

Lower Limestone Coast Water Allocation Plan

Outcomes from the 2022/23 review

Contents

Executive summary.....	3
Background.....	4
Stakeholder and community consultation underpins the review.....	4
Limestone Coast Landscape Board internal review.....	5
Outcomes and evidence from review.....	6
New data, knowledge and science to support improvement.....	6
Key new data available.....	6
Knowledge gaps still exist.....	8
A need to reconsider sustainable allocation.....	8
Findings from the review process.....	8
Activation of unused water.....	11
A need to improve environmental provisions within the Plan.....	11
Findings from the review process.....	12
Inconsistency of the Plan to relevant legislation and policy.....	13
Licensing components to be simplified.....	13
Findings from the review process.....	13
Reduction in administrative complexity.....	15
Findings from the review process.....	16
Development of the water market.....	17
Findings from the review process.....	17
Achievements of the 2013 Lower Limestone Coast Water Allocation Plan.....	18
Other matters may arise in amendment.....	18
Water matters for consideration outside of the review.....	19

Executive summary

The 2013 Lower Limestone Coast Water Allocation Plan (the Plan) introduced important changes that transformed water policy in the Lower Limestone Coast. As the first Plan for the Lower Limestone Coast Prescribed Wells Area it converted area-based water licences to volume and enabled the impacts of commercial plantation forestry to be managed through forest water licences.

It introduced pathways to bring over-allocated management areas back to sustainable allocation and introduced the first protections for groundwater dependent ecosystems.

These policy advances provide the foundation to now build the next iteration of water policy in the Lower Limestone Coast. While review recommends that substantial amendment is now required it is only with this foundation that water policy reform is possible.

Our climate is changing and this will impact our water resources. For the Plan to be appropriate in this uncertain climate future substantial amendment is needed. Underpinning this amendment will be considerable new knowledge, data and science, vastly improved on what was available for the Plan in 2013. This knowledge can support improvement in the Plan.

Review has determined that sustainable allocation must be reconsidered, particularly in the context of a changing climate. Current allocation levels will not be sustainable moving forward and the Plan lacks adaptability to manage and respond to this risk. Reconsidering sustainable allocation will also improve environmental provisions in the Plan though further provisions will be required to protect and maintain ecosystems and biodiversity.

Legislation and policy changes that have occurred since the adoption of the Plan provide new opportunities and challenges. Unbundling or partially unbundling licences may be possible to introduce adaptive frameworks and flexibility into the Plan. This will improve management of the resource under a variable climate. But these changes will also create new frameworks for water licence holders to understand and could initially create uncertainty.

Amendment can also reduce the complexity of the Plan and create administrative ease that isn't currently possible. This can create greater confidence and business certainty in the Plan with fewer barriers to understanding how it works. These amendments may also create the environment necessary to stimulate a more active water market that can create greater transfer opportunities.

The outcome of the review is to substantially amend the Plan, commencing in 2024. Amendment will focus on the key areas of new knowledge, sustainable allocation, environmental provisions, legislative and policy alignment, licencing complexity, administrative ease and the water market.

Background

The Limestone Coast Landscape Board (LC Landscape Board) develops and maintains water allocation plans as outlined in the *Landscape South Australia Act 2019*. The plans are developed with environmental, social, cultural and economic needs in mind and seek to ensure long term sustainability and security of the resource.

A water allocation plan for the Lower Limestone Coast Prescribed Wells Area was adopted in November 2013. Under the *Landscape South Australia Act 2019* a water allocation plan must be reviewed on a comprehensive basis at least once in every 10 years. The purpose of the review is to evaluate:

- The principles in the plan
- The success of the plan considering the outcomes it sought to achieve
- Provide an assessment of whether the water allocation plan remains appropriate or requires amendment
- Assess or address any other matters prescribed by the regulations.

The review of the Lower Limestone Coast Water Allocation Plan (the Plan) was announced in July 2022 and completed in October 2023.

