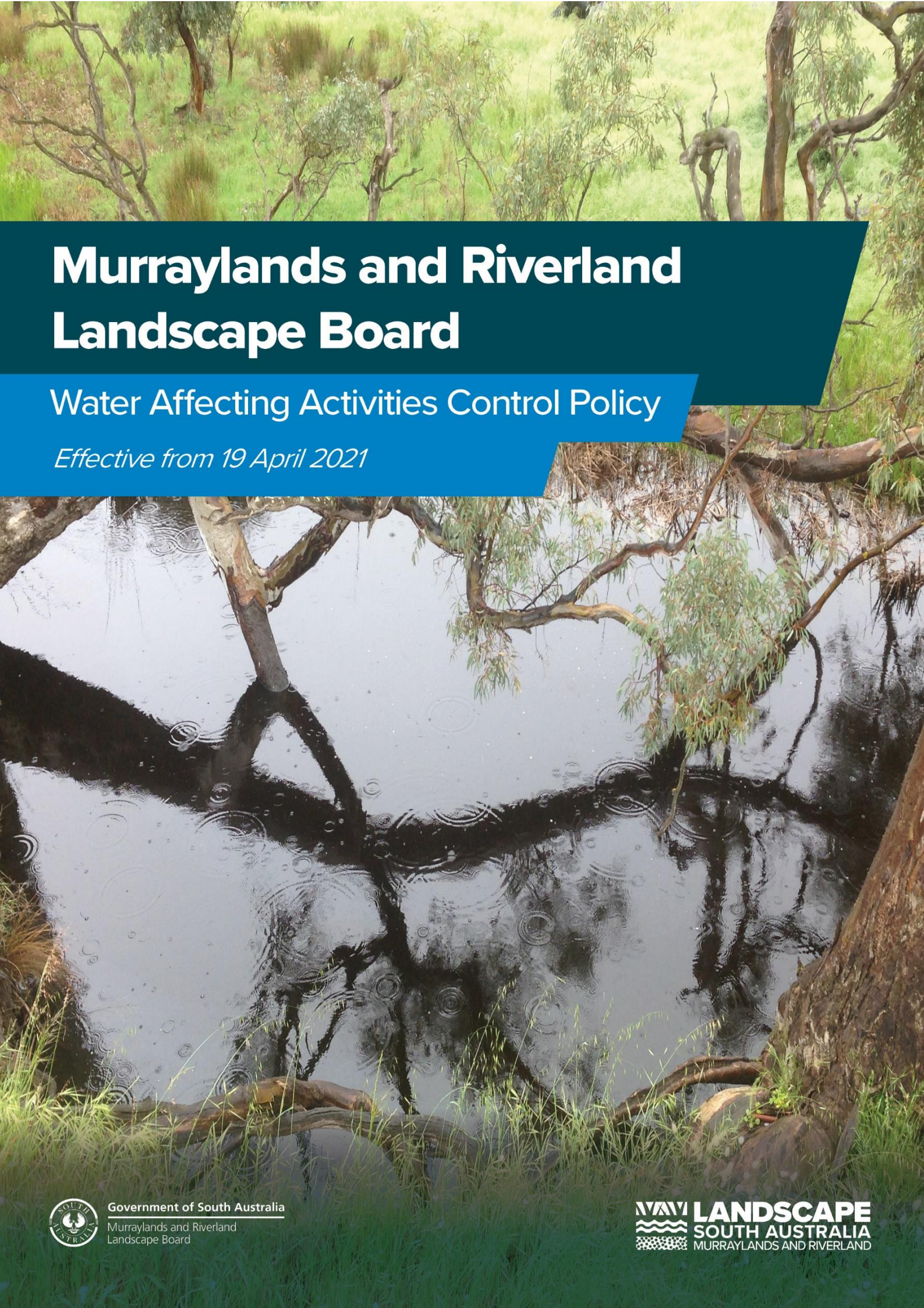

Murraylands and Riverland Landscape Board

Water Affecting Activities Control Policy

Effective from 19 April 2021

Government of South Australia
Murraylands and Riverland
Landscape Board

LANDSCAPE SOUTH AUSTRALIA
MURRAYLANDS AND RIVERLAND

Recognition of Aboriginal people

The Murraylands and Riverland Landscape Board acknowledges Traditional Owners of Country throughout Australia and recognises the continuing connection to lands, waters and communities. We pay our respect to Aboriginal and Torres Strait Islander cultures, and to Elders both past and present. Aboriginal people's interests in being involved in natural resources planning and implementation processes are also respected.

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1. Introduction

The *Landscape South Australia Act 2019* (the Act) provides for a Water Affecting Activities (WAA) Control Policy to be prepared with respect to the conservation, management or protection of water resources within a landscape management region.

In accordance with section 102(2) of the Act, a WAA Control Policy should not overlap with the provisions of a Water Allocation Plan (WAP) that is in operation in relation to a prescribed water resource or prescribed wells area and for this reason, this document is divided into two sections:

- Section 2 explains which WAA permit rules apply in different parts of the Murraylands and Riverland region (including on the region's boundary where a watercourse forms the boundary); and
- Section 3 details the water affecting activities policies which apply to specific activities in areas where these are not already regulated by a relevant WAP.

In accordance with the Act, Section 3 specifies the activities for which a WAA permit is required, and sets out the matters to be considered when granting a WAA permit. These rules are the same as provisions made previously under the *Natural Resources Management Act 2004* and contained in the regional NRM Plan. The rules in the former regional NRM Plan no longer apply, and are replaced by the rules in this Water Affecting Activities Control Policy (this Policy), pursuant to Sec 102 of the Act.

2. Which rules apply in which zone?

2.1 Prescribed and non-prescribed areas

The Murraylands and Riverland region crosses the boundaries of two prescribed water resource areas and two prescribed wells area, where the permit provisions of the relevant WAPs apply to water affecting activities. It also includes some 'non-prescribed' areas where the provisions of the former regional NRM Plan applied.

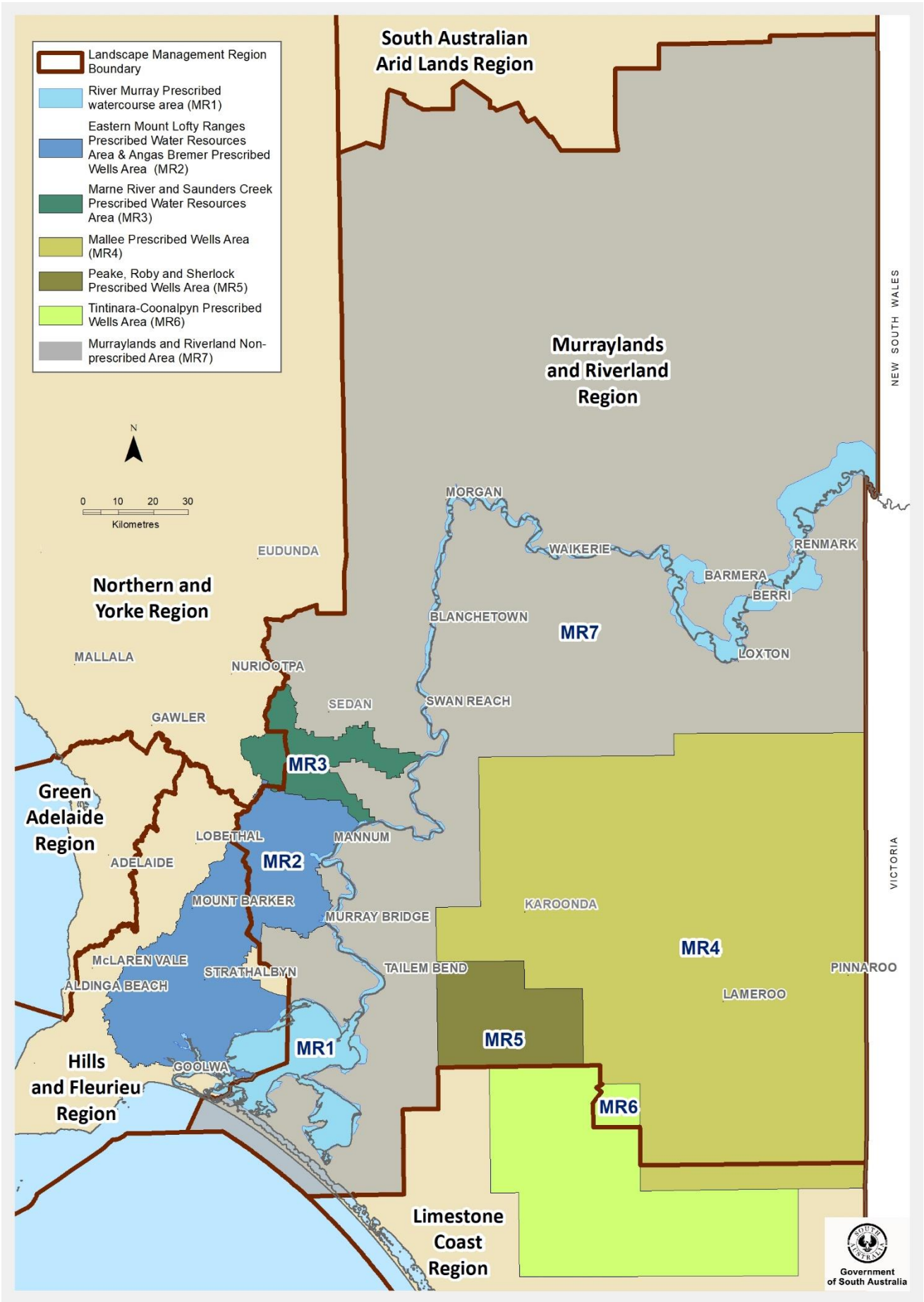
These areas have been delineated as 'zones' to indicate where, and for which activities, the relevant WAP rules or the rules under this Policy apply.

The zones are shown in **Figure 2.1**

Table 2.1: Zones related to areas within the Murraylands and Riverland region.

