

Protecting vulnerable water resources

Lower Limestone Coast Water Allocation Plan | November 2013 | Factsheet 4

The groundwater resources of the Lower Limestone Coast are unique and precious, and underpin the region's people, townships, industries and environment.

The Minister for Sustainability, Environment and Conservation adopted the Lower Limestone Coast Water Allocation Plan (the WAP) to ensure the long term sustainability of the region's water resources.

Developing the WAP has involved significant research and stakeholder consultation, resulting in what is believed to be a world-first approach to sustainable water resources management in that it now includes commercial forests as a licensed water user.

Across the Lower Limestone Coast Prescribed Wells Area (PWA), water use is currently within sustainable limits. There are, however, localised 'hotspots' where the water resources are vulnerable. In these areas, steps need to be taken to ensure we look after the water resource in the best interest of current and future users.

This Fact Sheet discusses what we know about the condition of the resource and, in particular, the process set out in the WAP to protect vulnerable water resources, including reductions to water allocations.

WATER RESOURCES IN THE LOWER LIMESTONE COAST

Movement in the water table is a natural phenomenon in response to recharge from rainfall. A rise or drop in underground water levels can occur locally or over the entire region, regardless of the use of water. Groundwater extraction, the interception of recharge and the presence of drains, all have the potential to further effect the water table.

A review of the available science has concluded that water use is currently within sustainable limits across the prescribed wells area level, but several hotspots of over-extraction/ over-allocation exist.

Water resources in these hotspots have been identified as at risk from the current level of demand for water. If we don't address these risks today, our long term ability to draw on water resources may be threatened.

The WAP has been developed to enable us to meet our obligations under the *Natural Resources Management Act 2004* and the National Water Initiative, to return all over-allocated and/or over-extracted systems back to environmentally sustainable levels of extraction.

ESTABLISHING SUSTAINABLE LEVELS OF ALLOCATIONS

In the WAP, the term Target Management Level (TML)

is used to define the limit to demand for water in each management area.

The TML is the volume of water that constitutes the water losses allowable in each management area. Net losses includes water allocated for irrigation, industry, commercial plantation forests, public water supply, aquaculture, recreational use and specialised production requirements, as well as unlicensed provisions for stock and domestic requirements or farm forestry. Allocations for seasonal carryover, bridging volumes or delivery supplements are excluded from the TMLs.

The method for calculating TML varies from management area to management area, depending on the level of risk to the water resources and the dependent community, industries and ecosystems.

Where the level of risk to water resources and its users from current allocation and extraction is low, the TML is set at the current level of allocation or at the Total Available Recharge (TAR), whichever is higher.

The TAR is the annual average vertical recharge in a given management area, less a specified 10% which has been set aside for lateral throughflow and environmental water requirements. The formula for calculating the TAR is shown below:

$$\text{TAR} = [\text{Total Area} - (\text{Area of Native Vegetation} + \text{Lakes})] \times \text{Recharge Rate} \times 0.9$$

When the levels of risk are high or very high, the TML is set at TAR.

HOW DO WE KNOW IF WATER RESOURCES ARE UNDER STRESS?

The WAP uses resource condition triggers to protect the resource from degradation by indicating where the condition of the resource is changing. These triggers can be used to identify any potential localised impacts from new extraction points.

Resource condition triggers indicate where water resources are under stress by measuring the trends in the depth to the water table and groundwater salinity levels.

The trigger for depth to the water table is defined as "an average water level decline of greater than 0.1 m/year over the preceding five years".

The trigger for groundwater salinity is defined as "an average increase in salinity of groundwater of greater than 2% per year over the preceding five years".



The WAP contains a risk management process to determine the best way to respond to varying resource conditions across the Lower Limestone Coast. The risk assessment process considers a range of factors, including the resource condition triggers – to inform decisions about changes to water allocations.

The risk assessment process was developed using the Department of Environment, Water and Natural Resources' Risk Assessment Framework and is consistent with the Lower Limestone Coast Water Allocation Plan Policy Principles which state that changes in allocation should be in response to an assessment of risk.

While greater detail on the risk assessment methodology is provided on pages 59-61 of the WAP, the guiding premise was the following question:

“Is there potential that the level of demand for water from both licensed and unlicensed users and current levels of extraction and recharge interception in management areas in the Lower Limestone Coast will lead to (further) declines in water tables and resource quality which will have detrimental impacts the community, industry and ecosystems dependent on the groundwater?”