Stakeholder and community consultation underpins the review

The LC Landscape Board formed a Stakeholder Advisory Group to support the review process. The Stakeholder Advisory Group met nearly monthly for the duration of the review, supporting comprehensive discussions of the principles in the Plan and what remained appropriate or needed amendment. The Stakeholder Advisory Group made numerous recommendations to the LC Landscape Board Governing Body of which the majority were endorsed. This included an overarching recommendation that the Lower Limestone Coast Water Allocation Plan is amended. Recommendations from the Stakeholder Advisory Group that were endorsed by the LC Landscape Board Governing Body will be addressed in amendment.

In addition to the Stakeholder Advisory Group the LC Landscape Board held information and feedback sessions to broaden the reach of the review. These sessions provided reasonable opportunity for stakeholders and community to contribute to the process.

It was recognised that the prescribed wells areas is large and that there would be stakeholders that didn't feel represented by the Stakeholder Advisory Group. These stakeholders also had valuable contributions for the review that needed to be considered.

In total of 18 sessions were held for various industries and community groups:

- Energy and mining
- Forestry
- Dairy

- Conservation and environment
- Cropping and livestock (2 sessions)
- Manufacturing and processing
- Horticulture
- Aquaculture
- Intensive farming
- Zone 6A (Frances and Bangham) management area
- Mid-South East Irrigators
- Community (3 sessions)
- Viticulture
- Primary Producers SA
- Zone 5A management area

Attendees were presented with information on the following and provided an opportunity to contribute their perspectives:

- Overview of the process
- Rainfall, climate and latest resource condition trends
- Observation well data
- Border Zone – The Border Groundwaters Agreement
- Management area statuses and specific management area details
- Groundwater modelling
- Information on principles specific to their industry or area of interest
- Information on issues specific to their industry or area of interest

Limestone Coast Landscape Board internal review

Limestone Coast Landscape Board staff also undertook an evaluation of the Plan. This evaluation was independent of stakeholders and was to bring another perspective to the review. This included bringing their understanding of the administration and implementation of the Plan by the Department for Environment and Water.

Once the sessions, the review by the Stakeholder Advisory Group and LC Landscape Board staff were completed the LC Landscape Board Governing Body undertook a review considering all evidence collected to determine the outcomes presented below.

Outcomes and evidence from review

The review recommends that a substantial amendment of the Plan is required for it to be appropriate into the future. This outcome is strongly supported by evidence collected through the review process. This includes evidence from stakeholders, community and the internal review by the LC Landscape Board.

The outcomes have been divided into eight critical areas to assist stakeholders in understanding how the evidence supports the outcome of amendment.

New data, knowledge and science to support improvement

We are in the enviable position that significantly more data, knowledge and science exists since the Plan was adopted that can support amendment and an improved Plan. The availability of new knowledge to support amendment is a positive outcome of the review and should be recognised. The LC Landscape Board is strongly committed to the Plan being underpinned by the best available science and strongly believes amendment is required to achieve this. This has also been a consistent message from stakeholders and the inclusion of new knowledge will create stakeholder and community confidence in the Plan. It will be critical that all science used to underpin the Plan meets equivalent criteria in terms of peer review and rigor. Inclusion of new data and science will ensure the amended Plan has the right and sufficient science to make the decisions needed in the management of the resource.

The review recommends amending the Plan to include the best available science.

Key new data available

New knowledge includes but is not limited to:

- Resource condition and trends
 - Trend and condition data now spans more than 30 years with the Department for Environment and Water releasing the latest 5 year trend data (2017 – 2021) in 2023. Observation well data is updated annually following autumn and spring monitoring.
- Reliable extraction and allocation data
 - Extraction from bores has now been metered for 10 years with water licence holders reporting their water use annually.
- Updated climate modelling
 - We have access to the dynamically downscaled projections for South Australia from the NARClIM 1.5 regional climate modelling project to apply to groundwater models. The extensive coverage of the NARClIM 1.5 modelling

of South Australia enables state wide mapping of projected changes in average temperature, rainfall and extreme heat. In addition, a range of other updates have been made where new information has become available since 2020. NARCLIM 2.0 is expected to be released in 2023 and it will also be considered for use with groundwater models.