Zone	Area/s within the Murraylands and Riverland region
MR1	Covered by River Murray Prescribed Watercourse
MR2	Covered by the Eastern Mount Lofty Ranges Prescribed Water Resources Area and Angas Bremer prescribed wells area
MR3	Covered only by Marne and Saunders Prescribed Water Resources Area
MR4	Covered by Mallee Prescribed Wells Area
MR5	Covered by the Peake, Roby and Sherlock Prescribed Wells Area
MR6	Covered by the Tintinara-Coonalpyn Prescribed Wells Area
MR7	Outside of any prescribed water resource or prescribed wells area.

Figure 2.1: Murraylands and Riverland Landscape Management region and corresponding zones



2.2 Relevant Water Affecting Activities and Authorities

Section 104 of the Act specifies the activities that may be regulated by a WAA Permit. The water affecting activities covered by either a WAP or this policy in the Murraylands and Riverland region are shown in **Table 2.2**. Under this Policy, a person may only undertake the activities listed in **Table 2.2** if the relevant authority shown in **Table 3.1** has granted a permit to authorise the activities.

Where a water affecting activity relates to a section of watercourse which forms the boundary between two different landscape management regions, the relevant authority may be either of the Boards, and only one WAA permit is required, as set out in Section 3 of this Policy.

The Act also provides for additional water affecting activities to be prescribed by a Regulation in accordance with section (104 (4) (l)).

2.3 Location of Water Affecting Activities

Table 2.2 shows where to find the rules for each activity in any given zone. In any instances where the activity relates to a length of a watercourse that forms a boundary between landscape management regions, the WAA Control Policy of that neighbouring region may also be relevant.

Where the WAA rules are part of a WAP, they may be found here:

- The River Murray Prescribed watercourse area boundary, MR1
- The EMLR PWRA and Angas Bremer Prescribed Wells Area , MR2
- The Marne and Saunders Prescribed WRA boundary, MR3
- The Mallee PWA boundary, MR4
- The Peake Roby Sherlock PWA boundary, MR5
- The Tintinara-Coonalpyn PWA boundary, MR6

Where the WAA rules are not in a prescribed area they may be found in Section 3 of this policy.

Table 2.2: Rules applying to WAA activities in each zone

		WAA rules						
Act ref	**Water affecting activities**	**MR1**	**MR2**	**MR3**	**MR4**	**MR5**	**MR6**	**MR7**
104 (3) (a) and (b)	Well construction and repair - drilling, plugging, backfilling, sealing, replacing, repairing or altering a well, drilling a monitoring well	(a) RM WAP Sec 8, (b) Sec 3 of this Policy	EMLR WAP 7.2.7	MS WAP 8.3	Mallee WAP Sec 7	PRS WAP 7.1	TC WAP 10.2	Sec 3 of this Policy
104 (3) (c)	Draining or discharge of water directly or indirectly into a well	Sec 3 of this Policy	EMLR WAP 7.2.8	MS WAP 8.4	Sec 3 of this Policy	Sec 3 of this Policy	TC WAP 10.4	Sec 3 of this Policy
104 (3) (d) or 104(4)(a)	Water diversion and storage - erection, construction, modification, enlargement, or removal of a dam, wall or other structure that will collect or divert, or collects or diverts, water flowing in a watercourse or flowing over land	Sec 3 of this Policy	EMLR WAP 7.2.1	MS WAP 8.5	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy
104 (4) (b)	Building a structure in a watercourse, lake or floodplain	Sec 3 of this Policy	EMLR WAP 7.2.2	MS WAP 8.6	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy
104 (4) (c)	Drainage or discharge of water into a watercourse or lake	Sec 3 of this Policy	EMLR WAP 7.2.3	MS WAP 8.7	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy
104 (4) (d), (e) and (f)	Depositing objects or solid material in a watercourse or lake	Sec 3 of this Policy	EMLR WAP 7.2.4	(d) MS WAP 8.6, (e) & (f) Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy
104 (4) (g)	Destroying vegetation growing in a watercourse or lake, or growing on the floodplain of a watercourse	Sec 3 of this Policy	Sec 3 of this Policy	MS WAP 8.8	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy
104 (4) (h)	Excavation or removal of rock, sand or soil	Sec 3 of this Policy	EMLR WAP 7.2.5	MS WAP 8.9	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy
104 (4) (i) and (j)	Use of imported water and effluent	Sec 3 of this Policy	EMLR WAP 7.2.6	MS WAP 8.10	Sec 3 of this Policy	Sec 3 of this Policy	(i) TC WAP 10.6, (j) Sec 3 of this Policy	Sec 3 of this Policy
104 (4) (k)	Undertaking commercial forestry	Sec 3 of this Policy	EMLR WAP 7.2.9	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy	Sec 3 of this Policy

Note: In accordance with the relevant water allocations plan – the objectives and principles set out in those plans may operate in conjunction with the objectives and principles set out in Section 3 of this document, being the region's Water Affecting Activities Control Policy.

3. Water affecting activities permit policies

3.1 General policies

Section 102 (3) (c) of the Act requires the Murraylands and Riverland Landscape Board to set out matters it will consider when exercising its powers to grant or refuse permits under Part 8 Division 2 of the Act.

A permit is required for water affecting activities (WAAs) contained within section 104 of the Act. **Table 3.1** sets out the activities that require a permit in the Murraylands and Riverland Landscape Management region, subject to the exclusions set out in the Act and below. **Table 3.1** also identifies the relevant authority for assessing permit applications for each type of activity.

A number of activities are excluded from requiring a permit under section 106 of the Act; this includes some activities which are approved under other legislation, such as the *Environment Protection Act 1993, Native Vegetation Act 1991,* or the *Planning, Development and Infrastructure Act 2016*. Some activities are also excluded from requiring a permit under section 104(8) of the Act. In addition, the Board has identified some instances where activities that would otherwise require a permit are excluded. These activities are shown in **Table 3.1** (columns 'WAAs excluded from requiring a permit – general exclusions' and 'WAAs excluded from requiring a permit – specific exclusions'), and discussed further in sections 3.1.2 and 3.1.3 in some cases.

The steps in assessing a WAA permit application are as follows:

1. Ascertain the nature and scope of the WAA with reference to section 104(3), 104(4) and of the Act.
2. Precisely define the affected site and determining if it is affected by a water allocation plan (WAP).
3. Ensure sufficient information has been provided by the applicant to enable the relevant authority to make an informed decision.
4. Determine if the WAA permit application qualifies as an exclusion. If the application does not qualify, it will be assessed via the 'on merit' process.
5. 'On merit' applications will be assessed against the WAA permit policies contained in Section 3 of this Policy, and/or the relevant WAP as appropriate.

Public notification is not required for any WAA permit applications in the Murraylands and Riverland Landscape Management region.

3.1.1 Best Practice Operating Procedures

The Board has determined a process for granting exemptions for local government and other statutory authorities for particular Water Affecting Activities that would otherwise require a permit.

An exemption to requiring a permit may be granted when all of the following points are met:

- Where the Council or authority is able to present to the Board a Best Practice Operating Procedure (BPOP) in relation to the WAA; and
- The person proposing to undertake the activity has obtained written approval from the Board to undertake the activity or activities in accordance with the BPOPs; and
- The activity is undertaken in accordance with the BPOPs

Further information on the development of a BPOP will be available on the Murraylands and Riverland Landscape Board website.

3.1.2 Current Recommended Practice

A Current Recommended Practice (CRP) sets out what the Board considers to be the most appropriate approach, methodology and/or design for undertaking particular water affecting activities. In addition, a CRP may further clarify the standards required to discharge the specific duty pursuant to section 110 of the Act.

In some instances, a CRP may negate the requirement for a WAA permit (see **Table 3.1**). The Board requires to be notified prior to the commencement of an activity undertaken in accordance with a CRP in such cases. A list of approved CRPs is published on the Murraylands and Riverland Landscape Board website.

3.1.3 Undertaken as part of a Board-endorsed work plan

An exemption from requiring a WAA permit will be provided for some activities where the Board has a contract with an applicant/financial deed pursuant to section 27 or 96 of the Act that specifies that there is an exclusion from requiring a WAA permit, for a specific work plan. All Board endorsed work plans will follow any relevant Current Recommended Practice for that WAA activity.

3.1.4 Water allocation plan interface

A water allocation plan may set out additional policies that the relevant authority will take into account when considering an application for a WAA permit. The policies in a water allocation plan may be different to the policies in the WAA Control Policy. To the extent that a water allocation plan includes different policies, the policies in the WAA Control Policy will not apply to that prescribed water resource.

Table 3.1: Water affecting activity exclusions and relevant authority

Act definitions of water affecting activities	Examples of WAAs	WAAs excluded from requiring a permit – general exclusions	WAAs excluded from requiring a permit – specific exclusions	Relevant authority
104(3)(a) Drilling, plugging, backfilling or sealing of a well	Well drilling or closure	As specified in the Act	None—all applications assessed on merit	Minister
104(3)(b) Repairing, replacing or altering the casing, lining or screen of a well	Well maintenance or upgrade	As specified in the Act	None—all applications assessed on merit	Minister
104(3)(c) Draining or discharging water directly or indirectly into a well	Managed aquifer recharge	As specified in the Act	None—all applications assessed on merit	Minister
104(3)(d) The erection, construction, modification, enlargement or removal of a dam, wall or other structure that will collect or divert, or collects or diverts— (i) water flowing in a prescribed watercourse; or (ii) water flowing in a watercourse in the Mount Lofty Ranges Watershed that is not prescribed; or (iii) surface water flowing over land in a surface water prescribed area or in the Mount Lofty Ranges Watershed	Dam, wall or other structure; Piping a watercourse; Channelling a watercourse; Stormwater harvesting/ treatment wetland	As specified in the Act	Desilting a dam in some circumstances, provided it is carried out consistently with principle 48, and does not involve a WAA pursuant to 104(4)(d)	Board
104(4)(a) The erection, construction, modification, enlargement or removal of a dam, wall or other structure that will collect or divert, or collects or diverts, water flowing in a watercourse that is not in the Mount Lofty Ranges Watershed and that is not prescribed or flowing over any other land that is not in a surface water prescribed area or in the Mount Lofty Ranges Watershed.	Dam, wall or other structure; Piping a watercourse; Channelling a watercourse; Stormwater harvesting/ treatment wetland	As specified in the Act	Desilting a dam in some circumstances, provided it is carried out consistently with principle 48, and does not involve a WAA pursuant to 104(4)(d)	Board

