
Green Adelaide

Water Affecting Activities Control Policy

Effective from 21 December 2020

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Green Adelaide Water Affecting Activities Control Policy

Introduction

The *Landscape SA 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 (including the Green Adelaide landscape management region). A 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.

This document is in two parts. Section 1 explains which WAA permit rules apply in different parts of the Green Adelaide landscape management region (including where a watercourse forms the boundary).

Section 2 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 2 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 substantially the same as provisions made previously under the *Natural Resources Management Act 2004* and contained in Regional NRM Plans. The rules in these former NRM Plans 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.

Section 1: Which rules apply where

1.1 Prescribed water resources

The Green Adelaide landscape management region crosses the boundaries of several prescribed water resources and prescribed wells areas, where the permit provisions of water allocation plans apply to some water affecting activities. These areas have been delineated as 'zones' to help determine where, and for which activities, the relevant WAP rules or the rules under this Policy apply.

The zones are shown in Map 1, and were derived as follows.

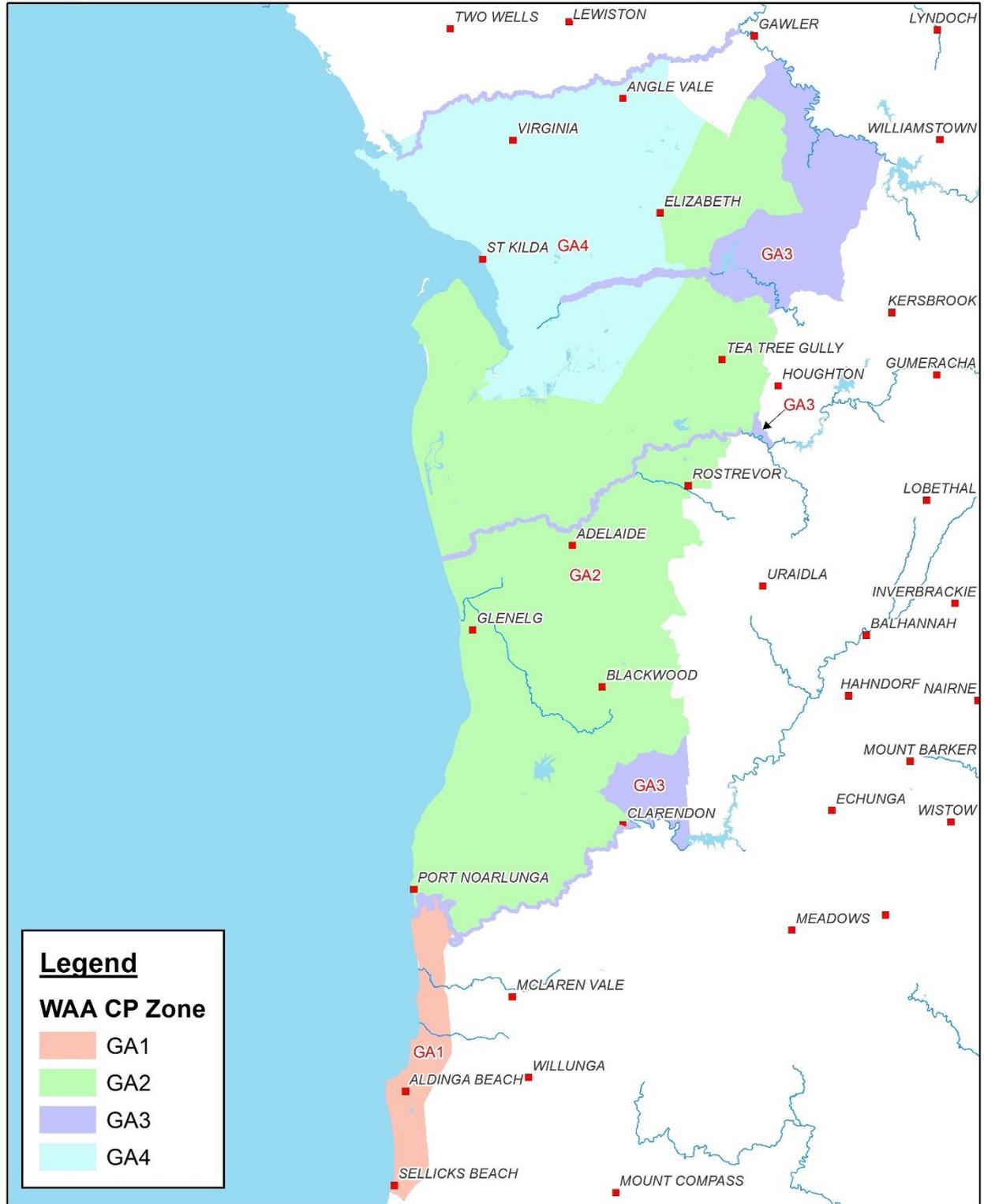
Zone	Area/s within Green Adelaide landscape management region
GA1	covered by both the Western Mount Lofty Ranges Prescribed Water Resources Area and the McLaren Vale Prescribed Wells Area
GA2	covered only by the Central Adelaide Prescribed Wells Area
GA3	covered only by the Western Mount Lofty Ranges Prescribed Water Resources Area
GA4	covered only by the Northern Adelaide Plains Prescribed Wells Area

1.2 Relevant water affecting activities and authorities

Section 104 of the Act specifies the activities that may be regulated by a WAA Permit. Under this Policy, a person may only undertake a water affecting activity if the relevant authority shown in Table has granted a permit to authorise the activities, unless the activity is exempted. The Act also provides for additional water affecting activities to be prescribed by a Regulation (104 (4) (I)).

The water affecting activities covered by either a WAP or this WAA Control Policy in the Green Adelaide area are shown in Table 1, together with the relevant approval authority.