- LiDAR to improve digital elevation model
 - In 2021 LiDAR was captured around the Naracoorte area
 - In 2018 LiDAR was captured along the south east coastline
 - 2007/2008 LiDAR for all of the Limestone Coast and western portion of Victoria is also available.
- Groundwater models
 - Three sub-regional models are nearing completion to support amendment:
 - South coast sub-regional model
 - Wattle Range (Mid-South East) sub-regional model
 - Province 2 sub-regional model
 - In addition a regional groundwater model has been developed since the current plan was adopted and is being updated for the:
 - Lower Limestone Coast unconfined aquifer, and the
 - Lower Limestone Coast confined aquifer.
- More information on groundwater dependent ecosystems, particularly wetlands, including:
 - Reinstatement of the wetland groundwater dependent ecosystem monitoring network¹
 - Long term mapping of wetland inundation using Water Observations from Space (WOfS)²
 - Development of the Wetlands Insight Tool by Geoscience Australia to characterise wetland vegetation cover and surface water
 - South Australian Wetland Inventory Database (SAWID) updates
 - Changes in level of groundwater dependency of wetland groundwater dependent ecosystems³
 - Improved understanding of water requirements for wetlands.
- New knowledge around the deemed rate for accounting for forest water use:

¹ Harding, C. (2018). *Review of the wetland dependent ecosystem (GDE) monitoring network*. DEW Internal Technical Note 2018, Government of South Australia, Department for Environment and Water, Adelaide.

² Harding, C., Herpich, D. and Cranswick, R.H. (2018) *Examining temporal and spatial changes in surface water hydrology of groundwater dependent ecosystems using WOfS (Water Observations from Space): southern Border Groundwaters Agreement area, South East South Australia*. DEW Technical Rote 2018/08, Government of South Australia, Department for Environment and Water, Adelaide.

³ Cranswick, R. H. and Herpich, D. (2018) *Groundwater-surface water exchange in the South East: 30 years of change*. DEW Technical Rote 2018/09, Government of South Australia, Department for Environment and Water, Adelaide.

- The Green Triangle Forest Industries Hub, funded by the Federal Government, has been undertaking research (independent of the Department for Environment and Water and LC Landscape Board) to improve the data that underpins the deemed rate. The research builds on work that was used to develop and underpin the current deemed rate⁴. The Department for Environment and Water and the LC Landscape Board is in an ongoing conversation with the Green Triangle Forest Industries Hub on the requirements the research will need to meet to be considered for inclusion. It should be noted the industry led research can create uncertainty and reduce confidence amongst other industries and this will need to be carefully managed.

Knowledge gaps still exist

There will always be knowledge gaps in the development or amendment of a water allocation plan. Groundwater knowledge and science is constantly improving and evolving and we never know everything. In the process of amendment what we don't know will be acknowledged and there will be transparency around how those knowledge gaps are dealt with or approached in the Plan.

A need to reconsider sustainable allocation

The most important outcome of the review process is the need to re-evaluate sustainable allocation of the resource and amend the Plan accordingly.

The review recommends that it is essential to understand the sustainable limits of the resource with far greater accuracy and underpinned by the best available science. Currently defined sustainable limits cannot manage the resource for continued social, economic and environmental benefit of current and future generations, particularly in a changing climate. Amendment is required to achieve this.

Findings from the review process

Resource condition trends:

Despite the improvements in water policy introduced by the Plan some groundwater declines that the Plan identified in the lead up to adoption have continued. Changes in groundwater levels over the 30 years to 2017 range from a decline of 6.62 m in some areas to a rise 0.93 m in others. The median decline is 0.72 m. The five-year trend in winter-recovered water levels (2017 to 2021) in the Coastal Flats area of the Lower Limestone Coast Prescribed Wells Area has 82% of observation wells showing a declining trend in groundwater levels with a mean decline of 0.12 m/year. In the same area in 2021 the winter

⁴ Benyon, R. and Doody, T. (2009) Quantifying groundwater recharge under plantations in South East South Australia. CSIRO: Water for a Healthy Country National Research Flagship.

recovered water levels in 49% of 217 monitoring wells were classified as 'below average' or lower. A small number of wells (6%) showed their lowest winter-recovered water level on record; these were generally located south of Mount Gambier near areas of intensive irrigation and forestry plantations or near drainage networks.