Act definitions of water affecting activities	Examples of WAAs	WAAs excluded from requiring a permit – general exclusions	WAAs excluded from requiring a permit – specific exclusions	Relevant authority
104(4)(b) The erection, construction or placement of any building or structure in a watercourse or lake or on the floodplain of a watercourse	Buildings or structures <10m^2; Pump house; Horse shelter; Culvert; Crossing point or bridge; Fencing	As specified in the Act Activity where the proponent has written authorisation to carry out the activity in accordance with Board endorsed **Best Practice Operating Procedures (BPOP)** addressing the activity Activity that is undertaken in accordance with a Board endorsed **Current Recommended Practice** addressing the activity and notification has been received by the Board prior to commencement Activity that is undertaken as part of a **Board endorsed work plan** that specifies that there is an exclusion from requiring a WAA permit for that activity	Activity that is proposed to be undertaken beyond the 1-in-100 year average recurrence (ARI) flood level, where flood mapping is available, or a distance of 10 metres or more from the banks of the nearest watercourse where flood mapping is not available	Board
104(4)(c) Draining or discharging water directly or indirectly into a watercourse or lake	Stormwater from buildings; Pipes; Culverts; Side entry pits		Activity that involves draining or discharging water of better quality than the receiving waters at a rate not exceeding 1 ML/y	Board
104(4)(d) Depositing or placing an object or solid material in a watercourse or lake	Island in dam in a watercourse; Ripraps; Rocks; Tyres; Snags; Filling a watercourse			Board
104(4)(e) Obstructing a watercourse or lake in any other manner	Planting vegetation			Board
104(4)(f) Depositing or placing an object or solid material on the floodplain of a watercourse or near the bank or shore of a lake to control flooding from the watercourse or lake	Levee; Depositing fill			Board

Act definitions of water affecting activities	Examples of WAAs	WAAs excluded from requiring a permit – general exclusions	WAAs excluded from requiring a permit – specific exclusions	Relevant authority
104(4)(g) Destroying vegetation growing in a watercourse or lake or growing on the floodplain of a watercourse	Removal or destruction of trees, shrubs, grasses	As specified in the Act Activity where the proponent has written authorisation to carry out the activity in accordance with Board endorsed **Best Practice Operating Procedures (BPOP)** addressing the activity Activity that is undertaken in accordance with a Board endorsed **Current Recommended Practice** addressing the activity and notification has been received by the Board prior to commencement Activity that is undertaken as part of a **Board endorsed work plan** that specifies that there is an exclusion from requiring a WAA permit for that activity		Board
104(4)(h) Excavating or removing rock, sand or soil from— (i) a watercourse or lake or the floodplain of a watercourse; or (ii) an area near to the banks of a lake so as to damage, or create the likelihood of damage to, the banks of the lake	Desilting dam in a watercourse; Desilting wetlands, swamps and springs; Realignment or alteration of a watercourse; Groundwater access trench (GAT) construction		Desilting a dam in some circumstances, provided it is carried out consistently with principle 48, and does not involve a WAA pursuant to 104(4)(d)	Board
104(4)(i) Using water in the course of carrying on a business in a landscape management region at a rate that exceeds the rate prescribed by a water allocation plan or a water affecting activity control policy if the water has been brought into the region by means of a pipe or other channel	Use of imported water for irrigation; Use of imported water for industrial purposes		Where imported water is used on the land at a rate of up to 1 ML/ha/y; or up to 1 ML/y for non-irrigated activities Where the water is sourced from an SA Water owned or operated mains water supply network	Minister
104(4)(j) Using effluent in the course of carrying on a business in a landscape management region at a rate that exceeds a rate prescribed by a water allocation plan or a water affecting activity control policy	Use of treated effluent (e.g. Community Waste Management System (CWMS)) for irrigation. Use of treated		Where effluent is used on the land at a rate of up to 1 ML/ha/y; or up to 1 ML/y for non-irrigated activities Where a person or business undertaking a WAA is legally obligated to comply	Minister

Act definitions of water affecting activities	Examples of WAAs	WAAs excluded from requiring a permit – general exclusions	WAAs excluded from requiring a permit – specific exclusions	Relevant authority
	effluent for industrial purposes		with a mandatory code of practice for the use of effluent that is consistent with the principles in this plan (for example, but not limited to, the EPA *Code of Practice for Milking Shed Effluent 2003*)	
104(4)(l) An activity prescribed by the regulations		None	None	To be determined

3.2 Water affecting activity permit general objectives

The general objectives and principles which all 'on-merit' WAA applications will be assessed against within the Murraylands and Riverland Landscape Management Region are outlined below.

For the purposes of section 3.2 and 3.3:

- Any terms used that are defined in the Act carry the meaning given by the Act; and
- Any terms used in this plan that are defined in the 'Water affecting activity definitions' section (section 3.4) carry the meanings given in that section, unless otherwise specified, or where used in a general sense.

Terms that are given in italics are defined in section 3.4. Italics are generally only used the first time a term is used within a principle. Note that commonly used terms defined in section 3.4 are generally not italicised for the sake of visual clarity.

3.2.1 Objectives

A. Support development and use of water resources in a sustainable and equitable manner to maximise productive use, while providing for the needs of natural ecosystems and other water uses, in the long-term.

B. Prevent activities which could lead to unacceptable deterioration in the quality and quantity of water resources.

C. Minimise adverse impacts of activities on other natural resources and the community.

D. Protect aquifer integrity, and geomorphology of watercourses, lakes and floodplains.

E. Protect the long-term integrity of ecological functions and dependent biodiversity.

3.2.2 Principles

1. A WAA must be undertaken in such a way that, in both the short-term and the long-term, it ensures:

a) maintenance or improvement of water quality

b) capture of water is within sustainable limits

c) equitable sharing of the water available for consumptive use

d) maintenance of natural hydrological and hydrogeological systems, and environmental water requirements

e) preservation of water-dependent ecosystems

f) protection against the risk of harm to public and private assets and public safety from flooding

g) continued monitoring of potential impacts from the activity where appropriate

2. A WAA must not:

a) cause or exacerbate soil erosion or bank destabilisation of a watercourse or lake, or erosion of a floodplain

b) be located in ecologically sensitive areas where the activity will or is likely to have a significant detrimental impact

c) have adverse impacts on water resources, other natural resources, or communities at both local and regional levels

d) have adverse impacts on biodiversity and habitat preservation, water-dependent ecosystems, environmental water requirements and migration of aquatic biota

e) cause or exacerbate unnatural waterlogging or rising water tables

f) cause unacceptable deterioration in the quality of surface water, underground water or water in a watercourse or lake

g) create or exacerbate the incidence or intensity of local or regional flooding or increase the flood risk to public and private assets, communities or individuals

h) impact on authorised devices or activities for scientific purposes

i) cause damage to the integrity of an aquifer or aquifers

3.3 Objectives and principles for specific water affecting activities

In addition to the general objectives and principles set out in section 3.2 the relevant authority will consider the following objectives and principles when determining whether to grant or refuse a permit for an activity that will be assessed 'on merit', and when considering best practice operating procedures.

3.3.1 Taking water - section 104(2)

Section 104(2) of the Act provides that a person must not take water from a watercourse, lake or well that is not prescribed or take surface water from land that is not in a surface water prescribed area in contravention of a water affecting activities control policy.

The following principles apply to the taking of water in the Noora Groundwater Management Area – Zone 11A North (as defined by the *Groundwater (Border Agreement) Act 1986*, and shown in **Figure 3.1**).

These principles will only have effect in the event that the regulation prescribing wells within the Noora Groundwater Management Area – Zone 11A North is revoked.

Objective

F. To ensure compliance with limits and reporting requirements as stated in relevant State and Commonwealth legislation.

Principles

3. The total volume of water taken from wells within the Noora Groundwater Management Area – Zone 11A North shall not exceed the permissible annual volume as determined by the *Review Committee* from time to time.

4. Water taken from wells within the Noora Groundwater Management Area – Zone 11A North (refer to **Figure 3.1**) must be taken through a meter supplied, installed and maintained in accordance with the South Australian Licensed Water Use Meter Specification, as may be amended from time to time.

5. If a person takes water from any well within the Noora Groundwater Management Area – Zone 11A North, the annual groundwater extraction volume data must be provided to the Minister's delegate when requested[1].

6. Principles 3-5 do not apply to water that is taken for:

    a) domestic purposes or for watering stock (other than stock subject to intensive farming);

    b) native title purposes;

    c) road-making, where the water has a salinity greater than 5,000 total dissolved salts measured in mg/L;

    d) fire-fighting;

    e) application of chemicals for the control of pest plants and animals; and

    f) application of chemicals to non-irrigated crops or non-irrigated pasture

[1] At the time of writing these principles, the major extraction of groundwater in Border Zone 11A North is for salt interception schemes (SIS) for the purpose of River Murray salinity management. All current and future SIS wells are metered for State salinity reporting requirements.

3.3.2 Constructing, backfilling or repairing wells—section 104(3)(a) and (b)

The objectives and principles that follow apply specifically to an activity under the following sections of the Act:

- 104(3)(a): drilling, plugging, backfilling or sealing of a well; and
- 104(3)(b): repairing, replacing or altering the casing, lining or screen of a well;

referred to here as the 'activity' or 'activities'.

Objectives

In addition to the general objectives outlined in section 3.2.1

G. Ensure the integrity of headworks are maintained.

H. Ensure wells are constructed in the correct aquifer system.

Principles

In addition to the general principles outlined in section 3.2.2

7. Well construction must be in accordance with the General Specification for Well Construction, *Modification and Abandonment in South Australia* (or any subsequent or related policy), as provided by the relevant authority.