Map 1 - Green Adelaide landscape management region WAA CP Zones



Legend

WAA CP Zone

- GA1
- GA2
- GA3
- GA4

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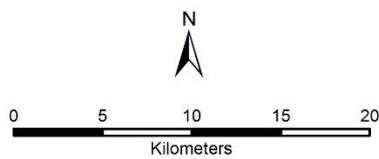


Table 1: Water affecting activities and relevant authorities

The relevant authorities listed below are consistent with the provisions of the Act, and with arrangements that applied prior to the commencement of landscape management boards.

Water affecting activities	Relevant authority
<i>Water diversion and storage - erection, construction, modification, enlargement, or removal of a dam, wall or other structure</i>	Green Adelaide Board*
<i>Building a structure in a watercourse, lake or floodplain</i>	Green Adelaide Board*
<i>Drainage or discharge of water into a watercourse or lake</i>	Green Adelaide Board*
<i>Depositing objects or solid material in a watercourse or lake</i>	Green Adelaide Board*
<i>Excavation or removal of rock, sand or soil</i>	Green Adelaide Board*
<i>Destroying vegetation growing in a watercourse or lake, or growing on the floodplain of a watercourse</i>	Green Adelaide Board*
<i>Use of imported water and effluent</i>	Minister
<i>Well construction and repair - drilling, plugging, backfilling, sealing, replacing, repairing or altering a well, drilling a monitoring well</i>	Minister
<i>Draining or discharge of water directly or indirectly into a well</i>	Minister
<i>Commercial forestry</i>	Minister

* where this water affecting activity relates to a section of watercourse which forms the boundary between Green Adelaide and another landscape management region, the relevant authority may be either of the Boards, and only one WAA permit is required, as set out in Section 2 of this Policy.

1.3 Location of WAA rules

Table 2 shows the location of the WAA rules which apply for each activity.

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

- Northern Adelaide Plains WAP (to be replaced by the Adelaide Plains WAP when adopted) [hyperlink](#)
- WMLR WAP Chapter 8 [hyperlink](#)
- McLaren Vale WAP Chapters 7, 8 and 9 [hyperlink](#)

When the Adelaide Plains WAP is adopted, some of the principles in this Policy will be replaced by principles in that WAP.

It should be noted that the rules which apply to zone GA3 also cover four watercourses in the Green Adelaide area (the Gawler River, Little Para River, River Torrens-Karrawirra Parri and Onkaparinga River), as these are part of the Western Mount Lofty Ranges Prescribed Water Resources Area.

Table 2: Rules applying to WAA activities in each zone

* Until Adelaide Plains WAP adopted, when the relevant WAP principles will supersede those in Section 2 of this Policy.

Act ref	Water affecting activities	GA1	GA2	GA3	GA4
104 (3) (a) and (b)	Well construction and repair - drilling, plugging, backfilling, sealing, replacing, repairing or altering a well, drilling a monitoring well	McLaren Vale WAP Ch. 9	Sec 2 of this Policy*	WMLR WAP 8.3	NAP WAP 7.2 and 7.3 *
104 (3) (c)	Draining or discharge of water directly or indirectly into a well	McLaren Vale WAP Ch. 7	Sec 2 of this Policy*	WMLR WAP 8.4	NAP WAP 7.4 *
104 (3) (d) and 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	WMLR WAP 8.5	Sec 2 of this Policy	WMLR WAP 8.5	Sec 2 of this Policy
104 (4) (b)	Building a structure in a watercourse, lake or floodplain	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy
104 (4) (c)	Drainage or discharge of water into a watercourse or lake	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy
104 (4) (d), (e) and (f)	Depositing objects or solid material in a watercourse or lake	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy
104 (4) (g)	Destroying vegetation growing in a watercourse or lake, or growing on the floodplain of a watercourse	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy
104 (4) (h)	Excavation or removal of rock, sand or soil	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy	Sec 2 of this Policy
104 (4) (i) and (j)	Use of imported water and effluent	McLaren Vale WAP Ch. 8	Sec 2 of this Policy*	Sec 2 of this Policy	NAP WAP 7.5 and 7.6*
104 (4) (k)	Undertaking commercial forestry	WMLR WAP 8.6	n/a	WMLR WAP 8.6	n/a

