood-dependent ecological asset is specified in local, state or Commonwealth environmental plans, policy or legislation, including—

(i) the *Basin Plan 2012* of the Commonwealth,

(ii) the *Biodiversity Conservation Act 2016*,

(iii) the *Environment Protection and Biodiversity Conservation Act 1999* of the Commonwealth,

(iv) the long-term water plan for the Murrumbidgee surface water resource plan area under the *Basin Plan 2012* of the Commonwealth,

(v) the *National Parks and Wildlife Act 1974*,

(vi) the *Fisheries Management Act 1994*,

(vii) the NSW Wetland Policy 2010,

(viii) the Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (2013 update),

(ix) any other source the Minister considers relevant.

48 Specific requirements for heritage site enhancement works

A flood work approval for a heritage site enhancement work must not be granted or amended unless, in the Minister's opinion, the work is for the purpose of improving flood connectivity to a flood-dependent heritage site.

Subdivision 3 Existing flood works in Management Zone A

49 Application

This subdivision applies to flood work approvals to use flood works in Management Zone A that were constructed before the commencement of this Plan and do not satisfy the requirements under section 37.

50 Requirements for granting flood work approval

A flood work approval must not be granted unless, in the Minister's opinion, the following apply—

(a) the approval is for the following types of flood work—

(i) an access road,

(ii) an infrastructure protection work,

(iii) a stock refuge,

(iv) a supply channel, and

(b) at the date of application, the flood work is not the subject of a previously refused application for the following—

(i) an approval for a controlled work under the repealed Part 8 of the *Water Act 1912*, or

(ii) a flood work approval under the Act, and

(c) the flood work described in the application satisfies the assessment criteria in section 52, and

(d) the cumulative impact assessment under section 54 has been completed.

51 Requirements for amending flood work approval

A flood work approval must not be amended unless, in the Minister's opinion—

(a) the flood work will have a reduced impact on flow patterns in Management Zone A, including impacts on flow distribution, depth, drainage or velocity, and

(b) the flood work described in the application satisfies the assessment criteria in section 52, and

(c) the cumulative impact assessment under section 54 has been completed.

Subdivision 4 Assessment criteria for flood works in Management Zone A

52 Assessment criteria for flood works

A flood work must, in the Minister's opinion—

(a) maintain adequate flood connectivity to the following under a range of flood scenarios including, at a minimum, scenarios for the large design flood and small design flood—

(i) flood-dependent Aboriginal cultural values,

(ii) flood-dependent ecological assets,

(iii) flood-dependent heritage sites, and

(b) maintain adequate flood connectivity to facilitate fish passage under a range of flood scenarios including, at a minimum, scenarios for the large design flood and small design flood, and

(c) not disturb the ground surface of an Aboriginal cultural value or cause more than minimal erosion to an Aboriginal cultural value, and

(d) not disturb the ground surface of a heritage site or cause more than minimal erosion to a heritage site, and

(e) maintain adequate drainage on landholdings that may be affected by the flood work, including adjacent landholdings.

53 Assessment criteria for flood enhancement works

(1) A flood enhancement work must not, in the Minister's opinion, be likely to—

(a) redistribute the peak flood flow by more than 5% on adjacent landholdings and other landholdings that may be affected by the flood work when compared to the peak flood flow under existing development conditions for a range of flood scenarios including, at a minimum, a scenario for the large design flood, or

(b) increase flood levels by more than 10cm on adjacent landholdings and other landholdings that may be affected by the flood work when compared to peak flood levels under the natural flooding regime and existing development conditions for a range of flood scenarios, including at a minimum, a scenario for the large design flood, or

(c) increase flow velocity by more than 50% on the landholding, adjacent landholdings and other landholdings that may be affected by the flood work when compared to flow velocity under the natural flooding regime and existing development conditions for a range of flood scenarios, including at a minimum,

a scenario for the large design flood, unless—

(i) increases of more than 50% are in isolated areas on the landholding and the landholder mitigates the impact of the flood wave so that the average impact across the landholding is not more than 50%, and

(ii) increases in flow velocity are not more than 50% at the boundary of the landholding, or

(d) increase flood levels resulting in impacts on high value infrastructure when compared to flood levels under the natural flooding regime and existing development conditions for a range of flood scenarios, including at a minimum, a scenario for the large design flood, or

(e) increase flow velocity by an amount that, in the Minister's opinion, is likely to have more than a minimal impact on soil erodibility on the landholding, adjacent landholdings and other landholdings that may be affected by the flood work, taking into account the ground cover on those landholdings.

(2) A flood enhancement work must not, in the Minister's opinion, be likely to—

(a) redistribute the peak flood flow by more than 5% at a peak discharge calculation location shown on the Peak Flood Flow Distribution (2012) Map, when compared to redistribution under existing development conditions, or

(b) redistribute the peak flood flow by more than 5% at a location and under any other flood scenario the Minister considers relevant.

54 Cumulative impact assessment

The Minister must consider the cumulative impact of the flood work and all existing flood works on the landholding on the following—

(a) adjacent landholdings,

(b) other landholdings the flood work may affect,

(c) the Floodplain.

Division 3 Granting or amending flood work approvals in Management Zone B

55 Application

This division applies to approvals to construct or use flood works in Management Zone B.

56 Requirements for flood works

A flood work approval must not be granted or amended unless, in the Minister's opinion—

(a) the application complies with section 57, and

(b) the flood work described in the application satisfies the assessment criteria in section 58.

57 Requirement to advertise certain applications for flood work approval

(1) This section applies to applications for flood work approval if, in the Minister's opinion, the following apply—

(a) the flood work is higher than 40cm above the natural surface level at any location,

(b) the flood work is a stock refuge and the following apply—

(i) the stock refuge has an area of more than 10ha and no other stock refuge is nearby, and

(ii) the total area of stock refuges on the landholding is more than 5% of the landholding,

(c) the flood work is an infrastructure protection work with an area that is greater than 1% of the total area of the landholding on which it is located.

(2) For the Regulation, section 26(1)(c), an application to which this section applies must be advertised.

58 Assessment criteria

(1) A flood work must, in the Minister's opinion—

(a) maintain adequate flood connectivity to the following under a range of flood scenarios including, at a minimum, scenarios for the large design flood and small design flood—

(i) flood-dependent Aboriginal cultural values,

(ii) flood-dependent ecological assets,

(iii) flood-dependent heritage sites, and

(b) maintain adequate flood connectivity to facilitate fish passage under a range of flood scenarios including, at a minimum, scenarios for the large design flood and small design flood, and

(c) not disturb the ground surface of an Aboriginal cultural value or cause more than minimal erosion to an Aboriginal cultural value, and

(d) not disturb the ground surface of a heritage site or cause more than minimal erosion to a heritage site, and

(e) maintain adequate drainage on landholdings that may be affected by the flood work, including adjacent landholdings.