8. The equipment, materials and method used for the activity shall not adversely affect the quality of the underground water resource.

9. Aquifers shall be protected during the activity to prevent adverse impacts on the integrity of an aquifer.

10. Where a well passes through two or more aquifers, an impervious seal must be made and maintained between the aquifers to prevent leakage between aquifers.

11. Wells drilled for the drainage or discharge of water into a well shall be pressure cemented along the full length of the casing.

12. The activity shall not adversely affect the quality, quantity and accessibility of water for supply from existing wells operated by other landholders.

13. The activity shall not adversely affect water-dependent ecosystems.

14. The activity shall not significantly increase local drawdown.

15. Where the volume of water taken from wells within the Noora Groundwater Management Area – Zone 11A North has reached or exceeded the permissible annual volume as determined by the *Review Committee* from time to time, no further well drilling permits shall be granted, if to do so is likely to result in a net increase in volume of groundwater extracted from the Noora Groundwater Management Area – Zone 11A North.

16. A well may be deepened provided that it does not penetrate a different aquifer.

17. Despite principles 12-15, a replacement well may be drilled provided that:

    a) the original well is backfilled in accordance with a permit issued pursuant to section 104(3)(a) of the Act;

    b) the replacement well is within 20 metres of the original well; and

c) the replacement well takes water only from the same aquifer as the original well

3.3.3 Drainage or discharging water into a well—section 104(3)(c)

The objectives and principles that follow apply specifically to an activity under section 104(3)(c) of the Act, comprising draining or discharging water directly or indirectly into a well.

In addition to the objectives and principles outlined in this section, the requirements of the *Environment Protection Act 1993*, and associated relevant policies such as the *Environment Protection (Water Quality) Policy*, should be considered.

Objectives

I. In addition to the general objectives outlined in section 3.2.1; Ensure the integrity of headworks are maintained.

J. Ensure the sustainable operation and management of managed aquifer recharge schemes (also known as aquifer storage and recovery schemes).

Principles

In addition to the general principles outlined in section 3.2.2;

18. Water that is drained or discharged into a well must comply with the Environmental Protection Act 1993 and any associated policy.

19. A permit to drain or discharge water into a well will not be issued unless a risk assessment is undertaken to the satisfaction of the relevant authority.

    This risk assessment must be consistent with the *National Water Quality Management Strategy—Australian Guidelines for Water Recycling: Managing Health & Environmental Risks, Phase 1 2006* and *Phase 2 2009,* and other related documents current at the time, including:

    a) an investigation into the sustainability of the drainage or discharge site, including but not limited to, tests for transmissivity, maximum injection pressures and calculated likely impacts on the integrity of the well and confining layers, and impacts of potentiometric head changes to other underground water users

    b) an appropriate operation or management plan demonstrating that operational procedures and monitoring regimes are in place to protect the integrity of the aquifer, minimise the wastage of water and protect the discharge site on an ongoing basis

    c) a water quality assessment which identifies hazards in the source water

    d) a report on the consequences and impacts to the ambient underground water resource where the water quality characteristics (salinity and chemistry composition) of the water to be discharged differs to that of the ambient underground water

20. Water that is drained or discharged into a well only by means of gravity is exempt from meeting the requirements of principle 19.a).

21. Roof runoff that is drained or discharged into a well via a closed system of capture and transport is exempt from meeting the requirements of principles 19.a), 19.b), and 19.d), provided that the system is equipped with a mechanism to divert first flush water.

22. Further to principle 19.b), continuation of draining and discharge is dependent on an annual report that addresses

the impacts to the ambient underground water at the draining or discharge site. Roof run-off captured in a closed system and then drained or discharged into a well is exempt from this principle.

23. For the purposes of principles 18 and 19, the relevant concentrations, levels or amounts shall be measured in sufficient representative samples of:

    a) the water to be drained or discharged

    b) ambient underground water collected from the proposed point of injection, or as near as possible to the proposed point of injection

    For the purpose of this principle, 'sufficient representative samples' means suitable samples, collected with equipment appropriate for the substance, material or characteristic to be measured and taken at suitable locations and times to accurately represent the quality of the relevant water.

24. The draining or discharging of water directly or indirectly into a well must not degrade ecosystems dependent on the underground water or detrimentally affect the ability of other persons to lawfully take from that underground water.

25. The headworks for the draining or discharge of water shall be constructed so that extraction, draining and discharge operations can be metered without interference.

26. The headworks for the draining or discharge of water shall be constructed so that water cannot leak if the well becomes clogged.

27. Wells constructed for the draining or discharge of water at pressures greater than gravity must be pressure cemented along the full length of the casing. This does not exempt the need to follow the general specifications for well construction.

3.3.4 Water diversion and collection—sections 104(3)(d) and 104(4)(a)

The objectives and principles that follow apply to an activity under the following sections of the Act:

- 104(3)(d): the erection, construction, modification, enlargement or removal of a dam, wall or other structure that will collect or divert, or collects of diverts—

  (i) water flowing in a prescribed watercourse; or

  (ii) water flowing in a watercourse in the Mount Lofty Ranges Watershed that is not prescribed; or

  (iii) surface water flowing over land in a surface water prescribed area or in the Mount Lofty Ranges Watershed; and

- 104(4)(a): the erection, construction, modification, enlargement or removal of a dam, wall or other structure that will collect or divert, or collects or diverts, water flowing in a watercourse that is not in the Mount Lofty Ranges Watershed and that is not prescribed or flowing over any other land that is not in a surface water prescribed area or in the Mount Lofty Ranges Watershed.

Note – Basin Plan limits for non-prescribed surface water management zone

This section includes principles that contribute to meeting South Australia's responsibilities under the Commonwealth's Basin Plan. The Murraylands and Riverland Landscape region includes part of the South Australian Non-Prescribed Areas surface water sustainable diversion limit (SDL) resource unit, a planning unit within the Basin Plan's South Australian Murray Region water resource plan area (see **Figure 3.2**). This surface water SDL resource unit also includes parts of the Hills and Fleurieu, Northern and Yorke, South Australian Arid Lands and Limestone Coast Landscape regions.

The Basin Plan sets a sustainable diversion limit for this SDL resource unit that caps allowable surface water taking in the area. The allowable future dam development capacity within the sustainable diversion limit for this SDL resource unit has been apportioned by agreement between the three NRM regions' prior to the boundary changes relevant to the introduction of the *Landscape South Australia Act, 2019* (namely the South Australian Murray-Darling Basin, South Australian Arid Lands and South East NRM Boards). While the boundaries of the previous South Australian Arid Lands NRM Board region and South East NRM Board region align with the South Australian Arid Lands Landscape region and Limestone Coast Landscape regions respectively, the part of the surface water SDL resource unit within the previous South Australian Murray-Darling Basin NRM Board area, referred to as the non-prescribed surface water management zone, is now divided across the Murraylands and Riverland; Hills and Fleurieu; and Northern and Yorke Landscape regions. To ensure that development is managed within the previously negotiated limit of 38,600ML for the *non-prescribed surface water management zone,* the three Landscape Boards now responsible for the management of the *non-prescribed surface water management zone* will use a centralised database to track and manage development against the available limit.

The dam capacity limit that applies to the part of the SA Non-Prescribed Areas SDL resource unit in the Murraylands and Riverland Landscape Management region applies to the total dam capacity, including existing dam capacity and future dam development.

Note: Catching and holding dams

Dams have traditionally been constructed across watercourses and drainage paths to directly capture water for a variety of purposes.

A dam that directly catches runoff or flow typically inhibits all flow until the dam is filled. Once filled, water spills over and flows further downstream. Such catching dams have been shown to reduce the rate and volume of streamflow, and change the pattern of streamflow, from natural undeveloped conditions. Catching dams may create problems for both other users and ecosystems downstream as they can reduce flow duration and total yield, and lengthen periods of no flows. There is little flexibility in the management of catching dams as they generally capture all runoff or flow until full.

Greater flexibility is provided by *holding dams*, where water is stored in a holding dam after being diverted from a catchment area or watercourse via a mechanism like a weir, pump or channel, rather than directly capturing runoff or flow with the dam. This is because the mechanism used to divert runoff or water from a watercourse can be varied more easily to allow capture of water at different times or flow rates.

Objectives

In addition to the general objectives outlined in section 3.2.1;

K. Ensure that dams, walls or any other water collection or diversion mechanisms are sited, constructed and operated in a manner which:

   a) protects the rights of downstream water users (including the environment) to access those water resources; and

b) maintains amenity

Principles

In addition to the general principles outlined in section 3.2.2;

Siting

28. A dam, wall or other structure for the storage, collection or diversion of water must not:

    a) be constructed in areas prone to erosion

    b) contribute to dryland salinity or intrusions of saline underground water into watercourses

    c) be constructed or enlarged in ecologically sensitive areas, where this will cause or be likely to cause significant detrimental impacts

29. Catching dams must not be constructed or enlarged in or across watercourses with a stream order of three or higher, except in exceptional circumstances where the proponent can demonstrate, to the relevant authority's satisfaction, that there is no reasonably practical alternative approach on the property to collect or access sufficient water to meet the reasonable requirements of the proponent.

30. In all other cases, holding dams should be constructed in preference to catching dams, unless it is not reasonably practical to do so.

Non-prescribed surface water management zone

31. A dam, wall or other structure that collects or diverts water must not be constructed or enlarged in the *non-prescribed surface water management zone* if that activity would cause the total volume of dam capacity in that zone to exceed the non-prescribed surface water management zone limit of 38,600 ML.

32. For the purposes of principle 31:

    a) the *non-prescribed surface water management zone* is shown in **Figure 3.3**.

    b) the dams and their capacities in the non-prescribed surface water management zone considered to exist prior to 30 June 2009 are given in Topography Water Bodies dataset Number 902 archived by the Department for Environment, Water and Natural Resources for the purposes of Basin Plan compliance.

Sub-catchment limits

33. A dam must not be constructed or enlarged if that activity would cause the total volume of dam capacity in a sub-catchment zone shown in **Figure 3.4** to exceed (or further exceed) the sub-catchment dam capacity limit specified in column 7 of **Table 3.2** for that zone (where relevant).