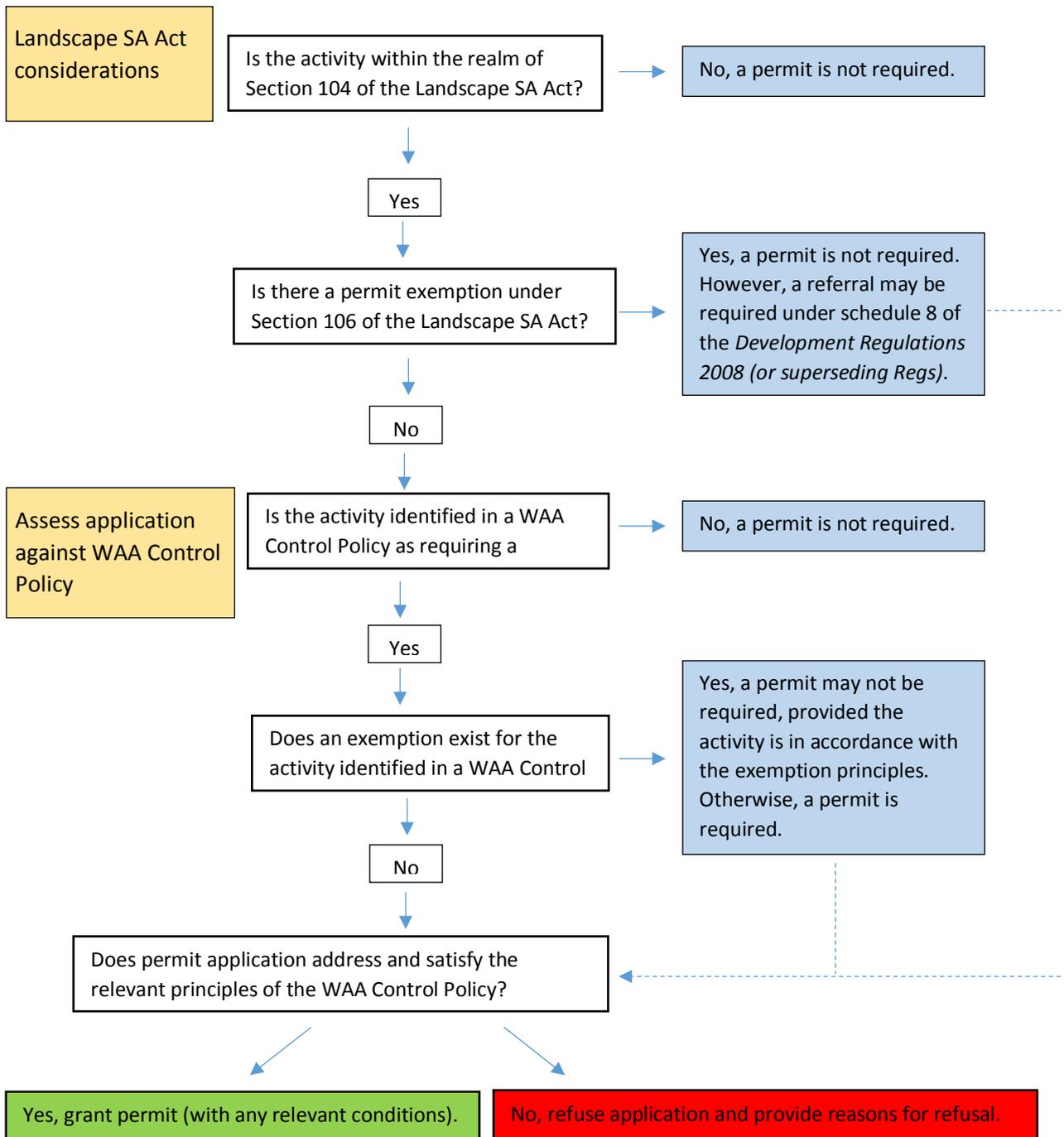
Section 2 Water affecting activities permit policies

2.1 Introduction

Section 102 (3) (c) of the *Landscape SA Act 2019* (the Act) requires the Green Adelaide 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. The conditions under which the board will grant or refuse a permit are outlined in this section. These policies will be used only where there are no provisions that apply to the activity in a relevant WAP.

A permit may be required for water affecting activities described in sections 104 of the Act. A number of activities are excluded from requiring a permit under section 106, for example, activities approved under other legislation, such as the *Environment Protection Act 1993 (SA)* or the *Planning, Development and Infrastructure Act 2016*. In addition, the board has identified some instances where activities that would usually require a permit are excluded (Table 2.1).

A WAA permit application is assessed using the following steps:



Applicant can appeal at the ERD Court against a refusal of a permit or a permit condition as per Section 216 of the *Landscape South Australia Act 2019*.

Public notification

Public notification is not required for any WAA permit applications under the Act.

Current recommended practice

A process has been determined for granting exemptions to landowners for particular WAAs that would otherwise require a permit.

Current recommended practices (CRPs) are approved procedures endorsed by a relevant board. A CRP sets out what a board considers to be the most appropriate approach, methodology and/or design for undertaking activities pursuant to section 104 of the Act. In addition, a CRP may clarify the standards required to discharge the specific duty, pursuant to section 110 of the Act.

In some instances, a CRP will negate the requirement for a WAA permit. Table 2 lists the WAAs that have the potential to be low risk and therefore suitable for a CRP. A list of approved CRPs is published on the relevant board's website.

Best practice operating procedures

A process has been determined for granting exemptions to local government and other statutory authorities for particular WAAs that would otherwise require a permit. Best practice operating procedures are approved procedures developed by eligible authorities to exceed minimum standards of operations for a range of water affecting activities undertaken.

Applications related to watercourses on a boundary

Within the Green Adelaide area, the following watercourses have sections which form part of the boundary between Green Adelaide and another landscape management region:

- Onkaparinga River
- RiverTorrens/Karrawirra Parri
- Gawler River
- Little Para River
- South Para River

If a WAA activity relates to one of these sections of watercourse, only one WAA permit is required and the relevant authority may be either of the relevant Boards. The same WAA permit policies apply in all cases, regardless of the assessment authority.

Table 2.1: Water affecting activities and associated exclusions

104(3)(a)	Act definition: Drilling, plugging, backfilling or sealing a well For example, well closure
	WAAs excluded from requiring a permit: None
	Relevant authority: Minister
104(3)(b)	Act definition: Repairing, replacing or altering the casing, lining or screening of a well For example, well maintenance or upgrade
	WAAs excluded from requiring a permit: None
	Relevant authority: Minister
	Act definition: Draining or discharging water directly or indirectly into a well For example, managed aquifer recharge

104(3)(c)	<p>WAAs excluded from requiring a permit: None</p>
	<p>Relevant authority: Minister</p>
104(3)(d)	<p>Act definition: The erection, construction, modification, enlargement or removal of a dam, wall or other structure that will collect or divert, or collects or diverts:</p> <ul style="list-style-type: none"> - water flowing in a prescribed watercourse, or - water flowing in a watercourse in the Mount Lofty Ranges watershed that is not prescribed, or - surface water flowing over land in a surface water prescribed area or in the Mount Lofty Ranges Watershed. <p>For example, construction of a dam, wall or other structure; channelling a watercourse</p> <p>WAAs excluded from requiring a permit: None</p> <p>Relevant authority: Board</p>
104(4)(a)	<p>Act definition: 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</p> <p>For example, construction of a dam, channelling a watercourse</p> <p>WAAs excluded from requiring a permit: None</p> <p>Relevant authority: Board</p>
104(4)(b)	<p>Act definition: The erection, construction or placement of any building or structure in a watercourse or lake or on the floodplain of a watercourse</p> <p>e.g. Buildings or structures <10m²; culvert; crossing point or bridge; fencing</p> <p>WAAs excluded from requiring a permit:</p> <p>Activity that is proposed to be undertaken beyond the one in 100 year flood recurrence 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</p> <ul style="list-style-type: none"> - Activities undertaken by local government (directly or by its contractors), a state agency or utility that has a board-endorsed best practice operating procedure addressing the activities - Activities undertaken in accordance with any board-endorsed current recommended practice - A board-endorsed activity - Activities pursuant to an obligation under either the <i>Metropolitan Drainage Act 1935</i>, or <i>South-Western Suburbs Drainage Act 1959</i> <p>Relevant authority: Board</p>
104(4)(c)	<p>Act definition: Draining or discharging water directly or indirectly into a watercourse or lake</p> <p>For example, stormwater from buildings</p> <p>WAAs excluded from requiring a permit:</p> <ul style="list-style-type: none"> - Activities undertaken by local government (directly or by its contractors), a state agency or utility that has a board-endorsed best practice operating procedure addressing the activities - Activities undertaken in accordance with any board-endorsed current recommended practice - A board-endorsed activity