(2) A flood work to which section 57 applies must not, in the Minister's opinion, be likely to—

(a) redistribute the peak flood flow by more than 5% on adjacent landholdings and other landholdings that may be affected by the flood work when compared to the peak flood flow under existing development conditions for a range of flood scenarios including, at a minimum, a scenario for the large design flood, or

(b) increase flood levels by more than 10cm on adjacent landholdings and other landholdings that may be affected by the flood work when compared to peak flood levels under the natural flooding regime and existing development conditions for a range of flood scenarios, including at a minimum, a scenario for the large design flood, or

(c) increase flow velocity by more than 50% on the landholding, adjacent landholdings and other landholdings that may be affected by the flood work when compared to flow velocity under the natural flooding regime and existing development conditions for a range of flood scenarios, including at a minimum, a scenario for the large design flood, unless—

(i) increases of more than 50% are in isolated areas on the landholding and the landholder mitigates the impact of the flood wave so that the average impact across the landholding is not more than 50%, and

(ii) increases in flow velocity are not more than 50% at the boundary of the landholding, or

(d) increase flood levels resulting in impacts on high value infrastructure when compared to flood levels under the natural flooding regime and existing development conditions for a range of flood scenarios, including at a minimum, a scenario for the large design flood, or

(e) increase flow velocity by an amount that, in the Minister's opinion, is likely to have more than a minimal impact on soil erodibility on the landholding, adjacent landholdings and other landholdings that may be affected by the flood work, taking into account the ground cover on those landholdings.

(3) A flood work to which section 57 applies must not, in the Minister's opinion, be likely to—

(a) redistribute the peak flood flow by more than 5% at a peak discharge calculation location shown on the Peak Flood Flow Distribution (2012) Map, when compared to redistribution under existing development conditions, or

(b) redistribute the peak flood flow by more than 5% at a location and under any other flood scenario the Minister considers relevant.

(4) The Minister may require an application to which section 57 does not apply to satisfy the requirements of subsections (2) and (3).

Division 4 Granting or amending flood work approvals in Management Zone C

59 Application

This division applies to approvals to construct or use flood works in Management Zone C.

60 Requirements for flood works

A flood work approval must not be granted or amended unless, in the Minister's opinion, the flood work described in the application satisfies the assessment criteria in sections 61 and 62.

61 Assessment criteria

A flood work must, in the Minister's opinion—

(a) maintain adequate flood connectivity to the following under a range of flood scenarios including, at a minimum, scenarios for the large design flood and small design flood—

(i) flood-dependent Aboriginal cultural values,

(ii) flood-dependent ecological assets,

(iii) flood-dependent heritage sites, and

(b) maintain adequate flood connectivity to facilitate fish passage under a range of flood scenarios including, at a minimum, scenarios for the large design flood and small design flood, and

(c) maintain adequate flow connectivity to other floodplain ecosystems, and

(d) not disturb the ground surface of an Aboriginal cultural value or cause more than minimal erosion to an Aboriginal cultural value, and

(e) not disturb the ground surface of a heritage site or cause more than minimal erosion to a heritage site, and

(f) maintain adequate drainage on landholdings that may be affected by the flood work, including adjacent landholdings.

62 Additional assessment criteria

(1) This section applies if—

(a) the flood work will cause a significant impact on high value infrastructure, or

(b) there are existing flood works nearby that have a condition limiting the height of the work, or

(c) the flood work may create a new flow path or restore an old flow path.

(2) The Minister must consider whether the flood work would be likely to—

(a) redistribute the peak flood flow by more than 5% on adjacent landholdings and other landholdings that may be affected by the flood work when compared to the peak flood flow under existing development conditions for one or more flood scenarios, or

(b) increase flood levels by more than 10cm on adjacent landholdings and other landholdings that may be affected by the flood work when compared to flood levels under the natural flooding regime and existing development conditions for one or more flood scenarios, or

(c) increase flow velocity by more than 50% on the landholding, adjacent landholdings and other landholdings that may be affected by the flood work when compared to flow velocity under the natural flooding regime and existing development conditions for one or more flood scenarios, unless—

(i) increases of more than 50% are in isolated areas on the landholding and the landholder mitigates the impact of the flood wave so that the average impact across the landholding is not more than 50%, and

(ii) increases in flow velocity are not more than 50% at the boundary of the landholding, or

(d) increase flood levels resulting in impacts on high value infrastructure when compared to flood levels under the natural flooding regime and existing development conditions for one or more flood scenarios, or

(e) increase flow velocity by an amount that, in the Minister's opinion, is likely to have more than a minimal impact on soil erodibility on the landholding, adjacent landholdings and other landholdings that may be affected by the flood work, taking into account the ground cover on those landholdings.

(3) The Minister must consider whether the flood work would be likely to—

(a) redistribute the peak flood flow by more than 5% under existing development conditions at a peak discharge calculation location shown on the Peak Flood Flow Distribution (2012) Map, or

(b) redistribute the peak flood flow by more than 5% at a location and under any other flood scenario the Minister considers relevant.

Division 5 Granting or amending flood work approvals in Management Zone CU

63 Application

This division applies to approvals to construct or use flood works in Management Zone CU.

64 Requirements for flood works

A flood work approval must not be granted or amended unless, in the Minister's opinion, the flood work described in the application satisfies the assessment criteria in sections 61 and 62.

Division 6 Granting or amending flood work approvals in Management Zone SP

Subdivision 1 Flood enhancement works in Management Zone SP

65 Application

This subdivision applies to approvals to construct or use flood works in Management Zone SP.

66 Requirements for flood works

A flood work approval must not be granted or amended unless, in the Minister's opinion, the following apply—

(a) the approval is for the following types of flood work—

(i) an Aboriginal cultural value enhancement work,

(ii) an ecological enhancement work,

(iii) a heritage site enhancement work,

(b) the flood enhancement work described in the application complies with the specific requirements for the work under this subdivision,

(c) the flood enhancement work described in the application satisfies the assessment criteria set out at section 73.

67 Specific requirements for Aboriginal cultural value enhancement works

A flood work approval for an Aboriginal cultural value enhancement work must not be granted or amended unless, in the Minister's opinion, the work is for the purpose of improving flood connectivity to a flood-dependent Aboriginal cultural value.

68 Specific requirements for ecological enhancement works

A flood work approval for an ecological enhancement work must not be granted or amended unless, in the Minister's opinion—

(a) the work is for the purpose of improving flood connectivity to a flood-dependent ecological asset, and

(b) the flood-dependent ecological asset is specified in local, state or Commonwealth environmental plans, policy or legislation, including—

(i) the *Basin Plan 2012* of the Commonwealth,

(ii) the *Biodiversity Conservation Act 2016*,

(iii) the *Environment Protection and Biodiversity Conservation Act 1999* of the Commonwealth,

(iv) the long-term watering plan for the Murrumbidgee surface water resource plan area under the *Basin Plan 2012* of the Commonwealth,

(v) the *National Parks and Wildlife Act 1974*,

(vi) the *Fisheries Management Act 1994*,

(vii) the NSW Wetland Policy 2010,

(viii) the Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (2013 update),

(ix) any other source the Minister considers relevant.

69 Specific requirements for heritage site enhancement works

A flood work approval for a heritage site enhancement work must not be granted or amended unless, in the Minister's opinion, the work is for the purpose of improving flood connectivity to a flood-dependent heritage site.

Subdivision 2 Existing flood works in Management Zone SP

70 Application

This subdivision applies to approvals to use flood works in Management Zone SP that were constructed before the commencement of this Plan and do not satisfy the requirements under Subdivision 1.