34. When the sub-catchment dam capacity limit for a sub-catchment zone has been reached or exceeded, any other methods of surface or watercourse water diversions or harvest shall not be permitted in that zone, if it may result in a net increase in the volume of water to be collected or diverted.

Property limits

35. A dam must not be constructed or enlarged if that activity would cause the total volume of dam capacity on a property to exceed (or further exceed) the property dam capacity limit for that property.

    The property dam capacity limit for a given property is calculated as follows:

    0.3 (30% of) X the area of the property (km^2) X long term average rainfall between the months of May and

November (mm) for the locality X 0.1 (10% run-off coefficient)

Exception to limits

36. Principles 33, 34 and 35 do not apply where the diversion is solely for the purpose of improving water quality, and/or mitigating flooding, prior to returning the diverted water to the same watercourse or drainage path within three days (or other period as determined by the relevant authority), with loss of water volume only allowed via minimised evaporation and seepage from the water body.

37. Principles 33, 34 and 35 do not apply to authorised structures for the specific purpose of measuring streamflow. For the purpose of this principle, an 'authorised structure' means a structure authorised by the Board, a local government authority or the Minister.

38. Where a dam (the 'original dam') has been washed away, a permit may be granted to construct a replacement dam of the same capacity as the original dam, despite principles 33, 34 and 35, provided that:

    a) the capacities of the original and replacement dams are demonstrated to the relevant authority's satisfaction; and

    b) the replacement dam is constructed in the same location as the original dam, or on a part of the same *property* that is *hydrologically continuous* with the original dam within the property

39. New dam capacity may be allowed in addition to the limits set out in principles 33, 34 and 35 to collect additional runoff generated from human-made areas of low permeability (such as hard surfaces created by urban or industrial development), provided that:

    a) it can be demonstrated to the relevant authority's satisfaction by a suitably qualified expert that collecting the additional runoff will not compromise the provision of water requirements of water- dependent ecosystems and existing consumptive users; and

    b) pre-development runoff and recharge from the site is returned to the environment:

        i. as close as reasonably practical to the natural flow path;

        ii. as soon as reasonably practical following precipitation, unless detained on-site for water quality remediation and/or mitigation of flooding, in which case the pre-development runoff and recharge must be returned to the environment within three days of collection or diversion (or other period as determined by the relevant authority);

        iii. in a manner that maintains the natural flow regime and aquifer recharge;

        iv. in a manner that does not cause significant detrimental impacts to the environment, including but not limited to erosion and detrimental impacts to stream bed and bank stability

40. For the purposes of principle 39:

    a) Pre-development runoff and recharge is the mean annual volume expected to return to water resources from the site under conditions prior to the creation of the low permeability surfaces that give rise to additional runoff.

    b) Pre-development runoff and recharge, and the volume of additional runoff generated by low permeability areas, will be determined to the satisfaction of the relevant authority by a suitably qualified hydrologist or engineer.

Flow regime

41. A dam, wall or other structure that collects or diverts surface water flowing over land or water from a watercourse must include a device that ensures any water present at or below the threshold flow rate will:

a) not be collected or diverted; or

b) be bypassed around the dam, wall or other structure, or otherwise returned to the same watercourse or surface water drainage path immediately downstream of the dam, wall or other structure as soon as reasonably practical AND the water will be of an equivalent or better quality.

42. For the purposes of this plan:

a) the threshold flow rate (in litres/second) is calculated by multiplying:

the *unit threshold flow rate* (in litres/second/km^2), by the area of *catchment area* (in km^2) above the point where the water is diverted from the watercourse or drainage path

b) The unit threshold flow rate is determined as follows:

i. where the dam, wall or other structure lies within a sub-catchment zone as shown in **Figure 3.4**, the unit threshold flow rate is that given for that zone in **Table 3.2**, column 8; or

ii. in all other cases, the unit threshold flow rate will be determined by the relevant authority

43. A device that will achieve the outcomes required by principle 41 shall:

a) be designed and constructed to ensure its correct operation is automated and, as far as reasonably practicable, cannot be manually overridden

b) not be obstructed or tampered with in any way

c) be maintained in such a condition that it continues to be effective in meeting principle 41

Dam design features

44. Dams, walls, or other structures for the collection, storage or diversion of water should, where appropriate and practicable, be designed and constructed to incorporate a range of features to improve water quality and enhance ecological values. Such features include, but are not limited to:

a) an irregular edge

b) a variety of depths to increase habitat for a variety of plants and animals

c) well vegetated edges

d) minimal stock access

e) an upstream silt trap for catching dams (one-tenth the size of the dam)

f) provision for aquatic biota migration where appropriate

g) provision of an island at least 0.5 metres above the maximum dam water level in water at least 0.5 metres deep

Dam construction

45. The erection, construction, enlargement, modification or removal of a dam, wall or other structure to collect or divert water must be undertaken in a manner that minimises the removal or destruction of riparian and in-stream vegetation (e.g. via inundation of area).

46. The erection, construction, enlargement, modification or removal of a dam, wall or other structure to collect or divert water must be undertaken in a manner that prevents silt or sediments from entering the watercourse, including but not limited to the use of erosion and sediment control measures such as diversion drains, revegetation, straw bale barriers, filter fences, sediment traps and detention basins.

47. The erection, construction, enlargement, modification or removal of a dam, wall or other structure to collect or divert water must ensure a minimum 20-year design life in accordance with best practice guidelines (endorsed by the Board) for all watercourse flow conditions up to the 100-year average recurrence interval (0.01 annual exceedance probability) flow rate for the proposed location.

Dam maintenance

48. A WAA permit is not required where the desilting of a dam meets all of the following provisions:

    a) desilting only involves the removal of unconsolidated material deposited since construction of the dam or material deposited since the dam was previously desilted;

    b) desilting does not enlarge the dam capacity or increase the dam wall height beyond their original dimensions;

    c) the dam is not on a watercourse with a *stream order* of 3 or higher;

    d) the excavated material is not placed in or near a watercourse, floodplain or lake;

    e) the excavated material does not:

        i. adversely affect native vegetation;

        ii. impede the natural flow of surface water;

        iii. re-enter any water body; or

        iv. facilitate the spread of pest plants or pathogenic material; and

        v. appropriate measures are taken to minimise water quality impacts arising from desilting

3.3.5 Building or structure in a watercourse, lake or floodplain—section 104(4)(b)

The objectives and principles that follow apply specifically to an activity under section 104(4)(b) of the Act, comprising the erection, construction or placement of any building or structure in a watercourse or lake or on the floodplain of a watercourse.

Objectives

As per the general objectives outlined in section 3.2.1

Principles

In addition to the general principles outlined in section 3.2.2

49. Construction and placement of structures—including roads—in a watercourse, floodplain of a watercourse, lake, wetland or area subject to inundation:

    a) shall be designed to minimise the risk of erosion resulting from the construction and location of the structure;

b) must not adversely affect the provision of environmental water requirements (e.g. by impeding flows);

c) must not adversely affect the migration of aquatic biota;

d) must not result in flooding, either upstream or downstream; and

e) must not be constructed where it, or any debris collected by it, would increase the risk of damage to property or the risk to safety of persons

50. Structures that impede the flow of water must be designed to bypass or otherwise return water present at or below the threshold flow rate in accordance with principles 41–43.

51. Principle 50 does not apply to structures authorised by the Minister or the relevant authority for the specific purpose of measuring stream flow, or for managing water flow to assist with maintenance, rehabilitation or restoration of locally indigenous water-dependent ecosystems, habitats, communities or species.

3.3.6 Drainage or discharge of water into a watercourse or lake—section 104(4)(c)

The objectives and principles that follow apply specifically to an activity under section 104(4)(c) of the Act, comprising draining or discharging water directly or indirectly into a watercourse or lake.

In addition to the objectives and principles outlined in this section, the requirements of the *Environment Protection Act 1993*, and associated relevant policies such as the *Environment Protection (Water Quality) Policy*, should be considered.

Objectives

In addition to the general objectives outlined in section 3.2.1

L. Manage drainage or discharge water such that contaminants are contained and managed on-site to minimise the conveyance of contaminants into watercourses or lakes.

Principles

In addition to the general principles outlined in section 3.2.2

52. Drainage or discharge of water into a watercourse or lake must only be undertaken where suitable protective measures have been provided to minimise degradation in the quality of the receiving water. Suitable protective measures may include, but are not limited to:

a) detention basins to regulate the rate, volume and quality of water discharged

b) reuse of drainage or discharge water that occurs under conditions that would not present a risk to public or environmental health

c) litter traps

d) pre-treatment of the water before discharge

e) a requirement that the quality of water drained or discharged into a watercourse lake or floodplain is of a quality similar to or better than that of the receiving water environment

f) discharge into the receiving waters occurs at times of naturally high flow

53. All treatment devices must be appropriately managed to ensure that they continue to function according to their design, particularly in the removal of accumulated sediment and litter.

54. The rate, location and timing of discharge or drainage of water must occur such that:

    a) the geomorphology of the watercourse or lake is protected;

    b) water-dependent ecosystems (including their environmental water requirements), and migration of aquatic biota, are not adversely affected;

    c) the flow capacity of the watercourse or lake is considered; and

    d) there is no increase in the risk of flooding

55. Storage of any contaminated water must only be undertaken in storage vessels with no natural catchment that are constructed to prevent leakage or overflow of any contaminated water.

Note: Waste stream from desalination processes

The discharge of a waste stream (brine and other chemicals) from desalination processes directly or indirectly to a watercourse or lake would be considered under this section of these policies for the control of WAAs.

3.3.7 Management of obstructions—sections 104(4)(d), (e) and (f)

The objectives and principles that follow apply specifically to an activity under the following sections of the Act:

- 104(4)(d): depositing or placing an object or solid material in a watercourse or lake;
- 104(4)(e): obstructing a watercourse or lake in any other manner; and
- 104(4)(f): depositing or placing an object or solid material on the floodplain of a watercourse or near the bank or shore of a lake to control flooding from the watercourse or lake.