	<ul style="list-style-type: none"> - Activities pursuant to an obligation under either the <i>Metropolitan Drainage Act 1935</i>, or <i>South-Western Suburbs Drainage Act 1959</i>
	Relevant authority: Board
104(4)(d)	<p>Act definition: Depositing or placing an object or solid material in a watercourse or lake</p> <p>For example, island in an on-stream dam; rip raps; rocks; tyres; snags; filling a watercourse etc.</p>
	<p>WAAs excluded from requiring a permit:</p> <ul style="list-style-type: none"> - Activities undertaken by local government (directly or by its contractors), a state agency or utility that has a board-endorsed best practice operating procedure addressing the activities - A board-endorsed activity - Activities undertaken in accordance with any board-endorsed current recommended practice - Activities pursuant to an obligation under either the <i>Metropolitan Drainage Act 1935</i>, or <i>South-Western Suburbs Drainage Act 1959</i>
	Relevant authority: Board
104(4)(e)	<p>Act definition: Obstructing a watercourse or lake in any other manner</p> <p>For example, planting vegetation</p>
	<p>WAAs excluded from requiring a permit:</p> <p>Activities undertaken by local government (directly or by its contractors), a state agency or utility that has a board-endorsed best practice operating procedure addressing the activities</p> <p>A board-endorsed activity</p>
	Relevant authority: Board
104(4)(f)	<p>Act definition: 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</p> <p>For example, levee; depositing fill</p>
	<p>WAAs excluded from requiring a permit:</p> <ul style="list-style-type: none"> - Activities pursuant to an obligation under either the <i>Metropolitan Drainage Act 1935</i>, or <i>South-Western Suburbs Drainage Act 1959</i> - A board-endorsed activity - Activities undertaken in accordance with any board-endorsed current recommended practice
	Relevant authority: Board
104(4)(g)	<p>Act definition: Destroying vegetation growing in a watercourse or lake, or growing on the floodplain of a watercourse</p> <p>For example, removal or destruction of trees, shrubs, grasses</p>
	<p>WAAs excluded from requiring a permit:</p> <ul style="list-style-type: none"> - Activities undertaken by local government (directly or by its contractors), a state agency or utility that has a board-endorsed best practice operating procedure addressing the activities - A board-endorsed activity - Activities undertaken in accordance with any board-endorsed current recommended practice
	Relevant authority: Board

104(4)(h)	<p>Act definition: Excavating or removing rock, sand or soil from:</p> <p>(i) a watercourse or lake or the floodplain of a watercourse, or</p> <p>(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</p> <p>For example, desilting, wetlands, swamps and springs</p>
	<p>WAAs excluded from requiring a permit:</p> <ul style="list-style-type: none"> - Activities undertaken by local government (directly or by its contractors), a state agency or utility that has a board-endorsed best practice operating procedure addressing the activities - Activities undertaken in accordance with any board-endorsed current recommended practice - Activities pursuant to an obligation under either the <i>Metropolitan Drainage Act 1935</i>, or <i>South-Western Suburbs Drainage Act 1959</i> - A board-endorsed activity - Desilting a dam, provided it: <ul style="list-style-type: none"> • involves the removal of unconsolidated material deposited since dam construction or since the dam was previously desilted • does not involve a WAA pursuant to 104(4)(d)
	<p>Relevant authority: Board</p>
104(4)(i)	<p>Act definition: Using water, at a rate that exceeds 1 ML/ha/y in the course of carrying on a business in the Green Adelaide landscape management region, if the water has been brought into the region by means of a pipe or other channel.</p> <p>For example, use of imported water for irrigation.</p>
	<p>WAAs excluded from requiring a permit:</p> <ul style="list-style-type: none"> - Where the water is sourced from an SA Water owned or operated mains water supply network - Activities undertaken in accordance with the board’s current recommended practice
	<p>Relevant authority: Minister</p>
104(4)(j)	<p>Act definition: Using effluent, in the course of carrying on a business in the Green Adelaide landscape management region, at a rate that exceeds 1 ML/ha/yr.</p> <p>For example, use of treated effluent</p>
	<p>WAAs excluded from requiring a permit:</p> <p>none</p>
	<p>Relevant authority: Minister</p>
104(4)(k)	<p>Act definition: Undertaking commercial forestry</p>
	<p>WAAs excluded from requiring a permit: None</p>
	<p>Relevant Authority:</p>
104(4)(l)	<p>Act definition: An activity prescribed by the regulations</p>
	<p>WAAs excluded from requiring a permit: None</p>
	<p>Relevant authority: tbd</p>

2.2 General objectives and principles

The following general objectives and principles apply to all WAA applications assessed in the Green Adelaide landscape management region under this Policy.

Objectives

1. Develop and use water resources in a sustainable manner to maximise productive use, while providing for the needs of natural ecosystems.
2. Prevent activities which could lead to deterioration in the quality and quantity of surface or underground water.
3. Protect and preserve watercourse, lake and floodplain geomorphology.
4. Protect the long term integrity of ecological functions and dependent biodiversity.