71 Requirements for granting flood work approval

A flood work approval must not be granted unless, in the Minister's opinion, the following apply—

(a) the approval is for the following types of flood work—

(i) an access road,

(ii) an infrastructure protection work,

(iii) a stock refuge, or

(iv) a supply channel,

(b) at the date of application, the flood work is not the subject of a previously refused application, for the following—

(i) an approval for a controlled work under the repealed Part 8 of the *Water Act 1912*,

(ii) a flood work approval under the Act,

(c) the flood work described in the application satisfies the assessment criteria in section 73(1),

(d) the cumulative impact assessment under section 74 has been completed.

72 Requirements for amending flood work approval

A flood work approval must not be amended unless, in the Minister's opinion—

(a) the flood work will have a reduced impact on flow patterns in Management Zone SP, including impacts on flow distribution, drainage, depth or velocity, and

(b) the flood work described in the application satisfies the assessment criteria in section 73(1), and

(c) the cumulative impact assessment under section 74 has been completed.

Subdivision 3 Assessment criteria for flood works in Management Zone SP

73 Assessment criteria

(1) A flood work must, in the Minister's opinion—

(a) maintain adequate flood connectivity to the following under a range of flood scenarios including, at a minimum, scenarios for the large design flood and small design flood—

(i) flood-dependent Aboriginal cultural values,

(ii) flood-dependent ecological assets,

(iii) flood-dependent heritage sites, and

(b) maintain adequate flood connectivity to facilitate fish passage under a range of flood scenarios including, at a minimum, scenarios for the large design flood and small design flood, and

(c) not disturb the ground surface of an Aboriginal cultural value or cause more than minimal erosion to an Aboriginal cultural value, and

(d) not disturb the ground surface of a heritage site or cause more than minimal erosion to a heritage site, and

(e) maintain adequate drainage on landholdings that may be affected by the flood work, including adjacent landholdings.

(2) A flood work must not, in the Minister's opinion, be likely to—

(a) redistribute the peak flood flow by more than 5% on adjacent landholdings and other landholdings that may be affected by the flood work when compared to the peak flood flow under existing development conditions for a range of flood scenarios including, at a minimum, a scenario for the large design flood, or

(b) increase flood levels by more than 10cm on adjacent landholdings and other landholdings that may be affected by the flood work when compared to peak flood levels under the natural flooding regime and existing development conditions for a range of flood scenarios, including at a minimum, a scenario for the large design flood, or

(c) increase flow velocity by more than 50% on the landholding, adjacent landholdings and other landholdings that may be affected by the flood work when compared to flow velocity under the natural flooding regime and existing development conditions for a range of flood scenarios, including at a minimum, a scenario for the large design flood, unless—

(i) increases of more than 50% are in isolated areas on the landholding and the landholder mitigates the impact of the flood wave so that the average impact across the landholding is not more than 50%, and

(ii) increases in flow velocity are not more than 50% at the boundary of the landholding, or

(d) increase flood levels resulting in impacts on high value infrastructure when compared to flood levels under the natural flooding regime and existing development conditions for a range of flood scenarios, including at a minimum, a scenario for the large design flood, or

(e) increase flow velocity by an amount that, in the Minister's opinion, is likely to have more than a minimal impact on soil erodibility on the landholding, adjacent landholdings and other landholdings that may be affected by the flood work, taking into account the ground cover on those landholdings.

(3) A flood work must not, in the Minister's opinion, be likely to—

(a) redistribute the peak flood flow by more than 5% at a peak discharge calculation location shown on the Peak Flood Flow Distribution (2012) Map, when compared to redistribution under existing development conditions, or

(b) redistribute the peak flood flow by more than 5% at a location and under any other flood scenario the Minister considers relevant.

74 Cumulative impact assessment

The Minister must consider the cumulative impact of the flood work and all existing flood works on the landholding on the following—

(a) adjacent landholdings,

(b) other landholdings the flood work may affect,

(c) the Floodplain.

Part 8 Mandatory conditions—the Act, section 17(c)

75 General

(1) In this part, unless otherwise specified, any written notice required to be given to the Minister must be sent to the email address for enquiries on the Department's website.

(2) Each flood work approval must be subject to the following mandatory conditions—

(a) the conditions required by sections 76 and 77,

(b) other conditions required to implement the provisions of this Plan.

76 Flood work decommissioning condition

(1) The approval holder must notify the Minister in writing of any intention to decommission a flood work at least 60 days before commencing decommissioning.

(2) The notice must include a work plan for the decommissioning.

(3) The Minister may, within 60 days of receiving notice under this clause, give a direction that the flood work—

(a) must not be decommissioned, or

(b) must be decommissioned in accordance with the requirements specified in the direction.

(4) The approval holder must not decommission the flood work if the Minister has given a direction that the work must not be decommissioned.

(5) In decommissioning the flood work, the approval holder must—

(a) comply with the work plan,

(b) if the Minister has given a direction— comply with the requirements specified in the direction, and

(c) ensure the area is returned to the natural surface level.

(6) Within 60 days of the flood work being decommissioned, the approval holder must notify the Minister in writing that the flood work has been decommissioned and provide details of the decommissioning.

77 Water quality condition

The approval holder must take reasonable steps to ensure the construction and use of the flood work minimises erosion and release of sediment into the floodplain.

Part 9 Amendment of this Plan—the Act, section 17(d)

78 Amendments

(1) This Plan may be amended as follows—

(a) to apply this Plan to additional areas or to modify or remove areas to which this Plan applies,

(b) to amend a map adopted by this Plan,

(c) to add, remove or modify a management zone using any of the following information as determined by the Minister—

(i) an aerial photograph or equivalent satellite image showing flood inundation at the property scale of either the large design flood or small design flood,

(ii) oblique photographs showing flood inundation of either the large design flood or small design flood that contain verifiable landmarks,

(iii) oblique photographs of flood survey marks that can be verified for either the large design flood or small design flood,

(iv) a hydraulic study which provides velocity and depth information for the large design flood or small design flood,

(v) other supporting information,

(d) to amend the description of the natural flooding regime,

(e) to amend the description of the existing flooding regime,

(f) to add, remove or modify the design floods used to establish the floodway network,

(g) to amend the description of the ecological benefits of flooding,

(h) to amend the description of flood-dependent Aboriginal cultural values,

(i) to amend the description of flood-dependent heritage sites,

(j) to add, remove or modify rules for granting or amending flood work approvals,

(k) to add rules for the removal or modification of existing flood works,

(l) to add, remove or modify requirements for the decommissioning of flood works,

(m) to add, remove or modify requirements if the approval holder intends to permanently cease using a flood work,

(n) to add, remove or modify a definition,

(o) before 1 July 2028—to add or modify provisions for the purpose of responding to climate change,

(p) to make amendment consequential on an amendment to the Act or regulations.

(2) This Plan may be amended to make consequential amendments necessary to give effect to an amendment authorised by subsection (1).

Schedule 1 Dictionary

section 5

Aboriginal cultural values means sites, objects, landscapes or resources that are important to Aboriginal people as part of their continuing culture and beliefs, listed in—

(a) the Aboriginal Heritage Information Management System,

(b) the Murray-Darling Basin Authority Aboriginal Submissions Database,

(c) the NSW State Heritage Register,

(d) the Commonwealth Heritage List, or

(e) any other source that, in the Minister's opinion, is relevant.

Aboriginal cultural value enhancement work—see section 35.

Aboriginal cultural value protection work—see section 35.

Act means the *Water Management Act 2000*.

annual exceedance probability or ***AEP*** is the chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage (%).