Objectives

As per the general objectives outlined in section 3.2.1

Principles

In addition to the general principles outlined in section 3.2.2

56. Any object or solid material to be used in the control or prevention of watercourse erosion must be designed with consideration of the local-scale and catchment scale landscape and hydrological processes.

57. The depositing or placing of an object or solid material in a watercourse or lake, or obstructing a watercourse in any other manner, must not:

    a) cause or increase erosion;

    b) cause detrimental offsite impacts, for example, but not limited to, flooding;

    c) adversely affect water-dependent ecosystems; or

    d) adversely affect the migration of aquatic biota

58. Objects or solid materials or other obstructions that impede the flow of water must be designed to bypass or otherwise return water present at or below the threshold flow rate in accordance with principles 41-43.

59. Principle 58 does not apply to structures authorised by the Minister or the relevant authority for the specific

purpose of measuring stream flow, or for managing water flow to assist with maintenance, rehabilitation or restoration of locally indigenous water-dependent ecosystems, habitats, communities or species.

60. Depositing or placing an object or solid material on the floodplain of a watercourse, or near the bank or shore of a lake, to control flooding from the watercourse or lake shall not:

    a) adversely affect the natural flow of a watercourse

    b) increase the risk of flooding (upstream or downstream), or

    c) cause or increase erosion

61. Depositing or placing an object or solid material on the floodplain of a watercourse, or near the bank or shore of a lake, to control flooding from the watercourse or lake should:

    a) provide for the needs of ecosystem processes (including the migration of aquatic biota); and

    b) minimise the impact or risk of flooding on human communities

3.3.8 Management of vegetation removal and excavation—sections 104(4)(g) and (h)

The objectives and principles that follow apply specifically to an activity under the following sections of the Act:

- 104(4)(g): destroying vegetation growing in a watercourse or lake or growing on the floodplain of a watercourse; and
- 104(4)(h): excavating or removing rock, sand or soil from—

    (i) a watercourse or lake or the floodplain of a watercourse; or

    (ii) an area near to the banks of a lake so as to damage, or create the likelihood of damage to, the banks of the lake

Note: Native vegetation controls

In most cases, destruction of, damage to and removal of native vegetation requires approval under the South Australian *Native Vegetation Act 1991*. Issuing a water affecting activity permit does not negate the need to comply with the provisions of the *Native Vegetation Act 1991*.

Objectives

As per the general objectives outlined in section 3.2.1

Principles

In addition to the general principles outlined in section 3.2.2

62. Alteration to the alignment of a watercourse, or destruction of vegetation within a watercourse, lake or floodplain shall only occur where it is for the protection of existing infrastructure or rehabilitation of a watercourse, lake or floodplain, and the activity does not result in any of the following:

    a) increased erosion

    b) increased flooding

    c) bed and bank instability

d) downstream sedimentation

e) destruction of significant habitat for native fauna

f) decline in water quality

g) alteration to the natural flow regime of a watercourse

63. The excavation and removal of rock, sand or soil, or destruction of vegetation within a watercourse, lake or floodplain, must not adversely affect either:

a) the ecology of a watercourse, lake or floodplain, or

b) migration of aquatic biota

3.3.9 Use of imported water and effluent—sections 104(4)(i) and (j)

The objectives and principles that follow apply specifically to an activity under the following sections of the Act:

- 104(4)(i): using water in the course of carrying on a business at a rate that exceeds one megalitre per hectare per year, or one megalitre per year for non-irrigated activities, if the water has been brought into the region by means of a pipe or other channel ('imported water'); and
- 104(4)(j): using effluent in the course of carrying on a business at a rate that exceeds one megalitre per hectare per year, or one megalitre per year for non-irrigated activities.

In addition to the objectives and principles outlined in this section, the requirements of the *Environment Protection Act 1993*, and associated relevant policies such as the *Environment Protection (Water Quality) Policy*, should be considered where relevant.

Objectives

In addition to the general objectives outlined in section 3.2.1

M. Ensure that effluent is used in such a manner that risks to public health are minimised.

N. Protect the productive capacity of the land.

Principles

In addition to the general principles outlined in section 3.2.2

64. A permit is not required for the use of imported water and effluent where the water or effluent is used on the land at a rate of up to one megalitre per hectare per year, or up to one megalitre per year for non-irrigated activities.

65. A permit is not required where a person or business undertaking a WAA is legally obligated to comply with a mandatory code of practice for the use of effluent that is consistent with the principles in this plan (for example, but not limited to, the EPA Code of Practice for Milking Shed Effluent 2003 or its successors).

66. The use of effluent must be undertaken in a manner that minimises risks to human health.

67. The use of imported water or effluent must not cause a rise in underground water levels that would adversely affect land, public and private assets, other water resources or natural resources and their beneficial uses.

68. The use of imported water or effluent must not adversely affect the natural flow regime or ambient quality of the receiving waters.

69. The use of imported water or effluent must not adversely affect the productive capacity of the land by impacts including, but not limited to, increasing salinity, water logging, sodicity, toxicity, nutrient concentrations or water tables.

70. The use of imported water or effluent must not adversely affect the condition, biodiversity or extent of a water-dependent ecosystem.

71. Any dams constructed for the storage of chlorine-treated imported water or effluent must be constructed so as to prevent:

    a) leakage from the dam through the soil

    b) overflows from the dam onto the surface of the land surrounding the dam

    c) overflow from the dam into a watercourse or lake

72. Any dams constructed for the storage of chlorine-treated imported water or effluent must not be located in a watercourse, floodplain, lake, or drainage path.

73. The use of imported water or effluent will not be permitted where its use will adversely affect the environment.

Figure 3.1: Noora Groundwater Management Area – Zone 11A North

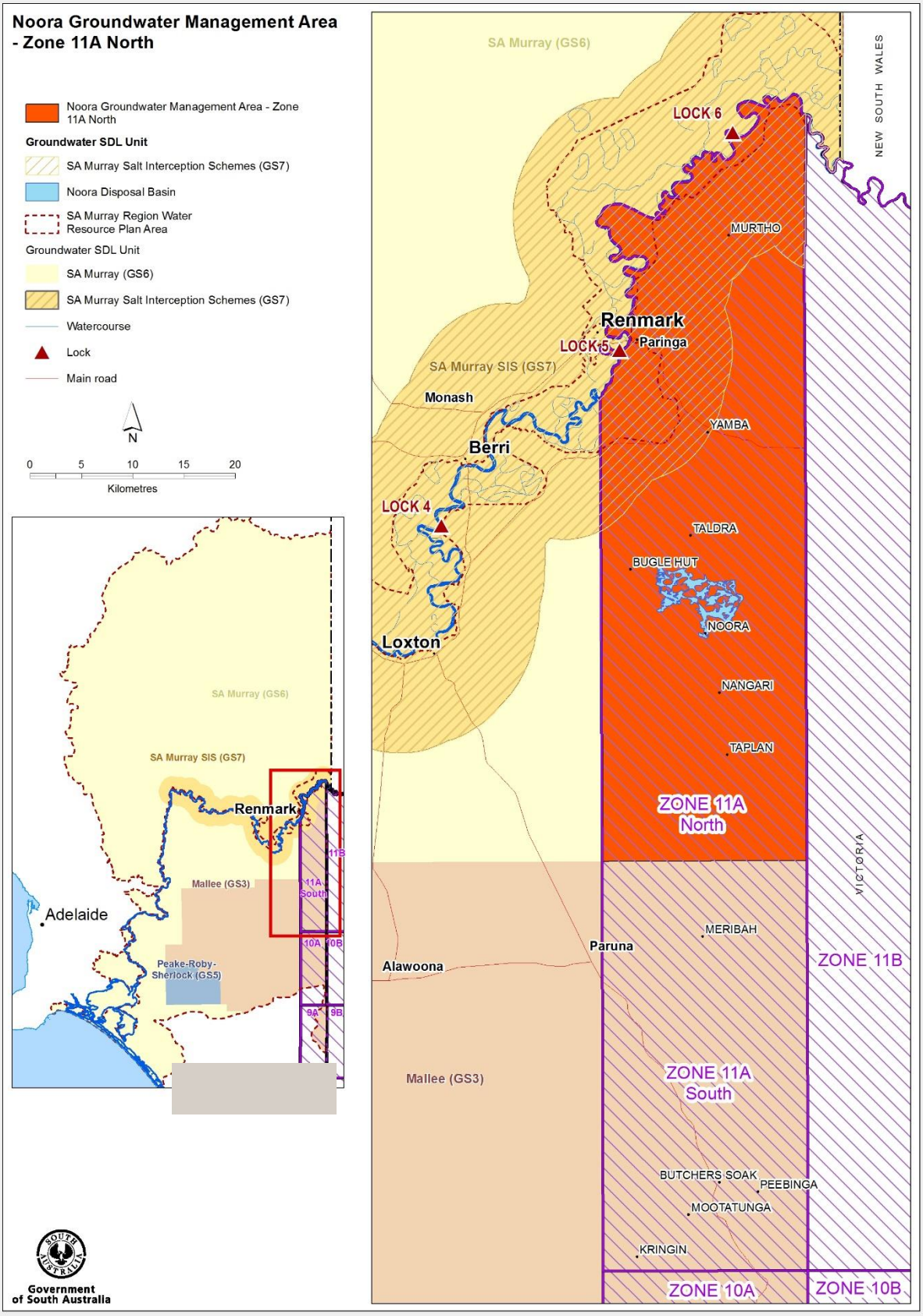


Figure 3.2: The South Australian Non-Prescribed Areas surface watersustainable diversion limit (SDL) resource unit, a planning unit within the Basin Plan's South Australian Murray Region water resource plan area.