Some rising trends were recorded with 6% of observation wells showing a rising trend in groundwater levels. Some of these are in the management areas of Coles and Short and the rising trend is attributed to changes in land use as a result of a reductions to allocation applied to forestry. While rising trends are reported in these areas groundwater levels have not recovered to previous levels.

Water use across the Prescribed Wells Area is approximately 50% of allocation in the confined and unconfined aquifers. If water use increases in combination with a changing climate declines would increase.

Declining groundwater levels are an indication of decreased recharge into the system, increased extraction or both. This is strong evidence that the currently defined sustainable limits cannot manage the resource for continued social, economic and environmental benefit of current and future generations.

Recharge is the current basis of allocation:

The Plan sought to manage groundwater sustainably by setting a target management level for each management area of the confined and unconfined aquifers. The target management level is based on a proportion of recharge in the management area. The target management level for each management area is defined as the level of system loss due to water extraction and recharge interception (for both licensed and unlicensed uses) that is sustainable in the management area. The Plan therefore considers the target management level as the sustainable limit per management area.

Proportion of recharge allocated in the unconfined aquifer:

In the unconfined aquifer the method for determining the proportion of recharge varied between management areas. It was based on the level of risk to the water resources and the dependent community, industries and ecosystems.

For low and moderate risk management areas the sustainable limit was set as 90% of the mean annual vertical recharge or at 2013 allocations, whichever was higher.

For high and very high risk management areas the sustainable limit was set at 90% of the mean annual vertical recharge and where 2013 allocations exceeded sustainable limit a schedule of reductions was introduced to bring allocations back to sustainable limits.

Challenges with the proportion of recharge allocated:

The allocation of a proportion of recharge is an equitable and logical approach, particularly given that at the time of developing the Plan a regional groundwater model was not available to represent volumetrically converted allocations and test use scenarios. However,

the proportion of recharge allocated for use and the subsequent determination of the sustainable limits was not a precautionary approach and lacked consistency with the objectives of the Plan.

The allocation of 90% of mean annual vertical recharge is a very high proportion relying on an accurate estimate of recharge⁵ and allowing no room for error. The recharge values for the Plan were determined from a variety of available sources, some dated to 1978 and 1995. Allocation of 90% of mean annual vertical recharge failed to consider that recharge was known to have declined since those values were determined and would not be representative of recharge in a drier climate. Although the Plan acknowledged climate change it made no allowances for potential changes in rainfall and consequent impacts on recharge.

In low and moderate risk management areas the Plan allowed for greater than 90% of recharge to be allocated where allocations exceeded the sustainable limit. Allowing for over-allocation in any management area is contradictory to managing risk to the resource and managing the resource for continued social, economic and environmental benefit of current and future generations.

In addition, as the unconfined aquifer target management levels did not include carryovers, seasonal transfers, bridging volumes and delivery supplements, not all losses from the system were accounted for. This allowed for more than 100% of average annual recharge to be removed from the resource at times, a risk that was not considered or managed by the Plan.

The treatment of each management area as an independent unit does not consider broader scale hydrogeological characteristics such as hydraulic gradient that are important to maintaining the condition of the regional aquifer.

As noted by Simmons et al (2019)⁶ the figure of 90% of recharge is an arbitrary figure that was not justified by the science underpinning the Plan. It is at the high end of allocations as a fraction of recharge whereas lower allocation fractions are usual where there are high value groundwater dependent ecosystems.

It is also contrary to how the Act defines 'environmental water requirements': "those water requirements that must be met in order to sustain the ecological values of ecosystems that

⁵ Simmons, C., Cook, P., Boulton, A. and Zhang, L. (2019) *Independent review of science underpinning reductions to licensed allocation volumes in the Lower Limestone Coast water allocation plan*. Goyder Institute for Water Research. Technical Report Series No. 19/01.

⁶ Simmons, C., Cook, P., Boulton, A. and Zhang, L. (2019) *Independent review of science underpinning reductions to licensed allocation volumes in the Lower Limestone Coast water allocation plan*. Goyder Institute for Water Research. Technical Report Series No. 19/01.

depend on the water resource, including their processes and biodiversity, at a low level of risk”.