Example—A flood with an AEP of 5% means there is a 5% chance that a flood of same size or larger will occur in a year.

areas of groundwater recharge are areas where water from a flood event leaks through the soil profile into the underlying aquifers.

borrow—see section 35.

design flood is a flood of known magnitude or annual exceedance probability that can be modelled and is selected to design floodway networks.

ecological assets are wetlands or other floodplain ecosystems, including watercourses that depend on flooding to maintain their ecological character and areas where groundwater reserves are recharged by floodwaters.

Ecological Assets Map means the Floodplain Management Plan for the Murrumbidgee Valley Floodplain Ecological Assets Map 2025 (FMP041_Version 1).

ecological enhancement work—see section 35.

ecological values—see section 16.

existing development conditions—see section 35.

fish passage refers to connectivity that facilitates the movement of native fish species between upstream and downstream habitats (longitudinal connectivity) and adjacent riparian and floodplain areas (lateral connectivity); areas that are important for fish passage include rivers, creeks and flood flow paths.

flood connectivity refers to the unimpeded passage of floodwater through the floodplain and is important for in- stream aquatic processes and biota and the conservation of natural riverine systems.

flood flow direction—see section 35.

flood wave—see section 35.

flood-dependent Aboriginal cultural values are Aboriginal cultural values in the Floodplain that rely on flooding to maintain their Aboriginal cultural values.

flood-dependent assets are Aboriginal cultural values, ecological assets or heritage sites that have important ecological or cultural features which rely on inundation by floodwaters to sustain essential processes.

flood-dependent ecological assets are ecological assets located within the floodway network in the Floodplain that rely on flooding to maintain their ecological values and are shown on the Ecological Assets Map.

flood-dependent heritage sites are heritage sites in the Floodplain that rely on flooding to maintain their heritage values.

flood enhancement work means a flood work for the purpose of improving flood connectivity to flood-dependent assets.

flood-impacted assets are Aboriginal cultural values, ecological assets or heritage sites that have important ecological or cultural features which are negatively impacted by inundation by floodwaters.

flooding regime means the characteristics of flooding, including the frequency, duration, nature and extent of flooding.

floodway network is a depiction of the passage of floodwater in the Floodplain, which is used to define management zones for planning, assessing and managing flood works in the Floodplain.

Floodway Network Map means the Floodplain Management Plan for the Murrumbidgee Valley Floodplain Floodway Network Map 2025 (FMP040_Version 1).

floodways are areas where a significant discharge of floodwater occurs during the large design flood and small design flood.

flow connectivity—see section 35.

heritage site means a cultural heritage object or place that is listed in—

(a) the NSW State Heritage Register,

(b) the NSW State Heritage Inventory,

(c) the Aboriginal Heritage Information Management System,

(d) the Murray-Darling Basin Authority Aboriginal Submissions Database,

(e) the Historic Heritage Information Management System,

(f) the Commonwealth Heritage List, or

(g) any other source that, in the Minister's opinion, is relevant.

heritage site enhancement work—see section 35.

heritage site protection work—see section 35.

high value infrastructure includes houses/dwellings, infrastructure protection works, town levees, stockyards, sheds and pump sites, but does not include farm levee banks, irrigation

development, fences and other such works.

infrastructure protection work—see section 35.

large design flood means the design flood of March 2012, which represents 2% AEP in the Murrumbidgee River at Narrandera gauge (410005).

natural flooding regime—see section 11.

natural surface level—see section 35.

other floodplain ecosystems are ecological assets located outside the floodway network in the Floodplain and are shown on the Ecological Assets Map.

peak discharge calculation location—see section 35.

Peak Flood Flow Distribution (2012) Map means the Floodplain Management Plan for the Murrumbidgee Valley Floodplain Peak Flood Flow Distribution Map (2012) 2025 (FMP042_Version 1).

Plan Map means the Floodplain Management Plan for the Murrumbidgee Valley Floodplain Plan Map 2025 (FMP039_Version 1).

primary access road—see section 35.

Regulation means the *Water Management (General) Regulation 2018*.

small design flood means the design flood of October 2016, which represents 14% AEP in the Murrumbidgee River at Narrandera gauge (410005).

spoil—see section 35.

stock refuge—see section 35.

supply channel—see section 35.

the Floodplain—see section 3.

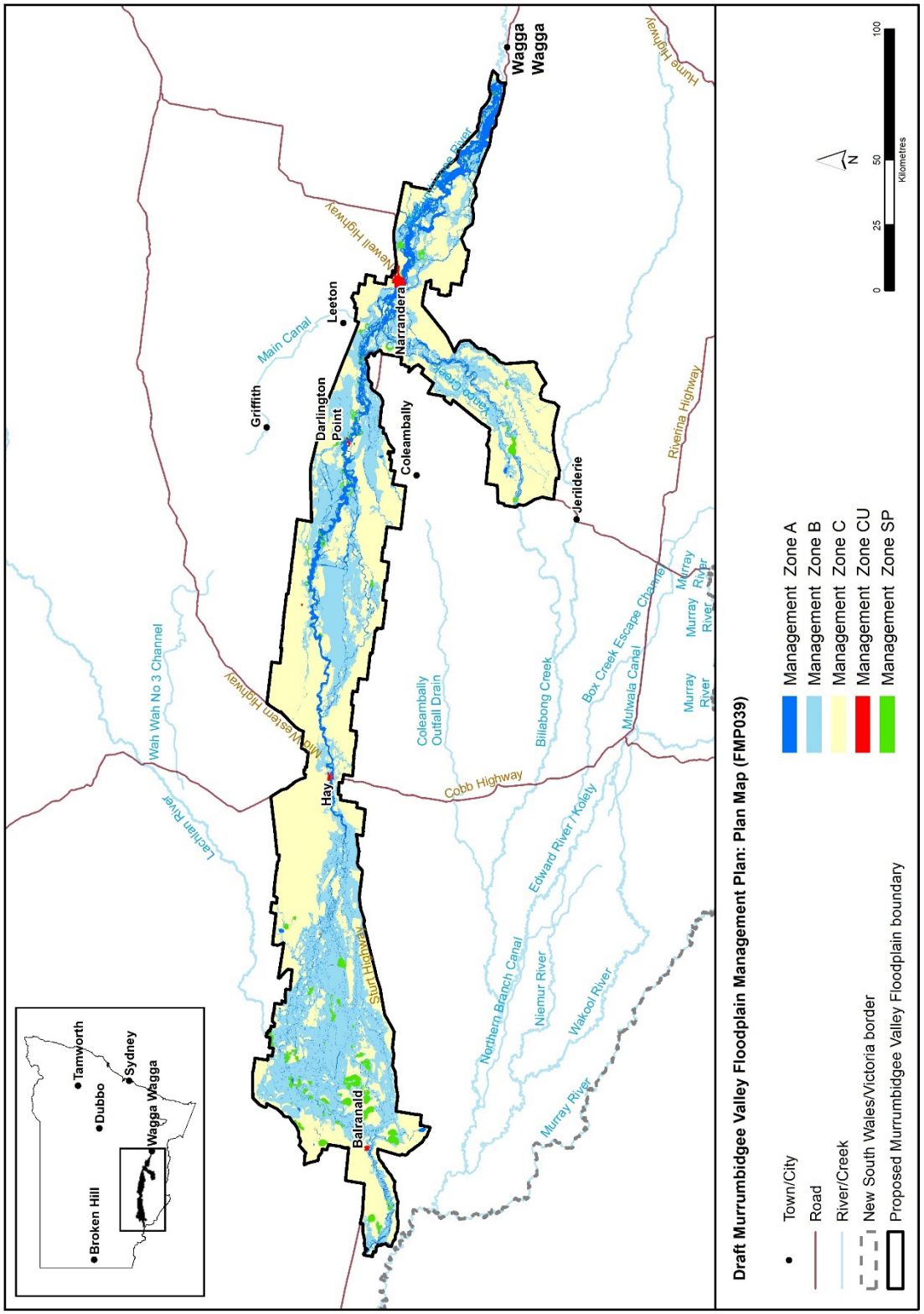
wetland means areas of land that are wet by surface water or groundwater, or both, for long enough periods that the plants and animals in them have adapted to, and depend on, moist conditions for at least part of their lifecycle; they include areas that are inundated cyclically, intermittently or permanently with fresh, brackish or saline water, which is generally still or slow moving except in distributary channels.