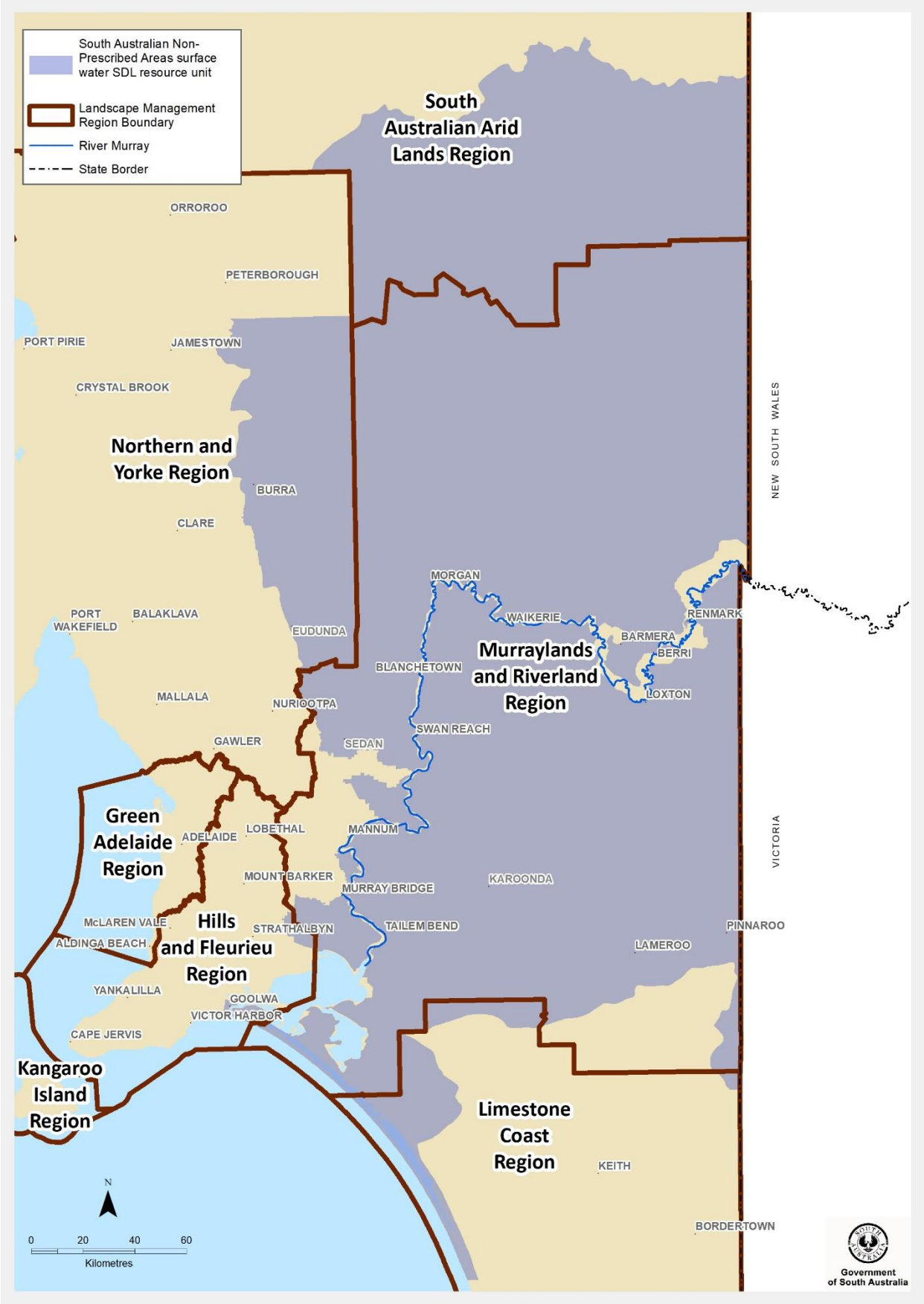


Figure 3.3: Non-prescribed surface water management zone map

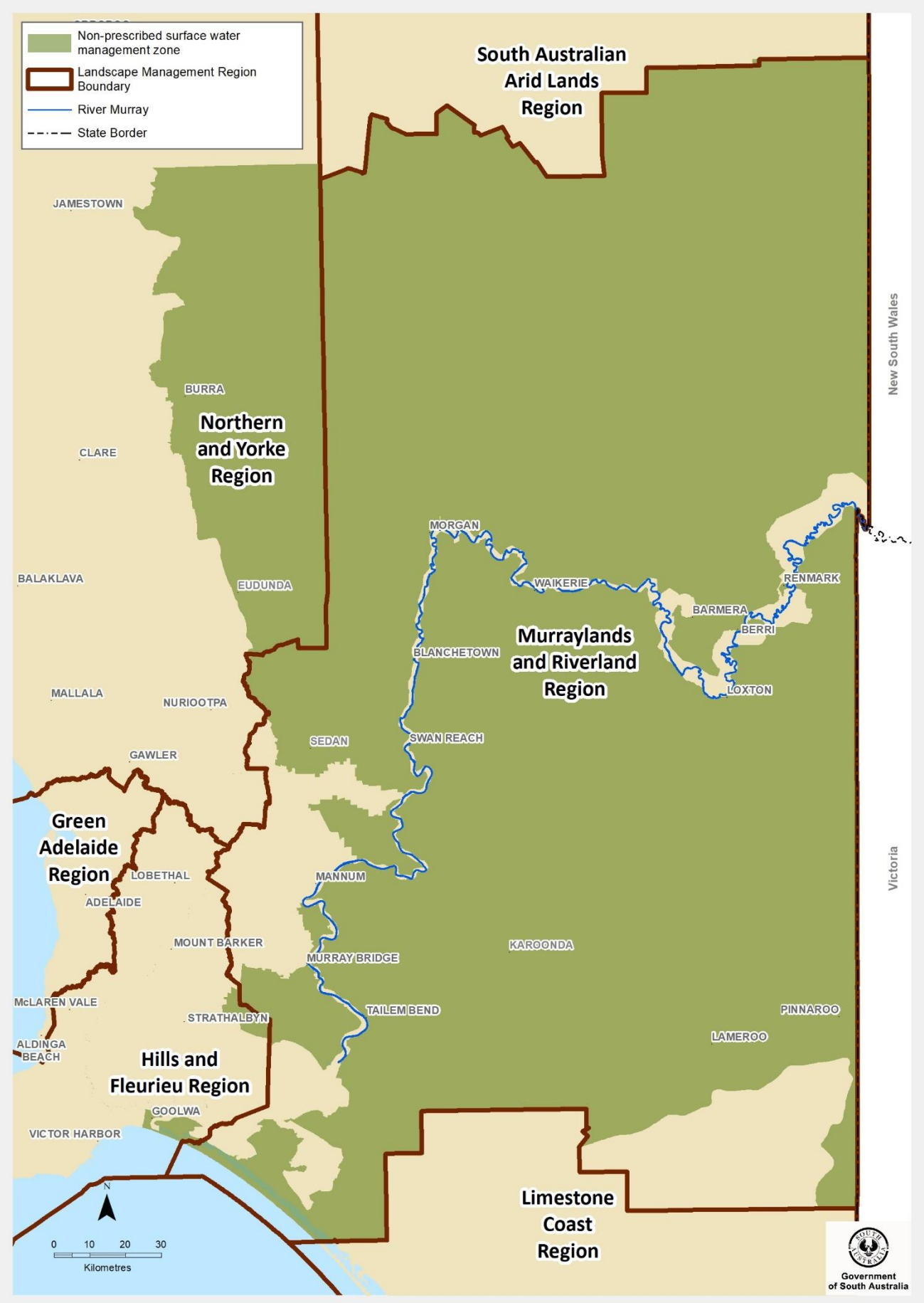


Figure 3.4: Sub-catchments zone map

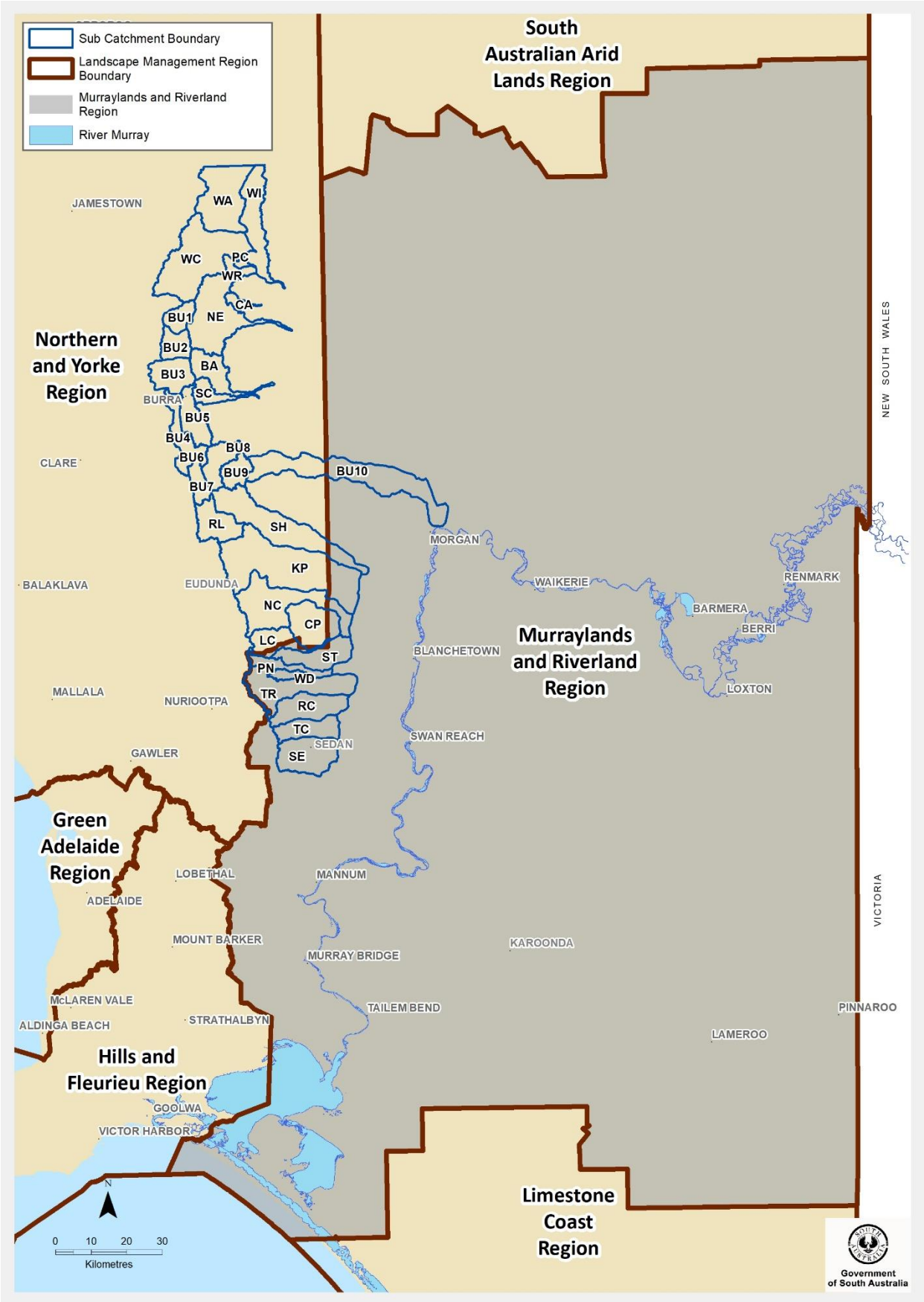


Table 3.2: Sub-catchment zone data

	1	2	3	4	5	6	7	8
Catchment	**Sub-catchment zone code**	**Sub-catchment zone area (km^2)**	**Average annual rainfall (mm)**	**Average May-November rainfall (mm)**	**Average May-Nov runoff (10% of May - Nov rainfall) (mm)**	**30% of May-November runoff (mm)**	**Sub-catchment dam capacity limit (ML)**	**Unit threshold flow rate ($L/s/km^2$)**
Baldina Creek	BA	99	415	306	31	9	909	1
Burra Creek—Razorback	BU1	53	420	309	31	9	491	1
Burra Creek—Mount Bryan TS	BU2	64	440	330	33	10	629	1
Burra Creek—Firewood Creek	BU3	99	462	347	35	10	1,031	1
Burra Creek—Springbank Valley	BU4	40	462	346	35	10	415	1
Burra Creek—Upper Burra Creek	BU5	90	439	325	32	10	876	1
Burra Creek—Logan Creek	BU6	66	473	356	36	11	700	1
Burra Creek—Lagoon Hill	BU7	48	473	356	36	11	510	1
Burra Creek—Worlds End	BU8	83	315	223	22	7	553	1
Burra Creek—Mid Burra Creek	BU9	61	315	223	22	7	409	1
Burra Creek—Lower Burra Creek	BU10	335	235	157	16	5	1,583	1
Caroona Creek	CA	19	261	181	18	5	104	1
Craigie Plain	CP	145	303	209	21	6	910	1
Keynes Plain	KP	468	321	225	23	7	3,163	1
Levi Creek	LC	90	442	327	33	10	888	1
Narcoota - Deep Creek	NC	248	380	269	27	8	1,999	1
Newikie Creek	NE	248	415	306	31	9	2,274	1
Piltimitiappa Creek	PC	10	235	148	15	4	45	1

	1	2	3	4	5	6	7	8
Catchment	**Sub-catchment zone code**	**Sub-catchment zone area (km^2)**	**Average annual rainfall (mm)**	**Average May-November rainfall (mm)**	**Average May-Nov runoff (10% of May - Nov rainfall) (mm)**	**30% of May-November runoff (mm)**	**Sub-catchment dam capacity limit (ML)**	**Unit threshold flow rate ($L/s/km^2$)**
Pine Creek	PN	58	362	258	26	8	452	1
Red Creek	RC	135	380	273	27	8	1,110	1
Robertstown Lagoon	RL	107	476	352	35	11	1,130	1
Stone Chimney Creek	SC	51	396	283	28	8	436	1
Sedan	SE	152	412	304	30	9	1,387	1
Spring Hut Creek	SH	280	314	219	22	7	1,842	1
Stonefield	ST	119	342	242	24	7	860	1
Towitta Creek	TC	94	363	263	26	8	745	1
Truro Creek	TR	194	400	291	29	9	1,693	1
Waupunyah Creek	WA	221	264	168	17	5	1,116	1
Wonna Creek	WC	329	395	288	29	9	2,847	1
Wild Dog	WD	26	354	254	25	8	197	1
Witto Creek	WI	164	248	164	16	5	808	1
Williams Reservoir	WR	30	261	181	18	5	162	1

Shared sub-catchment

Murraylands and Riverland region

Out-side Murraylands and Riverland region

3.4 Water affecting activity definitions

Terms that are defined in the Act have the meaning as given by the Act. Definitions given for such terms in this section are provided for information, and the definition given in the Act takes precedence in the event of inconsistency.

Allotment: has the same meaning as in the *Real Property Act 1886*.

Ambient underground water: in relation to draining or discharging water into a well, means the underground water that occurs at the proposed site of injection in the relevant aquifer, prior to the commencement of the proposed drainage or discharge of water into a well.

Annual exceedance probability (AEP): the probability that a given flow or rainfall event will be exceeded in any one year.

Average recurrence interval (ARI): the average value of the periods between exceedances of a given flow or rainfall event.

Catching dam: a dam, wall or other structure placed on or constructed across a watercourse or drainage path for the purpose of holding back and storing the natural flow of that watercourse or the surface water flowing along that drainage path.

Catchment area: the catchment area of a particular point means all of the land, determined by natural topographic features, from which runoff has the potential to naturally drain to that point.

Community Wastewater Management System (CWMS): an effluent collection, treatment and disposal/reuse system for a community.

Contaminants (and indicators of contaminants): may include, but are not limited to, nutrients, metals, biological organisms (for example, *Escherichia coli*), temperature, dissolved oxygen, colour, turbidity, suspended sediments, leachate, hydrocarbons, and litter.

Desilting: the removal of unconsolidated material deposited in a dam since construction, or material deposited since the dam was previously desilted.

Detention basin: a pond or basin constructed for the temporary detention of water to provide time for suspended sediments and other heavy pollutants to settle before discharge into a watercourse, lake, or other water storage, and/or to regulate the rate and volume of water discharged.

Domestic wastewater: has the same meaning as in section 3(1) of the Act, meaning water used in the disposal of human waste, and water used for personal washing, and water used for washing clothes or dishes, and water used in a swimming pool.

Drainage path: the path that surface water naturally flows along over land.