Areas with shallow groundwater dependent wetlands are very vulnerable to small declines in groundwater levels and are at particularly high risk from the approach of an allocation of a maximum of 10% of annual average vertical recharge for the environment.

The condition of many groundwater dependent wetlands has declined⁷ during the life of the Plan, with the availability of underground water to those ecosystems not being maintained or improved, as per Objective 6.1 d) of the Plan.

Proportion of recharge allocated in the confined aquifer:

In the confined aquifer the target management levels and levels of allocation are generally very low, in accordance with the objective to cautiously manage the aquifer, with the exception of the Kingston management area.

In the confined aquifer the target management level for each management area was set at the same level as the previous plan’s permissible annual volume, except for Kingston where the 2013 level of allocation (40,089 ML) exceeded the permissible annual volume (25,000 ML). Allocation was set to the 2013 allocation of 40,089 ML.

Managing the resource in Kingston has relied on self-management by licensees and principles in the Plan to reduce allocations should use exceed 25,000 ML. Although allowing self-management is an inclusive approach allowing licensees to take responsibility for their resource, the resource remains susceptible to the activation of unused water.

Activation of unused water

It is acknowledged that there are many barriers to or reasons why unused allocation has not been or may not be activated. These include costs of infrastructure to extract water, costs of extracting water, market drivers, industry make up and lack of need for water. These and other barriers can and will likely change over the coming years. The Plan currently has insufficient mechanisms to manage the risk activation of unused water poses to managing the resource for continued social, economic and environmental benefit for current and future generations.

A need to improve environmental provisions within the Plan

Ecosystems and biodiversity in the Lower Limestone Coast, including threatened species and ecological communities, are dependent on groundwater. Maintenance and, in some cases, improvement of groundwater levels is required for their ongoing presence in the region. The water allocation plan plays a critical role in protecting ecosystems and biodiversity from the

⁷ Harding, C., Herpich, D. and Cranswick, R.H. (2018) *Examining temporal and spatial changes in surface water hydrology of groundwater dependent ecosystems using WOfS (Water Observations from Space): southern Border Groundwaters Agreement area, South East South Australia*. DEW Technical Rote 2018/08, Government of South Australia, Department for Environment and Water, Adelaide.

impacts of groundwater extraction and recharge interception. The Plan introduced a range of environmental provisions and protections but review of the Plan clearly demonstrates these are inadequate or inappropriate and more is needed. Ongoing groundwater level declines are negatively impacting groundwater dependent ecosystems, particularly shallow systems and associated biodiversity across the Lower Limestone Coast.

The review recommends that improved environmental provisions are required to prevent further loss of ecosystems and biodiversity.

Findings from the review process

Inadequacy of the environmental provisions:

At the broadest scale setting a sustainable limit for each management area, nominally 10% of average annual vertical recharge for the environment, was the most important environmental provision within the Plan. The problems with the sustainable limits are discussed in '*A need to reconsider sustainable allocation*'.

The protections in the Plan are focussed on priority, high and very high conservation value groundwater dependent wetlands. There are no specific protections provided to other dependent ecosystems with only the assumption that managing groundwater level would effectively provide for them.

The setback principles only apply to new risks posed by irrigation or commercial forestry (e.g. new wells or new commercial forestry plantations). Existing impacts of irrigation and commercial forestry are exempt, as is stock and domestic bores and farm forestry. If existing extraction and/or forestry was directly impacting a groundwater dependent wetland, for which there is evidence that this is occurring, there is no mechanism in the Plan to manage this. There is also a potential for forestry "creep" into the wetland as the wetland is constricted. Minimum setback distances have not been sufficient to prevent adverse impacts on wetlands.

The thresholds set by the Plan lack ecological relevance for some groundwater dependent ecosystems and actually allow ongoing declines that negatively impact ecosystems and biodiversity. The Plan was insufficient in its recognition of the negative impact of groundwater declines on the condition of groundwater dependent ecosystems and as a result it could not do what it intended.

Scheduled reductions for over-allocated management areas were not fully applied. As these management areas remained over-allocated for the life of the Plan the intended benefit of reductions has been limited.