To answer this question, the risk assessment placed scores against a range of factors in each management area to understand the value of the resource. These factors include:

- the extent and level of activity of water-dependent industries and activities
- cultural value of the water resources
- presence and ecological value of groundwater dependent ecosystems.

Value scores were then multiplied by resource vulnerability scores (based on the resource condition triggers and aquifer thickness) to determine an overall consequence score.

The likelihood of a consequence occurring was determined based on the level of allocation and actual groundwater extraction. Consequence and likelihood analysis was used to determine the level of risk to water users posed in each management area by allocation and demand for water.

The risk assessment showed that in three management areas (Zone 2A, Coles and Short), the current levels of allocation and extraction present a very high risk to the groundwater resource and its users, as the level of allocation and extraction both exceed the total available recharge.

An additional five management areas (Frances, Hynam East, Myora, Zone 3A and Zone 5A) were determined to be at high risk from current demands.

In these high and very high risk management areas, the risks were determined to be ‘intolerable’, requiring a response (see Responding to stressed water resources below).

The balance of management areas were determined to be at low or moderate risk of degradation.

Tables 1 and 2 show the risk ranking of management areas for the unconfined and confined aquifers, identified by this assessment process.

RESPONDING TO STRESSED WATER RESOURCES

A change in the way water is managed is needed in areas where there is a high or very high risk that current levels of extraction will detrimentally impact the community, industries and ecosystems dependent on the groundwater.

The WAP responds to these over-allocated management areas through reductions to allocations. The extent of the required reductions in the high and very high risk management areas is outlined in Table 3 of this Fact Sheet.

The WAP sets a pathway towards reducing net losses (through reductions in allocations) within 8 years.

Reductions to allocations will occur in a staged manner with all components of allocations (tradeable component, delivery supplement, specialised production requirements) being reduced proportionately. A risk assessment will be run in year 5 of the WAP, to determine the condition of the water resource, and whether reductions should continue or can be discontinued.

In the Myora and Zone 2A management areas, as the total reduction required is less than 10%, it shall occur in one step on 1 July 2016.

In management areas where the required reduction is between 10% and 34% (Frances, Zone 3A and Zone 5A), reductions will be implemented in 4 equal steps at 1



July 2016, 2018, 2020 and 2022, with the last two steps to occur subject to the outcomes of a risk assessment in 2019.

In management areas where the required reduction is 34% or greater (Hynam East, Coles and Short), reductions will be 8.5% in 2016 and 2018, followed by half the remaining reduction in each of 2020 and 2022, with the last two steps to occur subject to the outcomes of a risk assessment in 2019.

Commercial forests are subject to the same level of reductions. However, in management areas requiring reductions, existing commercial forests will not receive their maximum allocation but will still be allocated enough water to offset their impact while still in the ground. Any additional reductions required from forestry will occur when the forest is harvested.

The WAP exempts allocations for industry, recreation, intensive farming and public water supply purposes from any reductions, as they represent less than 2% of the water allocated, but their reduction can have a significant community impact.

Licensees that have undergone reductions will be eligible to apply for a water taking allocation or an allocation for a forest in other management areas, subject to conditions.

WHAT HAPPENS IF THE RESOURCE CONDITION IMPROVES?

The WAP contains principles for the adaptive management of allocations. This means that there are in-built mechanisms to change our management practices if the condition of the resource changes.

The WAP repeats the risk assessment in the fifth year of the WAP to investigate changes to resource conditions in response to climate conditions and reductions in allocations.

A key aspect of this assessment is to consider the capacity to return water in management areas where the resource condition and level of risk may have improved. However, licensees that applied for and received allocation in another management area (as described in the previous section) would not be eligible to have water returned.

WHAT ABOUT MANAGEMENT AREAS NOT REQUIRING REDUCTIONS AT THIS TIME?

If the risk assessment run in 2019 identifies additional management areas at high risk, allocations in these management areas may be reduced.

WHAT IF I NEED MORE INFORMATION ON THE WATER ALLOCATION PLAN?

If you have questions about the WAP and how it will operate, you will find further information on our website: www.senrm.sa.gov.au

If you are a licensee, you will also shortly receive further information including application forms from our licensing staff.

Assistance is also available from Natural Resources South East. Contact **08 8735 1177**.

WHAT'S CHANGED AS A RESULT OF COMMUNITY CONSULTATION?