Effluent: has the same meaning as in section 3(1) of the Act, meaning domestic wastewater or industrial wastewater.

Environmental water requirements: those water requirements that must be met in order to sustain the ecological values of ecosystems that depend on the water resource, including their processes and biodiversity, at a low level of risk.

Geomorphic characteristics: features of a landform or landscape including, but not limited to, bed and banks of a watercourse, floodplain of a watercourse or lake, cliffs, soils, rocks and other mineral forms.

Groundwater access trench (GAT): shallow trenches excavated to allow direct access to underground water.

Headworks: any assembly on top of a well and located between the well casing and the water delivery system.

Holding dam: a dam that is not constructed across a watercourse and is primarily designed to hold water from a source other than the catchment area of the dam. Other water sources may include, but are not limited to, underground water and water diverted or pumped from a watercourse or drainage path that is not in the catchment area of the dam. Holding dams may capture a limited volume of surface water from the catchment area of the dam (up to 5% of its total capacity).

Hydrologically continuous: two or more points in the landscape directly connected by the same drainage path or watercourse.

Industrial wastewater: has the same meaning as in section 3(1) of the Act, meaning water (not being domestic wastewater) that has been used in the course of carrying on a business (including water used in the watering or irrigation of plants) that has been allowed to run to waste or has been disposed of or has been collected for disposal.

Non-prescribed surface water management zone: the area identified as the non-prescribed surface water management zone in Figure 3.3

Property: an allotment or contiguous allotments owned or occupied by the same person, persons or body, and operated as a single unit. Allotments will be considered to be contiguous if they abut at any point, or are separated only by a road, street, lane, footway, court, alley, railway, thoroughfare, easement, right-of-way, watercourse, channel or a reserve or similar open space.

Review Committee: *The Committee e*stablished for the purpose of the *Groundwater (Border Agreement) Act 1985*.

Stream order: a method of classifying the size of a part of a watercourse, based on the hierarchy of connecting watercourse segments. The Strahler stream ordering system is used in this plan. The most upstream part of a watercourse is a first order stream. Two first order watercourses join together to become a second order watercourse. Two second order watercourses join together to become a third order watercourse and so on. For the purposes of determining stream order for this plan, the network of watercourses is defined in the basis of current 1:50,000 topographic maps produced by the State Government.

Structure (in relation to a body of water or watercourse): something built or constructed, including, but not limited to, a ford, causeway, culvert, fence, jetty, boat mooring, weir or retaining wall.

Sub-catchment zone: a zone defining the area within which the total allowable dam volume is limited. The zone boundary is based upon the sub-catchment boundary, with adjustments to align the sub-catchment boundary to the nearest practicable allotment boundaries. These zones are shown in Figure 3.4.

Threshold flow rate: the flow rate at or below which water must not be taken, or if taken is to be returned to the same watercourse or drainage path immediately downstream of the structure, as soon as reasonably practical (in accordance with principles 41, 50 and 58). The value of the threshold flow rate for a given location is calculated in accordance with principle 42.

Transmissivity*:* a parameter indicating the ease of underground water flow through a metre width of aquifer section.

Unit threshold flow rate: used to determine the threshold flow rate in accordance with principle 42. The unit threshold flow rate is determined as follows:

a) where the dam, wall or other structure lies within a sub-catchment zone as shown in Figure 3.4, the unit threshold flow rate is that given for that zone in Table 3.2, column 8; or

b) in all other cases, the unit threshold flow rate will be determined by the relevant authority.

Water-dependent ecosystems: those parts of the environment, the species composition and natural ecological processes, that are determined by the permanent or temporary presence of flowing or standing water, above or below ground. The in-stream areas of rivers, riparian vegetation, springs, wetlands, floodplains, estuaries, lakes and aquifer ecosystems are all water-dependent ecosystems

More information

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