Where reductions have occurred their environmental benefit has been limited by distance from the dependent ecosystem and when the reduction is taken (e.g. forestry reductions are taken on clearfell which, due to the length of rotations, may not occur during the life of the

Plan). For community and stakeholder confidence provisions that impact industry to provide for dependent ecosystems should result in benefit to the environment.

Inconsistency of the Plan to relevant legislation and policy

Over a 10 year period it is expected that legislative and policy change will occur. This change can result in a water allocation plan becoming inconsistent with current relevant legislation. Inconsistency may be minor but in the case of the 2013 Lower Limestone Coast Water Allocation Plan (the Plan) there is substantial inconsistency that needs to be addressed in amendment. Water allocation plans should, as far as practicable, be consistent with such other plans, policies, strategies or guidelines, as are prescribed by the regulations⁸.

Of significance is the inconsistency of the Plan with the *Landscape South Australia Act 2019* (the Act) and supporting regulations. The review recommends amending the Plan to align to relevant legislation where appropriate.

Licensing components to be simplified

The Plan provides a licensing system underpinned by a complex range of components. The number of components is significant, comparative to other plans, and how they are treated and interact is complex. The system is overly complicated and contributes to confusion and a lack of transparency around how the Plan works and what is possible for a licence holder. For many licensees, administrators and other stakeholders the array of components and associated rules around their use, transfer and reporting in the Plan is too confusing to easily understand and apply.

The review process recommends that the licensing components be simplified under amendment.

Findings from the review process

Licensing components under the Plan:

The Plan contains two Licence types: A water (taking) licence and a forestry water licence. A water (taking) licence also has an associated purpose of use. A water (taking) licence provides the licensee with a tradeable allocation of water. Under volumetric conversion, some licensees were also granted a delivery supplement (DS) and/or a specialised production requirement (SPR) to be used in association with their tradeable allocation. The Plan provides for three different types of delivery supplement and six different types of specialised production requirement. These cannot be transferred separately and rules apply when transferred in association with their linked tradeable component.

⁸ *Landscape South Australia Act 2019* section 53 (20)

All water (taking) tradeable, delivery supplement and specialised production requirement allocations, except specialised production requirement for frost protection of grapevines, are entitled to carry-over up to 25% of their unused allocation each year.

Complexities of licensing components:

There is a particular lack of understanding of how delivery supplement and specialised production requirement allocations are to be used and the limitations on transfers. The Plan also includes different rules for the multiplicity of components and purposes of use. This has resulted in a cautious approach where licensees opt not to change their business in case they may lose some of their allocation.

Although there are multiple types of delivery supplement and specialised production requirement allocations only the specialised production requirement for frost protection is administered and reported separately. Other usage volumes are not reported separately to the tradeable component usage volumes. This limits the capacity to undertake compliance activities and to assess the use of these components as part of the Plan's review. It also questions the need to retain separate components.

An allocation's purpose of use and type of component are essentially immaterial to the impact the extraction of that allocation has on the aquifer. For example, a volume of water that is extracted for the purpose of aquaculture will have the same impact on the aquifer as if that water was extracted for the purpose of irrigation or as a specialised production requirement for frost. This is not reflected in the valuing of these components by licensees or the value of the allocation as set for the water levy. If water is not valued appropriately it will remain challenging to develop a water market.

Forest water licences:

The Plan and the Act both require that commercial forests hold a forest water licence with sufficient allocation attached to it to "provide for a quantity of water that is at least equal to the water required to fully offset the impact of the forest..."⁹. The allocations required by forestry have been determined according to deemed rates. The deemed rate is calculated as the total of two amounts – one for the interception of recharge and one for the direct extraction of groundwater. These have been determined for each management area and each species, and are an average over the life of a rotation based on a standardised rotation length, number of thinnings, fallow periods, weed control and quality of timber. The specified deemed rate may be changed if forest practices differ (e.g. for a shorter rotation time).

Although an effective accounting measure to offset the impact of forestry on the resource there is a lack of understanding of the deemed rates and how they operate both within the industry and more generally.

⁹ *Landscape South Australia Act 2019* section 167 (2)

If forest practices have changed substantially then the standard deemed rate should reflect those changes and variations to the standard deemed rate be used for exceptions to standard practices.