Note—Examples of wetlands include lakes, lagoons, rivers, floodplains, swamps, billabongs and marshes.

windrow—see section 35.

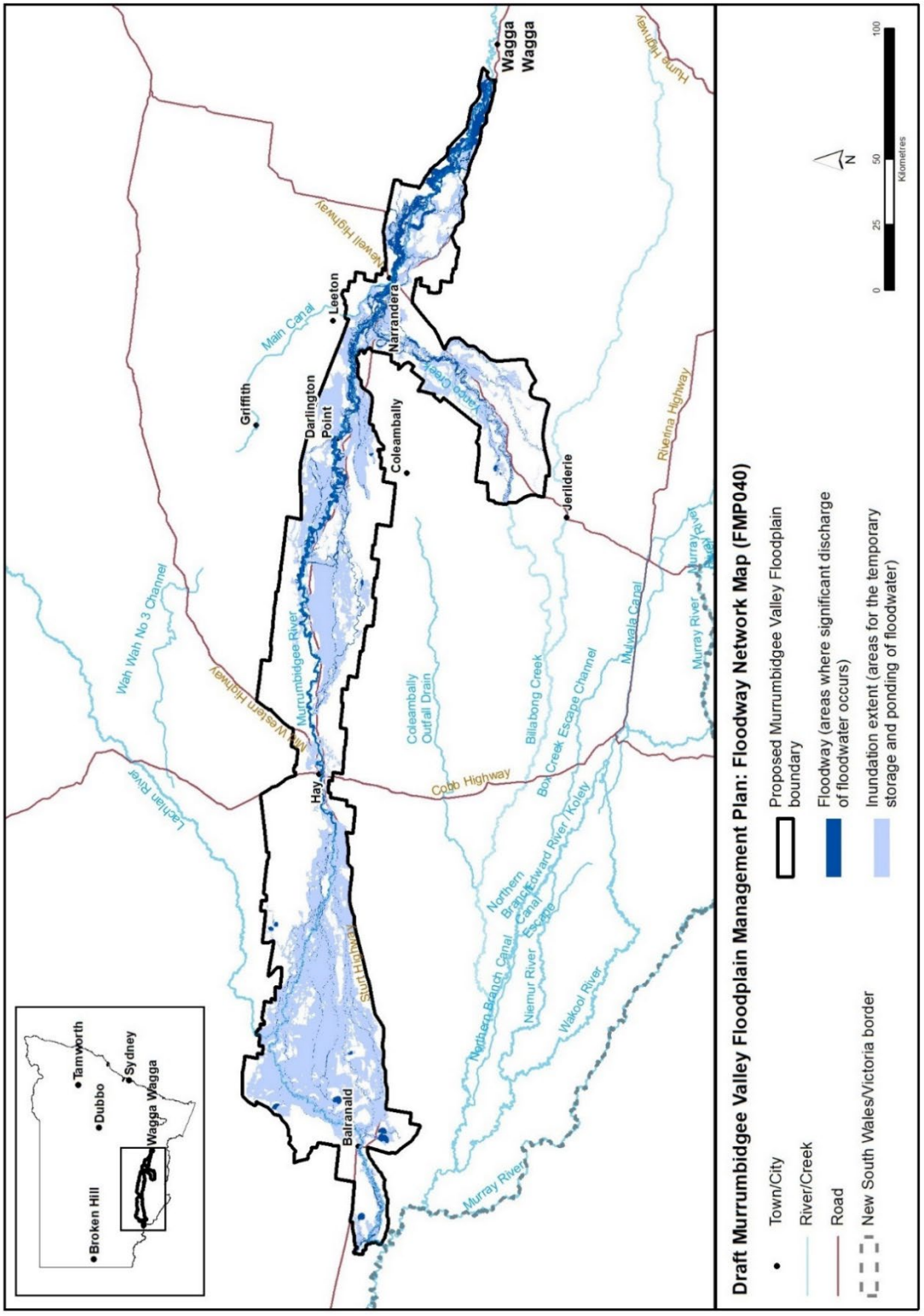
Appendix 1 Overview of the Plan Map

Overview of the Floodplain Management Plan Map (FMP039_Version 1), Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025



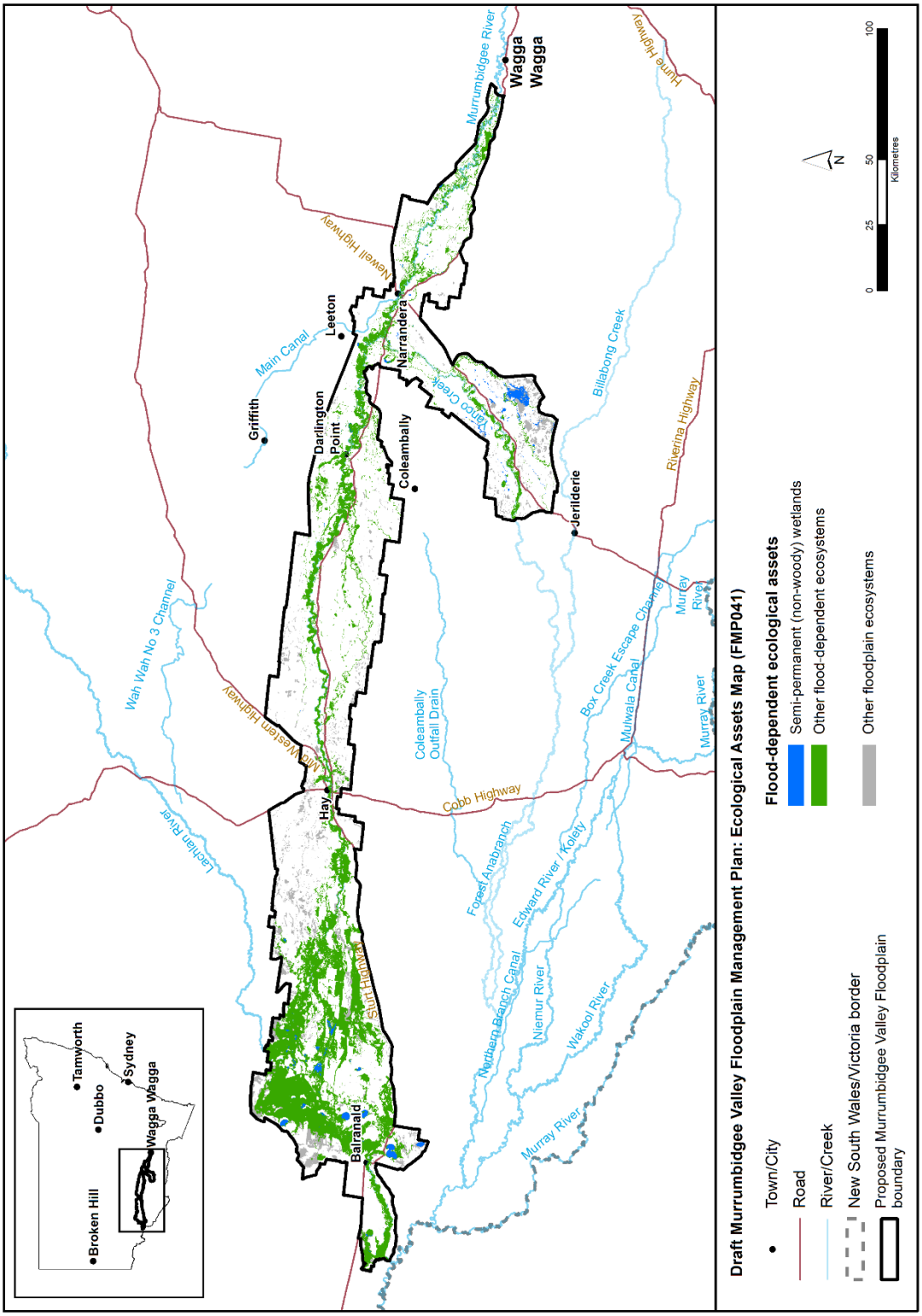
Appendix 2 Overview of the Floodway Network Map