Principles

Activities should not compromise the use or quality of water resources, or the capacity for natural systems to restore or maintain water quality.

Activities should not take place where they are likely to adversely impact on the migration of biota.

Natural creek and watercourse systems should be retained.

The design, construction and management of structures and activities must not result in watercourse erosion.

Activities should be designed and located so as not to alter the geomorphology of a watercourse or lake.

1. Activities should not contribute to dryland salinity or rising water tables.
2. Activities should not compromise the integrity of authorised scientific data collection and monitoring facilities related to the assessment and management of water resources.
3. Activities should not:
 - a. be located in ecologically sensitive areas
 - b. cause or exacerbate unnatural waterlogging, or increase groundwater induced salinity
 - c. affect water-dependent ecosystems, or environmental water requirements for underground water, watercourse, wetlands or floodplains
 - d. cause or increase the risk of flooding, upstream or down
 - e. cause or increase erosion, or affect bed and bank stability, or
 - f. detrimentally impact on ecological diversity and habitats.

2.3 Objectives and principles for specific water affecting activities

The following objectives and principles relate to specific situations. They are additional to those expressed in the general objectives and principles (section 2.2).

2.3.1 Well construction and repair: section 104(3)(a) and (b)

Where a WAP applies, the objectives and principles in the relevant WAP will be used as the basis for assessment.

The following objectives and principles apply to permits for activities relating to wells under the following sections of the Act:

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

Objectives

1. Protect the quality of underground water resources.
2. Protect groundwater-dependent ecosystems.
3. Minimise the impact on underground water resources.
4. Protect underground water resources from pollution, deterioration and undue depletion.
5. Ensure the integrity of headworks is maintained.

Principles

1. 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.

Impact of well works on water quality and integrity of the aquifer

2. The equipment, materials and methods used in the drilling, plugging, backfilling or sealing of a well, or the replacement or alteration of the casing, lining or screen of a well, must not adversely affect the quality of the underground water resource.
3. Aquifers must be protected during the drilling, plugging, backfilling or sealing of a well, or the replacement or alteration of the casing, lining or screen of a well, to prevent adverse impacts on the integrity of the aquifer.
4. New wells constructed for the purpose of taking underground water must not be located within 300 metres of an operational well that has a permit or licence to recharge the underground aquifer and is being used for managed aquifer recharge (MAR) unless:
 - a. the new well will be completed in an aquifer that is not in direct hydraulic connection with the aquifer into which the water is being recharged; or
 - b. the new well is part of the existing MAR scheme.

Sealing between aquifers

5. Where a well passes, or will pass, through two or more aquifers, an impervious seal shall be made and maintained between all aquifers.

Wells for drainage or discharge

6. The headworks for the draining or discharge of water must be constructed so that extraction and draining or discharge operations can be metered without interference.
7. The headworks for the drainage or discharge of water must be constructed so that water cannot leak if the well becomes clogged.
8. Wells constructed for the drainage or discharge of water must be pressure cemented along the full length of the casing.

2.3.2 Draining or discharge of water into a well: section 104(3)(c)

Where a WAP applies, the objectives and principles in the relevant WAP will be used as the basis for assessment.

The following objectives and principles apply specifically to activities under section 104(3)(c) of the Act, comprising the draining or discharging of water directly or indirectly into a well (commonly part of an MAR scheme).

In addition the Environment Protection (Water Quality) Policy 2003 (or any subsequent or related policy), prepared under the *Environment Protection Act 1993 (SA)*, should also be considered.

Note: In addition to the requirements outlined below for drainage or discharge into a well, an MAR development may also require a water licence for the recovery component of the scheme, and a water licence for the source water.

Objectives

1. The sustainable operation and management of managed aquifer recharge schemes.
2. Reasonable and practicable measures are taken to avoid the discharge of contamination to the receiving underground water resource during the draining or discharging of water into a well.
3. Prevent environmental harm from the draining or discharging of water into a well.
4. Ensure that draining or discharging water directly or indirectly into a well does not have the potential to adversely affect:
 - a. the quality of underground water
 - b. the integrity of the aquifer, including (but not limited to) the confining layer of the aquifer and the ability of the aquifer to transmit water
 - c. water tables, including (but not limited to) waterlogging, land salinisation and damage to infrastructure (e.g. roads, buildings, foundations)
 - d. any underground water-dependent ecosystem or ecologically sensitive area that depends on the underground water resource
 - e. the ability of other persons to lawfully take from that underground water, or
 - f. the longevity of operations.

Principles

1. Water that is drained or discharged into a well must comply with the *Environmental Protection Act 1993* and any associated policy.
2. A permit to drain or discharge water into a well will not be issued unless a hydrogeological risk assessment is undertaken to the satisfaction of the relevant authority. This hydrogeological risk assessment must be consistent with the *National Water Quality Management Strategy - Australian Guidelines for Water Recycling: Managing Health & Environmental Risks*, Phase 1 2006 (or any subsequent or related policy), and include:
 - a. an investigation into the suitability of the draining or discharging 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.
3. Water that is drained or discharged into a well by means of gravity only is exempt from meeting the requirements of principle 2(a).
4. Roof runoff (surface water) that is drained or discharged into a well via a closed system of capture and transport is exempt from meeting the requirements of principles 2(a), (c) and (d), provided that the system is equipped with a mechanism to divert first flush water.
5. Further to principle 2(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 runoff (surface water) captured in a closed system and then drained or discharged into a well is exempt from this principle.

6. For the purposes of principles 2 and 3, 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.

Note: '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 so as to accurately represent the quality of the relevant water.

7. For the purposes of this plan, the term 'ambient underground water' means water that occurs at the proposed site of injection in the relevant aquifer, before beginning the proposed draining and discharge activities.
8. The draining or discharging of water directly or indirectly into a well must not detrimentally affect the ability of other persons to lawfully take from that underground water, or degrade ecosystems dependent on the underground water.
9. The headworks for the draining or discharge of water shall be constructed so that extraction and draining and discharge operations can be metered without interference.
10. The headworks for the draining or discharge of water must be constructed so that water cannot leak if the well becomes clogged.