It is currently assumed that plantations do not extract groundwater where the depth to water is greater than 6m. This is based on a lack of data on groundwater extraction where depth to water is between 6 and ~9 m. Consideration should be given as to whether there is new knowledge available to review this assumption.

As plantations extract groundwater and intercept recharge, groundwater levels under plantations can drop with depth to water becoming greater than 6m. Under the current principles the deemed rate for these plantations would no longer include a portion for groundwater extraction but this has not been changed over the life of the Plan.

Farm forestry:

The definition of farm forestry does not set a maximum allowable area of farm forestry on a property. This allows large areas of plantations to be exempt from holding a forest water licence where it is a large mixed farming property and the plantation area does not exceed 10% of the Certificate of Title or Crown Lease area. This may be in contradiction to the intent of principles.

The allowance made for farm forestry impacts on the groundwater resource, (11,454 ML/year) should be reviewed and updated and consideration given to whether exemptions to requiring a forest water licence continue to apply.

Licensing components provided transparency at adoption:

The reason for the number of components was to create transparency in the volumetric conversion process and give licence holders confidence in that process. It sought to honour, in a transparent way, what a licence holder had before the Plan so they could understand what they would have under the Plan when it was adopted in 2013.

This appears to have been successful for the conversion process but the transparency it provided on adoption has been eroded through time. Many licence holders today are seemingly unaware of or have a low understanding of the rationale behind the components or how they work.

Reduction in administrative complexity

Simplification of the Plan is needed. The overall success of a water allocation plan is dependent on the ability to implement and administer it. The complexity of the Plan has presented a number of challenges to administration. There are clear benefits to simplification, for the Department through to the end user.

Review recommends that amendment reduce administrative complexity of the Plan. Administration resourcing needs will need to be considered in light of any amendment.

Findings from the review process

Review identified a range of specific areas where complexity was creating challenges for water licence holders and administration by the Department.

General administration:

Administration and implementation should be underpinned and guided by a clear set of objectives. The Plan would benefit greatly from a single set of objectives with clear and transparent intent.

The application of the Plan can be reliant on interpretation and assumptions where it is silent on an area of policy, the intent of the Plan is not clear or principles are complex.

The current Departmental database does not support the administration of forest water licences. Their allocations and usage are not recorded and managed within the database. Capacity and knowledge of the operation and management of forest water licences within the Department is also limited as administration of these licences is unique.

Reporting period:

The reporting periods for water (taking) licences and forest water licences differ. Water (taking) licences are managed on a financial year and forest water licences on a calendar year. This creates challenges in data collection and accurate analysis.

Specialised production requirement frost:

Allocations for the specialised production requirement for frost protection are not represented accurately on a water (taking) licence. The total allowable volume of a three-year period is recorded rather than available volume. These allocations are then managed on a three year rolling average basis, which is not well understood by some water licence holders. These are not able to be managed in the Departmental database and are calculated outside of the database. Water licence holders are not provided with data as to where they are in their usage across the three years.

Water licence holders with the specialised production requirement for frost provided feedback that reporting accurately on water usage, particularly where there is no separate meter, was difficult. The time period applied to frost is not always relevant and may include irrigation use, negatively impacting how much frost protection volume is available in the following years.

Transfers:

Transfers involving delivery supplement and specialised production requirement allocations are difficult to administer as different rates apply to different management areas. Hence the volume of the allocation differs for the transferee and the transferor. These calculations are managed outside the Departmental database.

Temporary transfers of a tradeable component linked to a delivery supplement, where it is not a like-for-like transfer (e.g. flood to flood), require the delivery supplement component to be forfeited to the Minister and then granted back to the transferor on return. This process is manually administered by Departmental staff.

In management areas subject to reductions the Plan allows for licensees to be able to transfer up to 75% of their reduction. These transfers are not recorded in the Departmental database and require a review of licence allocations each time there is a transfer under that principle. The administrative burden and associated fees does not encourage transfers, surrendering of allocations or leasing of water.

Development of the water market

The Plan has not established an active water market. There is a lack of competitive pressure, and the demand to trade is not substantial, in part due to excess (unused water) water. The water is valued but value is not creating a market, particularly for temporary trades.