Overview of the Floodway Network Map (FMP040_Version 1), Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025



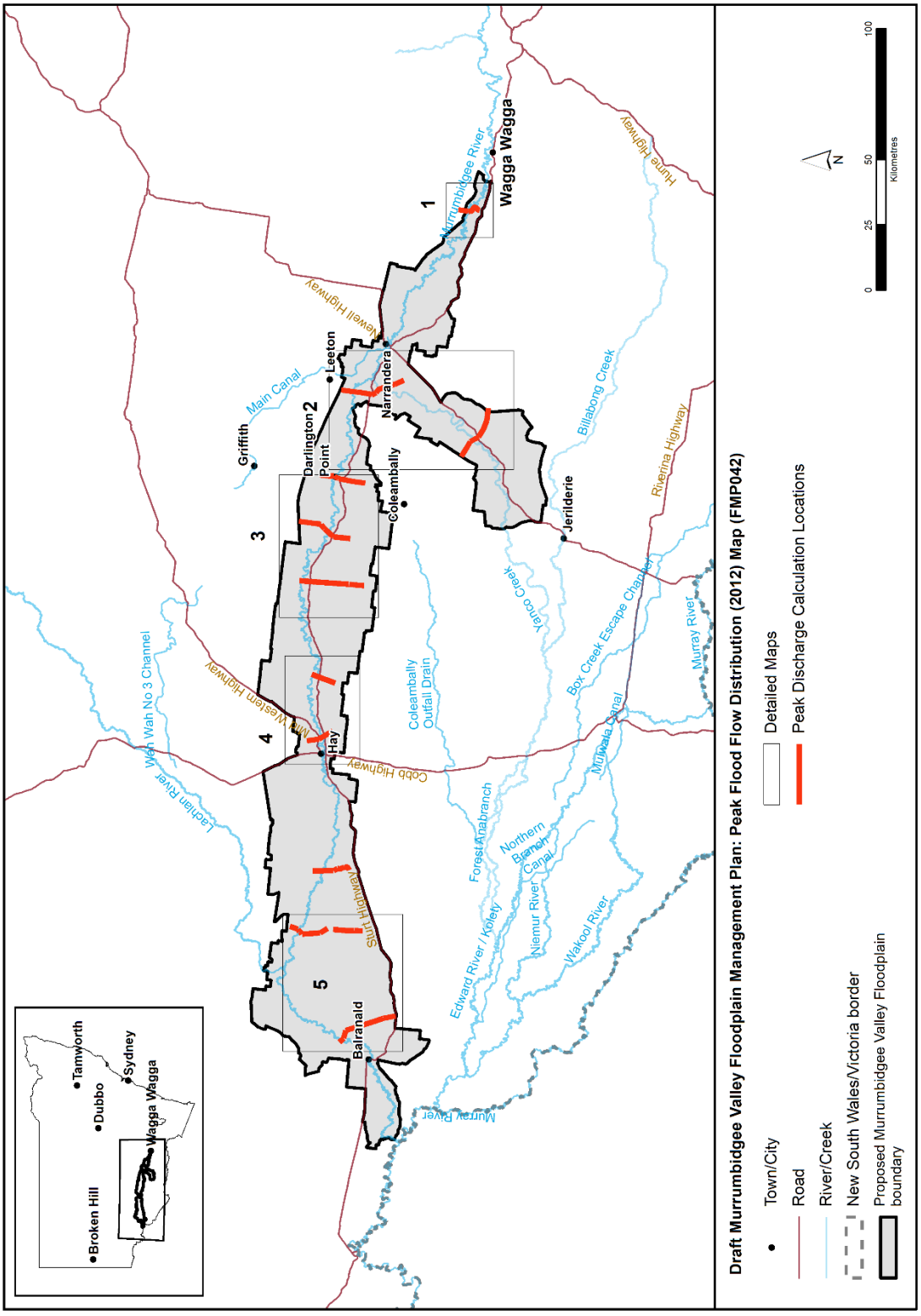
Appendix 3 Overview of the Ecological Assets Map

Overview of the Ecological Assets Map (FMP041_Version 1), Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025