The limit to allocation in Zone 2A has been raised and reductions are now 3%. No reductions will be required in the Stewarts management area. In management areas requiring reductions of 34% or greater, the first two steps of reduction have been made smaller, to provide a greater opportunity to retain water if reductions are discontinued in Year 5 of the Plan.

FURTHER READING

Guide to the WAP

- Factsheet 1 - Sustaining our region through water allocation planning
- Factsheet 2 - Changes to how water is allocated
- Factsheet 3 - Forest water use
- Factsheet 4 - Protecting vulnerable water resources
- Factsheet 5 - Water trade and transfer
- Factsheet 6 - Protecting groundwater dependent ecosystems
- Factsheet 7 - Managing the confined aquifer
- Factsheet 8 - Managing water in the Border Zone
- Factsheet 9 - Farm forestry



Table 1: Risk ranking of unconfined aquifer management areas

Unconfined Management Area	Risk Ranking	Unconfined Management Area	Risk Ranking	Unconfined Management Area	Risk Ranking
BANGHAM	Yellow	JOYCE	Green	ROSS	Green
BEEAMMA	Yellow	KENNION	Yellow	SHORT	Red
BENARA	Yellow	KILLANOOLA	Yellow	SMITH	Green
BLANCHE CENTRAL	Green	KONGORONG	Yellow	SPENCE	Green
BOOL	Green	LACEPEDE	Green	STEWARTS	Yellow
BOWAKA	Green	LAKE GEORGE	Green	STRUAN	Yellow
BRAY	Green	LANDSEER	Yellow	SYMON	Green
COLES	Red	LOCHABER	Green	TOWNSEND	Green
COMAUM	Yellow	MACDONNELL	Yellow	WATERHOUSE	Yellow
COMPTON	Green	MARCOLLAT	Yellow	WESTERN FLAT	Yellow
CONMURRA	Green	MAYURRA	Green	WOOLUMBOOL	Green
DONOVANS	Yellow	MINECROW	Green	YOUNG	Yellow
DUFFIELD	Green	MONBULLA	Yellow	ZONE 2A	Red
FOX	Yellow	MOORAK	Green	ZONE 3A	Orange
FRANCES	Orange	Mount BENSON	Yellow	ZONE 5A	Orange
GLENBURNIE	Yellow	Mount MUIRHEAD	Yellow		Yellow
GLENROY	Yellow	MOYHALL	Green		Yellow
GREY	Yellow	MURRABINNA	Green		Yellow
HACKS	Green	MYORA	Orange		Yellow
HINDMARSH	Yellow	ORMEROD	Green		Yellow
HYNAM EAST	Orange	PEACOCK	Green		Yellow
HYNAM WEST	Yellow	RIDDOCH	Yellow		Yellow
JOANNA	Yellow	RIVOLI BAY	Green		Yellow

Table 2: Risk ranking of confined aquifer management areas

Management area	Risk ranking	Management area	Risk ranking
FAIRVIEW	Green	ZONE 1A	Green
KALANGADOO	Yellow	ZONE 2A	Yellow
KINGSTON	Yellow	ZONE 3A	Yellow
LUCINDALE	Green	ZONE 4A	Green
MILLICENT	Green	ZONE 5A	Yellow
TARATAP	Green	ZONE 6A	Yellow
WIRREGA	Green		

KEY

Colour	Risk ranking	Tolerability
Red	Very High	Intolerable
Orange	High	Intolerable
Yellow	Moderate	Tolerable subject to being the focus of further investigation where possible
Green	Low	Broadly acceptable



Table 3: Reductions required to bring allocation to within TML in high and very high risk management areas

Management area level	Target management level (ML/year)	Estimated total losses (total allocations + farm forestry + stock and domestic requirements - delivery supplements*) (ML/y)	Estimated allocations exempt from reductions*	Estimated reduction to allocations (excluding industry, recreation or public water supply) required to bring total allocations within TML (%)**
Coles	25,228	50,264	713	51
Short	30,597	53,444	1376	44
Frances	4,393	6,234	697	33
Hynam East	3,576	7,568	606	57
Myora	20,655	21,378	551	3
Zone 2A	66,015	67,767	3,073	3
Zone 3A	54,158	62,823	3,985	15
Zone 5A	18,780	27,113	2,491	34

*estimated using the volumetric conversion principles set out in the WAP.

**calculated based on estimated volumes of allocation determined using the volumetric conversion principles set out in the WAP.