The review recommends that the barriers to the development of an active water market be further explored through amendment of the Plan. The benefits and drawbacks to an active water market must be understood. The impacts or contribution of other amendments on development of an active water market will be considered. Water costs can drive efficiency and are required to meet the resourcing requirements of implementation, this will be taken into consideration in amendment.

Findings from the review process

The Plan incorporates principles to allow for temporary and permanent transfers of water (taking) and forest water licences and is, to some degree, reliant on an active water market to manage risk to the resource. The water market in the region is not well developed with limited transfers occurring.

Anecdotally there are a number of factors contributing to this:

- The process for seeking, buying and selling water is not well understood. This is resulting in those who have water tending to hold onto water. They are also more likely to acquire more water in comparison to those who don't have water and are trying to enter the market.
- There is confusion about what components of a licence can be transferred, the conditions of transfers, whether it is possible to transfer within a management area, between management areas and in the Designated Area.
- There is confusion over why a transfer is unsuccessful which contributes to water licence holders not seeking to undertake future transfers.
- There is a lack of understanding of principles for rotational crops and allowances for seasonal transfers.
- The cost of one or more hydrogeological assessments required for a transfer is seen as a prohibitive factor.

- There is a lack of demand as many licensees hold significantly more allocation than they use.
- Access to carry-over of up to 25% of unused allocation from the previous year can meet a licence holder's demand for water negating the need for transfers.
- Unused allocation is being retained rather than transferred as a buffer against potential reductions to allocations.
- Retaining unused allocation rather than transferring retains an increasing value asset.
- Prohibitive infrastructure and operating costs limit demand and activation of unused allocations.
- Over-allocated management areas limit transfers. For example if where an industry wants to grow based on land use capabilities or other factors is already over allocated no transfers are possible.

Achievements of the 2013 Lower Limestone Coast Water Allocation Plan

The Plan included some substantial changes to the way water is managed in the region when it was adopted in 2013.

It was the first water allocation plan for the Lower Limestone Coast Prescribed Wells Area, bringing together and building on the previous water allocation plans for the Lacepede Kongorong, Comaum-Caroline and Naracoorte Ranges prescribed wells areas.

The Plan converted all existing area-based water licences to volume based licences (volumetric conversion) providing transparency, flexibility and equitability. Commercial forestry was included in the Plan enabling its impact on the water resource to be accounted for and managed through forest water licences.

Mechanisms were introduced to bring at risk and/or over-allocated management areas back to sustainable levels of allocation. Principles were also introduced to provide protections to groundwater dependent ecosystems.

These changes have been key steps towards the sustainable management of the region's prescribed water resources. Although their inclusion has resulted in complexity and compromises in the Plan, they provide a strong basis for the next iteration of water allocation planning in the Lower Limestone Coast Prescribed Wells Area.

Other matters may arise in amendment

The review of the Plan has been comprehensive and has identified the areas of key concern at this time to inform an amendment process. However, this does not mean other matters will not arise as the amendment process is worked through and new policy principles are developed. The LC Landscape Board remains open to considering other matters as amendment is worked through.

Water matters for consideration outside of the review

A dominant topic throughout the review of the Plan was the impact of drains on groundwater.

Drainage has had a profound impact on the availability of water in the landscape, including groundwater. Prior to drainage, around 50% of the region was seasonally or permanently flooded wetland habitat. Now less than 3% of the original wetland extent remains and most of that is in poor condition. Those wetlands that remain in good condition are important for tourism and recreation and are some of the most visited and iconic features of the region. These significant wetlands, and those that are degraded, require active management to restore or maintain their values. Today the 17,000 wetlands of the region and primary production sit side by side in a drying landscape, both dependent on and impacted by the availability of water and our management of it.

As drains are managed under different legislation and by a different agency there are strict limitations to what the Plan can do in their management. Yet stakeholders and community clearly recognise their impact on groundwater resources.

Outside of the review of the Plan the LC Landscape Board is undertaking research to help inform adaptation of the drainage infrastructure under a drying climate. Outcomes from this work will inform broader water resource management, outside of the Plan.

The drains will remain a significant water resource management issue in the Limestone Coast region and their climate adaptation potential to support management of our groundwater resources will be progressed alongside of the amendment of the Plan.