Lower Limestone Coast WAP Stakeholder Advisory Group
Minutes

Meeting No. 2, 01 May 2024, 10:30 – 3:30 pm
Mount Gambier

Objectives

- Provide an overview of the groundwater monitoring network in the Lower Limestone Coast Prescribed Wells Area.
- Provide an understanding of climate change and climate modelling and how this used in water allocation planning.
- Provide an understanding of groundwater modelling and an overview of groundwater models for the Lower Limestone Coast Prescribed Wells Area.

Attendees:

Group Attendees – Penny Schulz (Chair), Pete Bissell (Chair), Alan Rossouw, Belinda Williamson (attended from 12.43), Claire Harding, Claire Davies, Darren Shelden, Graeme Hamilton, Kerry DeGaris, Kylie Boston, Simon Sheriff (Teams), Peter Balnaves, Terry Buckley, Wayne Hancock

Department for Environment and Water – Cameron Wood, Graham Green

Staff Attendees – Liz Perkins, Sue Botting, Chelsea Burns, Ryan Judd, Megan McCrae

Apologies – James Prescott, Melissa Herpich

Welcome and agenda

The Chair welcomed everyone and thanked Group members and staff for their attendance and gave an acknowledgement of country.

Minutes

Minutes from Meeting 1 were confirmed as true and correct. Moved by: Alan Rossouw. Seconded by: Terry Buckley. All were in favour.

Action outcomes to note

- Action 1.3 – Overview of groundwater monitoring network presented in Meeting 2.

Groundwater monitoring

Sue Botting provided an overview of the groundwater monitoring in the Lower Limestone Coast Prescribed Wells Area.

Key Points:

- Monitoring needs to have a purpose, we need to have a reason to do it
- 2014-15 monitoring optimisation program
- Interactive map of observation wells showing 50 year hydrographs

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Discussion:

- How were the seawater intrusion well locations decided?
    - Where has been monitored in the past, where current monitoring is.
    - Where there are gaps.
    - Where there could be issues/risks identified from past monitoring/sampling and indications from groundwater modelling.
    - Practicalities of accessing the bores for getting the data e.g. close to roadsides.
- Discussion around what the information in WaterConnect means. What is the difference in the classification of bores between monitoring and observation? Monitoring is classified as a well that is being monitored for a specific purpose or localised issue, observation is classified as a well being monitored as part of the regional monitoring network.
- How many bores are used elsewhere for adaptive management within management zones such as at Padthaway? Padthaway will use all the water level monitoring wells in the Padthaway Flats management zone which is 37. In comparison the Tatiara draft plan was proposing to use 8 wells per management zone for adaptive management. This is dependent on size of management zones and monitoring available and what is determined as practical and reasonable.
- Monitoring in the more highlands area – few wells determined decision and one close to meat works. Is this a reasonable complaint or not? Hynam East had 5 wells added to the monitoring network, this may need some further investigation.
- Of the wells being monitored, how many have that full 50 years of dataset? Unsure of the mix of time. Some data points early on were removed if there was a data point or two and then no data again for 10 years for example.
- Will graphs be updated on the interactive map LC Landscape Board has developed? At this stage it is static and won't be updated but will be investigated further as to if this can be done or if the Department will provide something similar in the future under their plans for a data lake.
- Map data has been manually reviewed and checked for anomalies or large data gaps. Not finalised as yet so Group may provide feedback on presentation or advise on potential errors they have identified.
- The Group also discussed naming conventions, possibility of depth to groundwater graphs and monitoring protocols and standards.

Climate and climate projections

Graham Green provided an overview of the climate and climate projections.

Discussion:

- The downward trend in blue (RCP1.5), is this due to abandonment of fossil fuel use? Yes this trend would be achieved through a large reduction in use of fossil fuels, particularly coal and oil and to a lesser extent gas. Becoming more possible with renewable energy becoming accessible and a replacement for coal in particular. Oil will be more difficult due to fuel for transport being less easily reduced at this point in time.
- Discussion on local changes in climate for potato growing and in particular in the past hot days seemed to have strong winds and were worse impact to the potato growing. Hot days don't seem to have the bad winds as often now which doesn't have the detrimental impact. Winds are currently not being projected as part of climate projections.

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- Is there an explanation for the sharper increase in temperature for 2023 and 2024? Not a conclusive cause but theories are change in global regulations for shipping fuels – lowered the maximum percentage of sulphur from 3.5% to 0.5% for all ships operating worldwide. The theory is sulphur particles contained in ships' exhaust fumes have been counteracting some of the warming coming from greenhouse gases. With reduction in sulphur emissions warming has increased.
- Discussion around the observed rainfall. The south east part of the Lower Limestone Coast has experienced little decline in annual rainfall at this stage and how this is different to what has been experienced seasonally and how the rain falls.
- Some noted that they had experienced and noticed this change in climate and weather in their lifetime.
- Graphs of 30 year groundwater levels and the red in the graphs, it's not just climate change into the future it's what we have already experienced since the 2000s. It's not all extraction that is impacting on groundwater levels it is the climate change that has already been experienced. It explains part of the reason that extraction being 50% of allocation but groundwater levels are still showing a declining trend.
- Can we determine change in recharge from this data with ET estimates and change in rainfall. CSIRO study – showed the change in recharge from climate change impacts which was linked to change in seasonality of rainfall.
- Can we reasonably determine the impact on recharge into the future from climate change projections? Methods are available and models have been done using historic data. Modelling change in recharge is quite difficult so the models use a scaling factor from other studies but does attempt to incorporate it.
- What is the expectation of the board for incorporating and acknowledging the impacts of climate change into the amendment of the water allocation plan? Climate change important to include within the adaptive management framework and the adaptability of the plan to deal with variation in climate, weather and groundwater levels.