Note: For the purposes of this plan, the term 'headworks' means any assembly on top of a well and located between the well casing and the water delivery system.

11. 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.

2.3.4 Water storage and diversion: section 104(3)(d) and 104(4)(a)

Where a WAP applies, the objectives and principles in the relevant WAP will be used as the basis for assessment.

Where a WAP does not exist, or is not in operation, the objectives and principles that follow apply specifically to an activities under:

- Section 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
- Section 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: Dams that have a wall height greater than three metres or a volume of five megalitres or greater require development approval under the *Planning, Development and Infrastructure Act 2016* therefore do not require a permit under the *Landscape SA Act 2019*. Development approval is issued by local councils. Applications received by a local council are referred to the relevant authority for direction.

Objectives

1. Maintain and improve the quality and quantity of water flowing in the region.
2. Ensure that dams, walls or other water collection or diversion mechanisms in watercourses and drainage paths are constructed and managed in a manner which:
 - a. protects the needs of downstream users

- b. protects water quality and quantity
- c. protects ecosystems dependent on these resources.

Principles

1. The combined capacity of all dams in a catchment within an allotment shall not exceed 50 per cent of the annual runoff for that catchment in the allotment.

Note: For the purposes of principle 1, 'annual runoff' is a volume derived from 10 per cent of the mean annual rainfall for the allotment, multiplied by the area of the allotment.

Note: For the purposes of principle 1, the term 'allotment' means an allotment delineated on a certificate of title under the *Real Property Act 1886* and includes two or more contiguous allotments owned or occupied by the same person and operated as a single unit for the purpose of primary production.

Location

2. Dams, including dam walls and spillways must not be located:
 - a. in, immediately upstream or downstream of an ecologically sensitive area
 - b. in an area prone to erosion
 - c. on-stream for third order, or higher, streams (and water should be diverted to an off-stream dam wherever possible for first and second order streams), or
 - d. where the migration of aquatic biota could be adversely affected.

Note: For the purpose of principle 2, an 'on-stream dam' means 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 runoff flowing along that drainage path.

Note: For the purpose of principle 2, an 'off-stream dam' means a dam, wall or other structure that is not constructed across a watercourse or drainage path and is designed to hold water diverted, or pumped, from a watercourse, a drainage path or aquifer, or from another source. Off-stream dams may capture a limited volume of surface water from the catchment above the dam, but may not take an amount of surface water, from the catchment above the dam, in excess of 5 per cent of its total volume.

3. In order to minimise impacts on downstream water-dependent ecosystems:
 - dams must not be located on-stream for third order or higher streams; or
 - water should be diverted to an off-stream dam wherever possible for first and second order streams

Note: For the purposes of principle 3, the threshold flow rate (litres/second) means:

- a. The flow rate of a watercourse or drainage line (litres/second) determined by multiplying the unit threshold rate (litres/second/square kilometre) by the area of catchment (square kilometre) that contributes to the watercourse or drainage line, that is above the point where the water is diverted from the watercourse or drainage line: or
- b. 1 litre/second, whichever is the greater.
- c. For the purposes of (a), the unit threshold flow rate of a subcatchment can be determined by dividing the 10th per centile flow rate (litres/second) for a subcatchment (square kilometres), where the 10th per centile flow rate is the flow rate (litres/second) obtained from a time weighted annual flow duration curve (with the time step being 1 day - mean flow), which is greater than or equal to 10 per cent of all flows during that period.

Dam construction and design

4. Dams should be sited and constructed to:
 - a. minimise the loss of soil from the site through soil erosion and siltation
 - b. minimise the removal or destruction of in-stream or riparian vegetation.

5. Provision shall be made for flow to pass the dam as follows:
 - a. A diversion structure shall include a device that prevents the diversion of water from the watercourse or drainage line during periods of flow at, or below, the threshold rate.
 - b. An on-stream dam, wall or structure shall include a device that regulates the diversion of any flow at, or below, the threshold rate, away from the dam and returning it back to the same watercourse or drainage line below the dam, wall or structure.
6. Collection or diversion of water flowing in a watercourse, or over land, must not adversely affect downstream water-dependent ecosystems by causing reduced stream flow duration, lengthened periods of no or low flow, or other such impacts, unless it is part of a Green Adelaide plan or project of the board (for example, a constructed wetland).

Removal of a dam

7. Removal of a dam shall not result in:
 - a. increased erosion
 - b. increased flooding
 - c. bed and bank instability
 - d. downstream sedimentation
 - e. loss of riparian vegetation
 - f. decline in water quality, or
 - g. alteration to the natural or pre-existing flow regimes of a watercourse.
8. The site of the dam should be remediated and revegetated so that there are no ongoing impacts on the downstream environment.

2.3.5 Structures in watercourses: section 104(4)(b)

The objectives and principles that follow apply specifically to an activities under section 104(5)(b), the erection, construction or placement of any building, or structure, in a watercourse, or lake, or on the floodplain of a watercourse.

Objectives

1. Minimise the potential for erosion and the restriction of surface water flows.
2. Protect the ecology of a watercourse, or lake, or the floodplain of a watercourse.

Principles

1. Construction and placement of structures, including roads, in a watercourse, a floodplain of a watercourse, a lake, a wetland, or an 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 of those areas (for example, by impeding flows)
 - c. must not adversely affect the migration of aquatic biota
 - d. must not alter the hydrology of a stream in such a way as to adversely impact on the ecology
 - e. must not result in flooding, either upstream or downstream
 - f. 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.

2. Structures that impede the flow of water, including but not limited to weirs, must be designed to enable flows at or below the threshold flow rate, excluding structures for the specific purpose of measuring stream flow for scientific purposes.