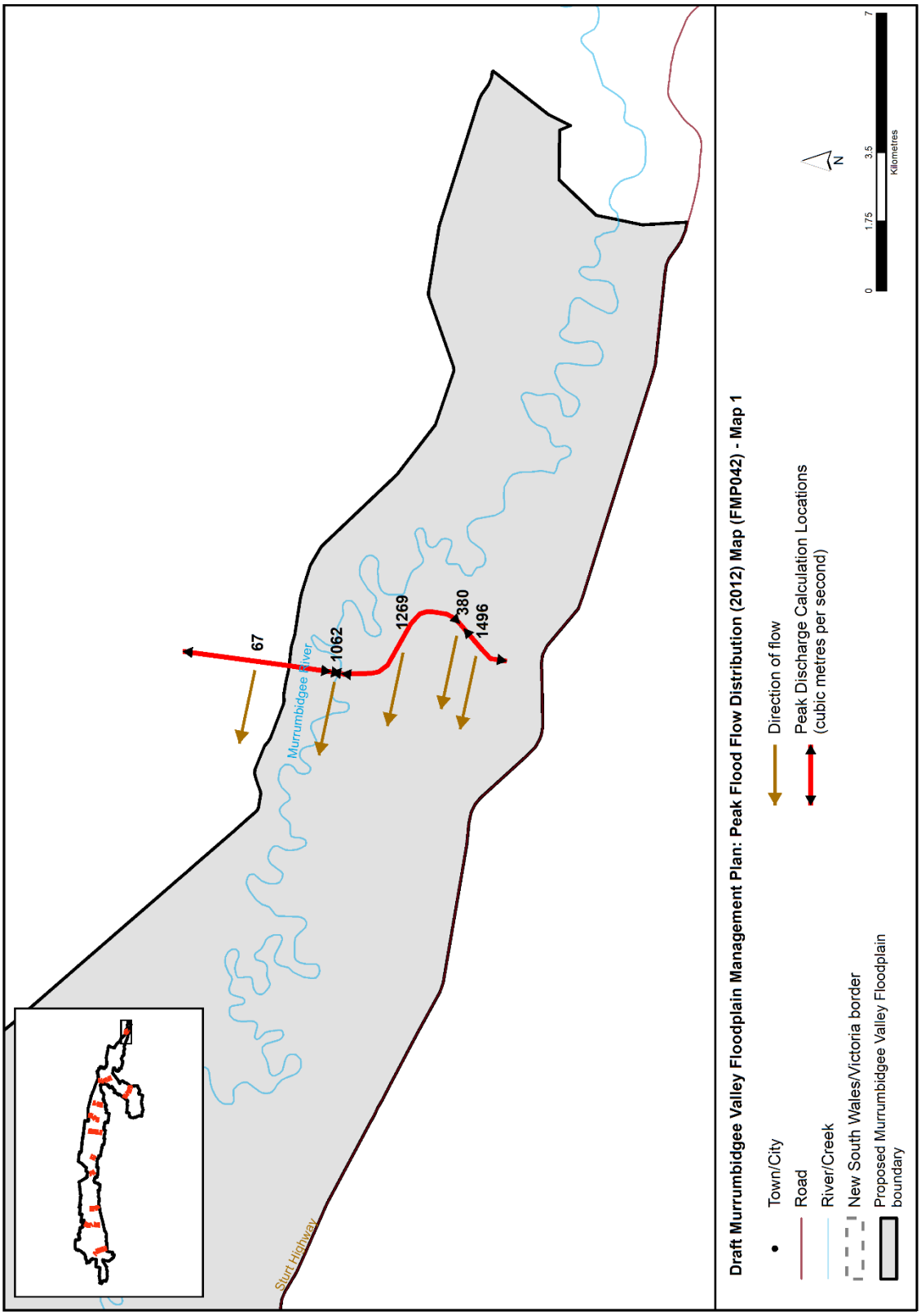


Appendix 4 Overview of the Peak Flood Flow Distribution (2012) Map

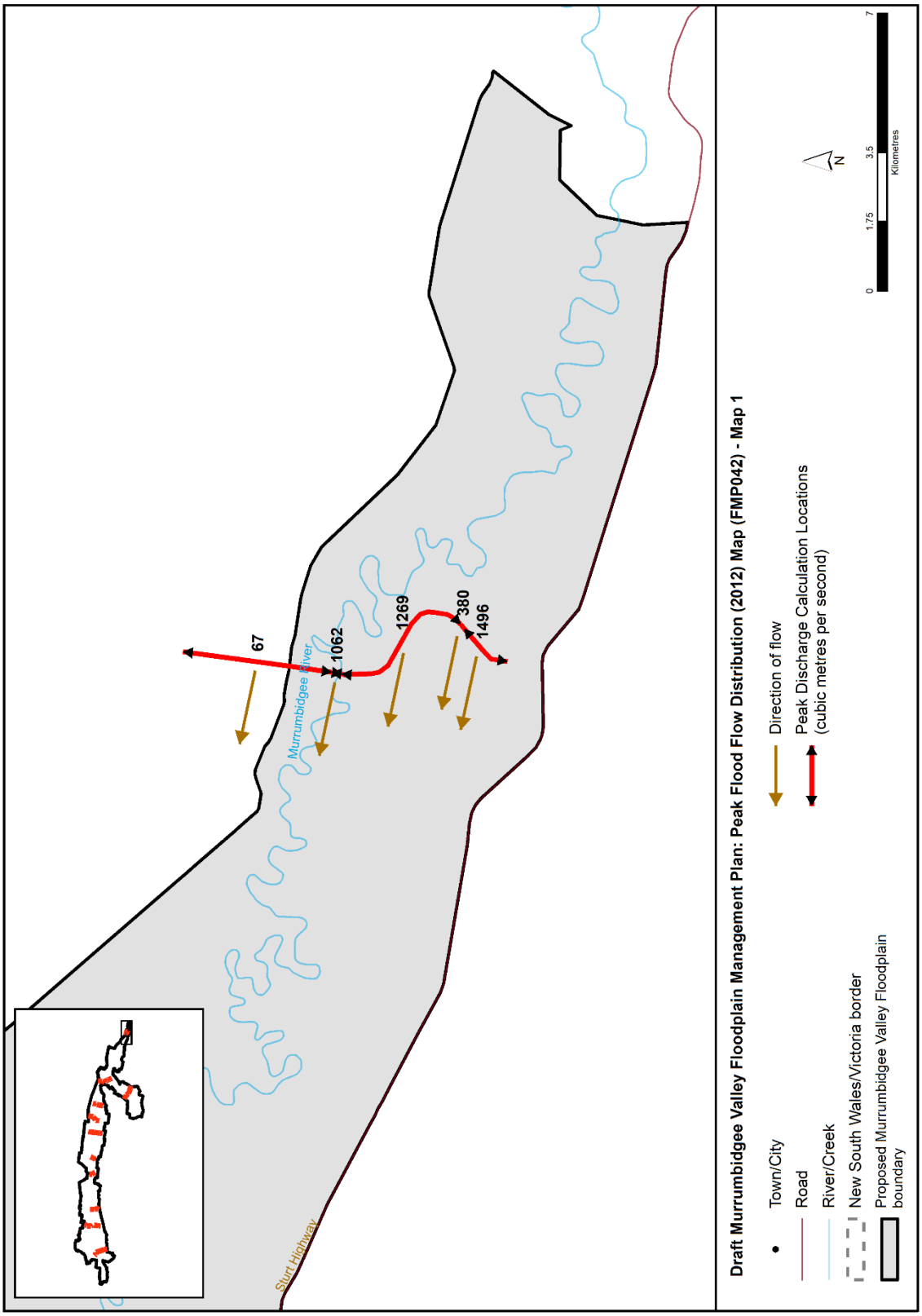
Overview of the Peak Flood Flow Distribution (2012) Map (FMP041_Version 1), Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025



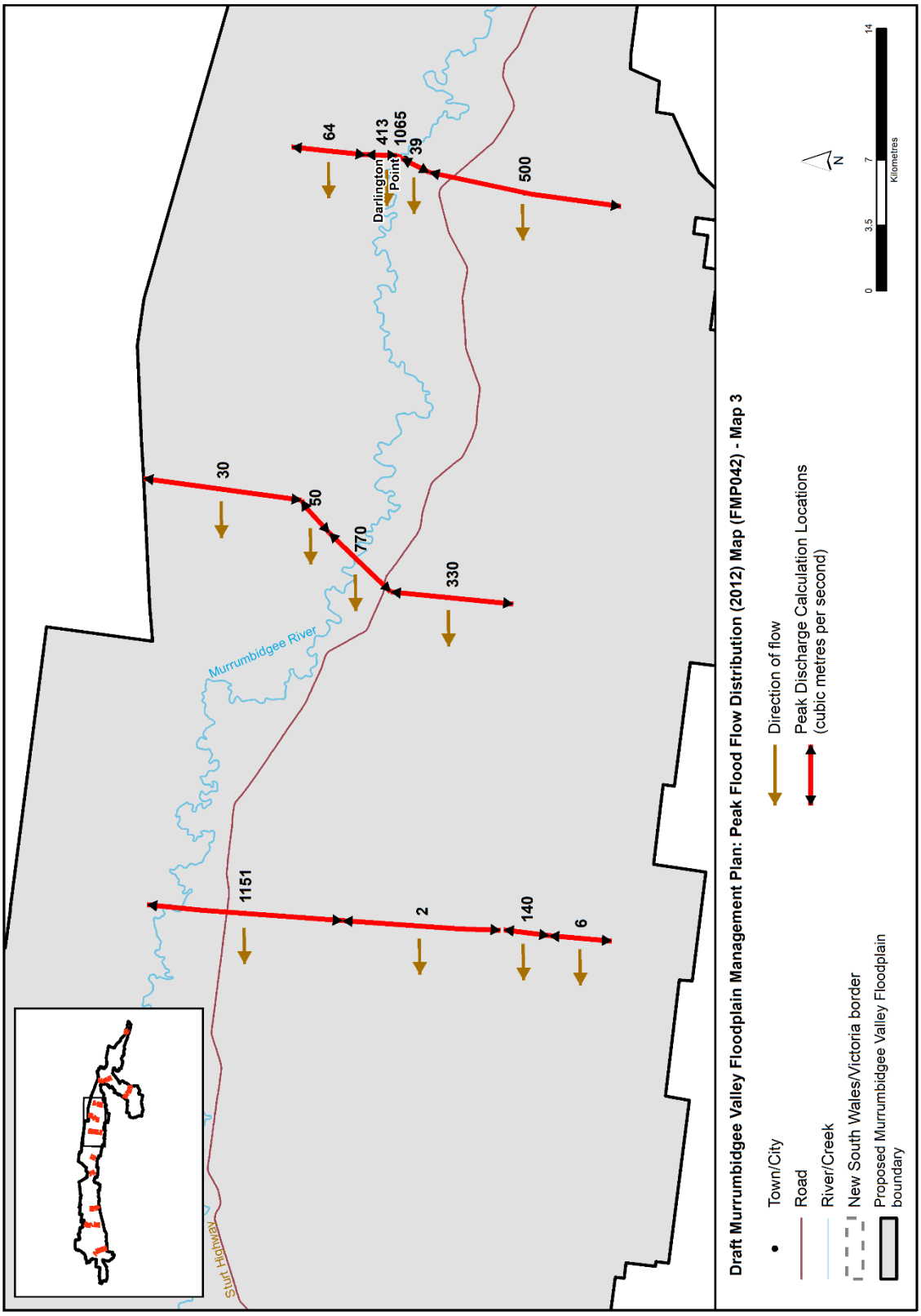
Map 1 of the Peak Flood Flow Distribution (2012) Map (FMP041_Version 1), Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025



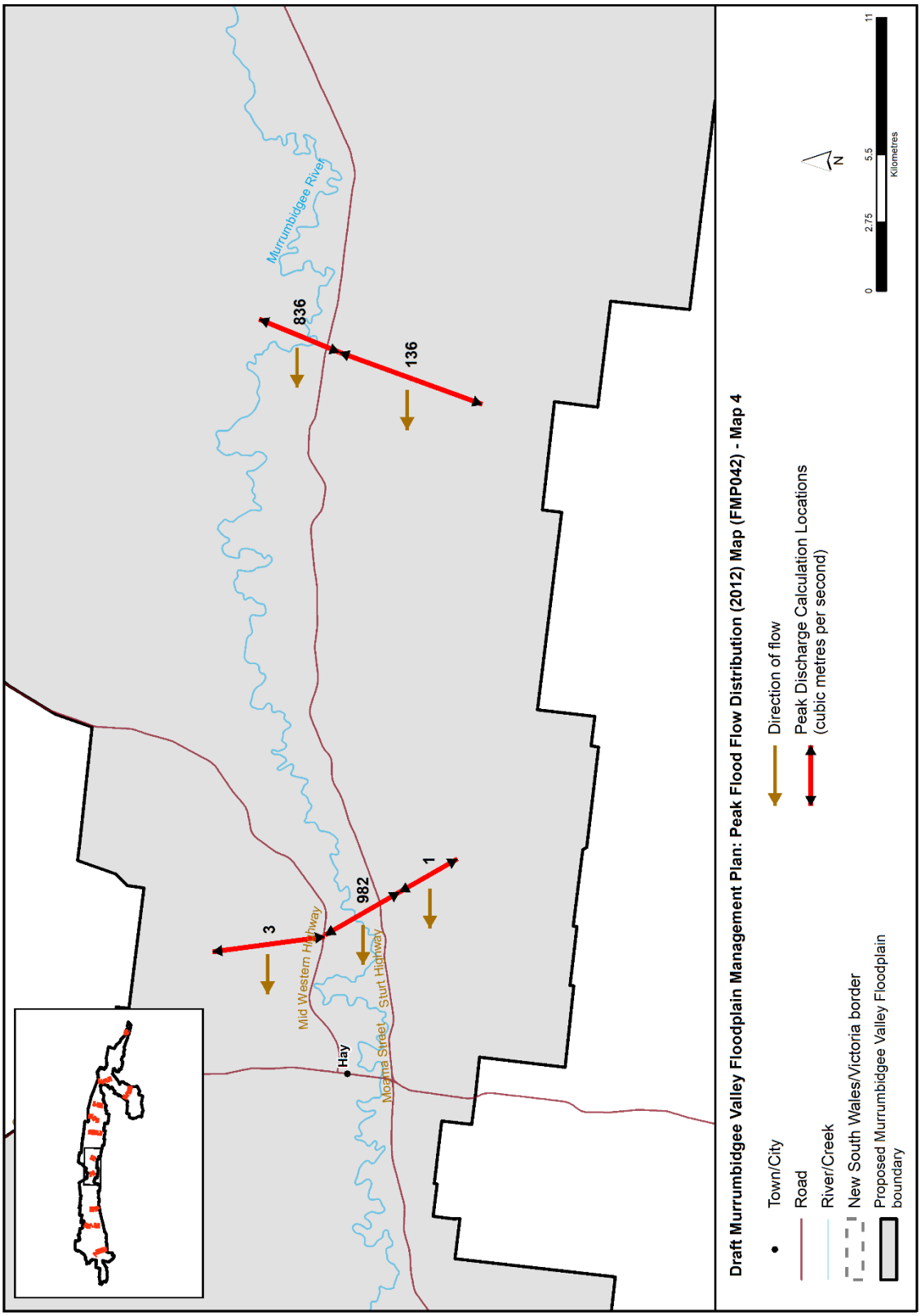
Map 2 of the Peak Flood Flow Distribution (2012) Map (FMP041_Version 1), Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025



Map 3 of the Peak Flood Flow Distribution (2012) Map (FMP041_Version 1), Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025



Map 4 of the Peak Flood Flow Distribution (2012) Map (FMP041_Version 1), Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025



Map 5 of the Peak Flood Flow Distribution (2012) Map (FMP041_Version 1), Floodplain Management Plan for the Murrumbidgee Valley Floodplain 2025