2.3.6 Draining or discharge of water into a watercourse or lake: section 104(5)(c)

The objectives and principles that follow apply specifically to an activities under section 104(5)(c) 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 (Water Quality) Policy 2015 (or any subsequent or related document) prepared under the *Environment Protection Act 1993* (SA) should be considered.

Objectives

1. Protect ecosystems dependent on the receiving water resources.
2. Sustain the existing uses of the receiving water resources.

Principles

1. Drained and discharged water must be of a suitable quality to:
 - a. sustain the existing uses of the receiving waters
 - b. protect ecosystems that are dependent on the receiving waters.
2. Draining or discharging water must be undertaken in a manner that ensures:
 - a. contaminants in drainage or discharge water are contained and managed on site to minimise the conveyance of contaminants into watercourses, lakes, or underground water resources
 - b. the quality of water drained, or discharged, into a watercourse, or lake, is of the same quality or better than that of the receiving water environment.
3. The discharge or drainage of water into a watercourse must be at a rate and in a location such that:
 - a. the geomorphology of the watercourse is protected
 - b. the flow capacity of the watercourse is considered
 - c. there is no increase in the risk of flooding downstream
 - d. the migration of aquatic biota is not adversely affected.
4. Drainage or discharge of water into a watercourse, or lake, shall be undertaken only where protective measures have been provided to minimise erosion or degradation in the quality of the receiving water.
5. Watercourses shall be retained in their natural state, to promote natural filtering and pollutant removal processes.

2.3.7 Depositing objects in a watercourse: sections 104(4)(d), 104(4)(e) and 104(4)(f)

The objectives and principles that follow apply specifically to an activities under:

- section 104(4)(d) depositing or placing an object or solid material in a watercourse, or lake
- section 104(4)(e) obstructing a watercourse, or lake, in any other manner
- section 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

1. Watercourses and lakes are protected against:
 - a. destruction of bed and banks
 - b. water pollution
 - c. erosion
 - d. habitat destruction.
2. Watercourses, or lakes, are free of obstructions that may:
 - a. impede natural stream flow, or
 - b. cause unnecessary flooding.

Principles

1. An object, or solid material, shall be deposited or placed in a watercourse, or lake, only where it includes:
 - a. the construction of an erosion control structure, for example a rock chute or rip rap
 - b. a device or structure used to extract or regulate water flowing in a watercourse, for example diversion weirs, or
 - c. an activities required for scientific purposes, for example flow measuring devices.
2. Any object or solid material used in the control or prevention of watercourse erosion shall not cause:
 - a. increased erosion upstream or downstream
 - b. detrimental impacts.
3. The depositing or placing of an object, or solid material, in a watercourse, or lake, shall not adversely affect:
 - a. Water-dependent ecosystems
 - b. the migration of aquatic biota, or
 - c. the natural flow regime.
4. Obstructing a watercourse or lake shall not cause erosion.
5. 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 impact upon the natural flow of a watercourse
 - b. increase the risk of flooding, upstream or downstream, or
 - c. cause or increase watercourse erosion.
6. 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)
 - b. minimise the impact or risk of flooding on human communities.

Note: For the purpose of these principles, an 'object' can include vegetation, such as fallen trees and other plant debris.

2.3.8 Destroying vegetation or excavating in a watercourse: sections 104(4)(g) and 104(4) (h)

These sections do not apply where the clearance of vegetation requires approval under the *Native Vegetation Act 1991*.

The objectives and principles that follow apply specifically to an activity under:

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

Objectives

1. Ensure that watercourses, lakes and floodplains are protected against adverse impacts arising from the destruction of vegetation or the excavation and removal of rock, sand and soil.

Principles

1. Vegetation shall be destroyed only where it is for the protection of existing development or infrastructure, or rehabilitation of a watercourse, and does not result in any of the following:
 - a. increased erosion
 - b. increased flooding
 - c. bed and bank instability
 - d. downstream sedimentation
 - e. decline in water quality
 - f. alteration to the natural flow regime of a watercourse
 - g. destruction of significant habitat for wildlife.
2. The excavation and removal of rock, sand or soil must not adversely impact on:
 - a. the ecology of a watercourse, lake or floodplain
 - b. migration of aquatic biota.
3. The excavation and removal of rock, sand or soil must not result in:
 - a. increased erosion
 - b. increased flooding
 - c. bed and bank instability
 - d. downstream sedimentation
 - e. loss of riparian vegetation
 - f. decline in water quality
 - g. alteration to the natural flow regime of a watercourse.

2.3.9 Use of imported water or treated effluent water: sections 104(4)(i) and 104(4)(j)

Where a WAP applies, the objectives and principles in the WAP will be used as the basis for assessment.

Where a WAP does not exist, or is not in operation, the objectives and principles that follow will apply specifically to an activity under:

- section 104(5)(i), for the application of water on land, in the course of carrying on a business, at a rate that exceeds 1 ML/hectare/year, if the water has been brought into the region by means of a pipe or other channel
- section 104(5)(j), using effluent, in the course of carrying on a business, at a rate that exceeds 1 ML/hectare/year.

Note: If the use of effluent is managed through a licence issued by the Environment Protection Authority, this section (section 104 (5)(j)) does not apply.

Objectives

1. The sustainable use of imported water or effluent so that it does not adversely impact on:
 - a. structures or ecosystems, through a rise in underground water levels
 - b. the natural flow of watercourses
 - c. the quality of surface water, underground water or water in watercourses
 - d. the productive capacity of the land, through rising underground water levels, salinity, sodicity, waterlogging or nutrient levels, or
 - e. the condition, biodiversity or extent of water-dependent ecosystems.

Principles

1. Use of imported water or effluent water should not cause a rise in the underground water level, sufficient to detrimentally affect structures or ecosystems.
2. Use of imported water or effluent should not adversely affect the natural flow of water, or the quality of surface water, underground water or water in a watercourse, or lake.
3. Use of imported water or effluent should not adversely affect the productive capacity of the land, by causing salinity, sodicity, waterlogging, perched water tables or other such impacts.
4. Use of imported water or effluent should not adversely affect water-dependent ecosystems.
5. Imported water or effluent should be stored in a closed system, with no natural catchment, and constructed to prevent:
 - a. leakage to the surrounding soils
 - b. overflow from the dam to the surface of the land surrounding the dam
 - c. overflow from the dam into a watercourse.

2.4 Glossary

Aquifer

A permeable zone of rock or sediment in which underground water is stored.

Board

In this document, 'Board' means the Green Adelaide Board unless otherwise specified.

Board-endorsed activities

An activity for which express written support or approval has been provided by the board or its representative based on having been scored accordingly using the risk assessment for WAAs.

Best practice operating procedure

Board-approved procedures developed by eligible authorities to exceed minimum standards of operations for a range of water activities undertaken that incorporates the scoring of proposed works using the board's risk assessment.

Catchment

Is the area of land determined by natural topographic features that naturally drains to a watercourse or lake.

Catchment area (of a particular point)

The land determined by natural topographic features, from which runoff has potential to naturally drain to that point.

Current recommended practice (CRP)

Guidelines which stipulate the board's 'current recommended practice' for undertaking specific water affecting activities. In some cases, a CRP will negate the need to apply for a WAA permit application.

Detrimentially affect

An activities that causes, or is likely to cause, temporary or permanent damage or harm to: water quality, aquatic life or ecosystem health.

Effluent

Domestic wastewater or industrial wastewater (as defined in the Act).

Environment Protection (Water Quality) Policy 2015

The Environment Protection (Water Quality) Policy 2015 provides the structure for regulation and management of water quality in South Australian inland surface waters, marine waters and groundwater.

First order watercourse

A watercourse that does not have a tributary flowing into it.

Floodplain

Any area of land adjacent to a watercourse, lake or estuary that is periodically inundated with water. This includes any other area designated as a floodplain by a Green Adelaide plan.

Headworks

An assembly on top of a well that is located between the well casing and the water delivery system.

Landscape management region

Landscape management region means a landscape management region established under the *Landscape South Australia Act 2019*.

Managed aquifer recharge (MAR)

Water that is artificially recharged (by draining or discharging water into a well) to an aquifer for subsequent recovery.

Minister

In this document 'Minister' means the Minister responsible for the *Landscape South Australia Act 2019*.

National Water Quality Management Strategy, Australian Guidelines for Water Recycling: Managing Health & Environmental Risk (Phase 2) 2009

These guidelines provide a generic 'framework for management of recycled water quality and use' that applies to all combinations of recycled water and end users.

Rip rap

Graded rock placed on the bed or banks of a watercourse as an erosion protection measure.

Rock chute

An engineered rock structure designed to control the bed grade of a watercourse.

Second order watercourse

Where two first order watercourses join, the subsequent watercourse becomes a second order watercourse.

Stream order

Stream order is the method for classifying the order of a watercourse. This is based on the Strahler stream ordering system, and is defined at 1:50,000 topographic map series. Stream ordering describes the most upstream part of a watercourse as a first order stream. When two first order watercourses join they become a second order stream, and when two second order watercourses join they become a third order stream and soon.

Third order watercourse

When two or more second order watercourses join they form a third order watercourse.

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 dam or structure. This rate is site-specific and can be calculated by the following method:

The flow rate of a watercourse or drainage line (litres/sec.) determined by multiplying the unit threshold rate (litres/sec./square kilometres) by the area of catchment (square kilometres) that contribute to the watercourse or drainage line, that is above the point where the water is diverted from the watercourse or drainage line; or 1 litre/second, whichever is the greater.

For the purposes of (a), the unit threshold flow rate of a subcatchment can be determined by dividing the 10th per centile flow rate (litres/second) for a subcatchment (square kilometres), where the 10th percentile flow rate is the flow rate (litres/second) obtained from a time weighted annual flow duration curve (with the time step being one day - mean flow), which is greater than or equal to 10 per cent of all flows during that period.

Watercourse

As defined in the Act watercourse means a river, creek or other natural watercourse (whether modified or not) in which water is contained or flows whether permanently or from time to time and includes—

- (a) a dam or reservoir that collects water flowing in a watercourse; and
- (b) a lake through which water flows; and
- (c) a channel (but not a channel declared by regulation to be excluded from the ambit of this definition) into which the water of a watercourse has been diverted; and
- (d) part of a watercourse; and
- (e) an estuary through which water flows; and
- (f) any other natural resource, or class of natural resource, designated as a watercourse for the purposes of this Act by a regional landscape plan, a water allocation plan or a water affecting activities control policy.

Additionally, Section 1(1)(4a) of the Act states that a reference to a watercourse is a reference to either:

- a) the bed and banks of the watercourse (as they may exist from time to time); or
- b) the water for the time being within the bed and banks of the watercourse (as they may exist from time to time); or
- c) both, depending on the context.

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.

Water quality

The physical, chemical and biological characteristics of water.

Water pollution

Any chemical, physical or biological change in the quality of a body of water that has a harmful effect on any living thing that drinks, uses or lives in, and around it.

Water resource

A watercourse or lake, surface water, underground water, stormwater (to the extent that it is not within a preceding item) and effluent, as defined in the Act.

Wetland

An area that comprises land that is permanently or periodically inundated with water (whether through a natural or artificial process) where the water may be static or flowing and may range from fresh water to saline water and where the inundation with water influences the biota or ecological processes (whether permanently or from time to time) and includes any other area designated as a wetland by a regional landscape plan, but does not include:

- a) a dam or reservoir that has been constructed by a person wholly or predominantly for the provision of water for primary production or human consumption; or
- b) an area within an estuary or within any part of the sea; or
- c) an area excluded from the ambit of this definition by the regulations.

Water pollution

Any chemical, physical or biological change in the quality of a body of water that has a harmful effect on any living thing that drinks, uses or lives in, and around it.