Groundwater modelling

Cameron Wood provided an overview of the groundwater modelling for the Lower Limestone Coast Prescribed Wells Area.

Discussion:

- How often are the inputs for the model updated? Depends on how much data you have and answers trying to get and the complexity of the model needed or wanted. Model is from a point in time until updated by simulates 6 monthly due to seasonal fluctuations and matching with the 6 monthly groundwater monitoring for most observation wells.
- Is the aquifer model developed from drilling records? Yes
- How was recharge calculated for the model? Water-table fluctuation method using wells that are a distance from pumping wells that limits the impact of extraction and provides a better representation of rainfall-recharge.
- Has recharge for plantation areas been updated? Recharge has been estimated and updated following clearance of plantation. It is difficult to capture for softwood as it is generally smaller areas of clearance spread across the region. Hardwood is captured better as there has been significant clearance since 2016 and in large areas that has resulted in an increase (recovery) in groundwater levels which impacts recharge.

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- Does that mean Victoria shares their drilling data? Groundwater model includes Victorian groundwater use data and groundwater level data. Victoria data does feed into it but there is less of it in comparison to SA.
- Can you zoom in on specific areas to pull out the information at a finer scale? Yes
- Could you use the groundwater model to determine how much land could be inundated if a drain has weirs put in? Not using the ModFlow model but it could be modelled using surface water modelling if there is sufficient data.
- Does the accuracy increase with a finer scale grid mesh for the model? Yes as long as there is sufficient data to meet the requirement of the finer cells e.g. if you only have enough data to meet a 1 km by 1 km size cell then there is no benefit in making the cells 100 m by 100 m. Also increases complexity, size and run time.
- Have you compared the model to the model for the current water allocation plan? There was not an unconfined groundwater model for the current plan. Allocation was determined from recharge estimates. There was a Wattle Range model developed by Aquaterra that was used to help inform the deemed rate calculations.
- It looks like there is a drought every 10 years or so in the modelled scenarios Future rainfall projections are created by repeating the climate of the last ten years. Climate change and water usage scenarios are then applied to the replicated rainfall data.
- Where we know there are significant thresholds for GDEs can we use the model to determine what these thresholds are or what scenarios will maintain conditions above these thresholds? Yes to some extent.
- How many scenarios can be run and how long will it take? Difficult to determine and depends on what the scenarios are and then what the answers are that we hope to pull out of the model. There is generally investigations needed following the results from the model. E.g. comparing water level decline impacts on stock and domestic or GDEs. The model won't spit this info out, it will provide an estimated water level from the assumptions and data applied which then needs to be compared to stock and domestic well depths across the region or the elevation of wetland beds for example.
- How do we use the model to determine what the actual reduction in use needs to be rather than reduction of allocation as some of this allocation won't be used? We can pull this apart from allocation data and reductions using the model and working out what is actual use and overall reduction in allocation.
- Assumptions – we think that we have overestimated recharge but could it be a possibility that we have underestimated groundwater outflow to sea? Groundwater flow could be moving quicker than assumed? Model shows that the inflows and outflows are matching well and this is particularly shown in the South Coast model where groundwater outflow to sea matches reasonably well with coastal spring discharge measurements that we have.
- What is the process for deciding on scenarios and getting scenarios run? We will discuss this as a group at following meetings.
- The model has good quality data in it and then assumptions that we have lower confidence in, what do we need to make the model more accurate? Documented in the model report that can then inform the model better in the future or if money becomes available for research.
- Discussion around Picc Ponds thresholds and model scenario results and the importance of having the thresholds and an idea of acceptable impact should be for an area for the model to be useful.
- How long do models take to run?
    - MSE model takes about an hour to run once it has been built – 1 layer.

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- South Coast can take 4-5 hours to run as it is a bit more complicated and has three layers
- Province 2 – 20 mins to run – 1 layer, shorter run time has allowed this model to be used more for testing uncertainty analysis.
- Confined 6 hours to run.

Meeting 3

Sue Botting provided a brief overview of the topics for Meeting 3.

Key Points:

- Modelling scenarios to be discussed in Meeting 4.

  ACTION: Request from Group for extraction and allocation for each management area and holding licences info.

Other business

- It is understood that PIRSA may have funding available – could we ask them to contribute to monitoring data interactive mapping that was presented today?
- Water Steering Committee will be meeting in 2 weeks' time, including PIRSA representatives. Committee acts as information sharing forum, particularly where collective resource or funding is needed. Function is not to make decisions or influence amendment process of the Group.
- SA Water no longer has the same Minister as DEW and now falls under portfolio of Nick Champion. May need to be a consideration for the process.
- Group is lacking First Nations representation, was this going to be pursued? Capacity of First Nations representatives is a limitation to membership of this Group. Ongoing updates and engagement will continue in parallel.
- Need for engagement with dryland / stock and domestic. Awaiting data from DEW to directly contact and engage with permit holders who are not licence holders.

  ACTION: Water Steering Committee terms of reference and membership information to be provided to the Group.

Next meeting date

- Next meeting date: Wednesday 12 June 2024, 10.30 am – 3.30 pm, Chardonnay Lodge, Coonawarra.

Close of meeting

Meeting closed at 3:50 pm.

The Chair thanked the staff from the Department for Environment and Water. The Chair thanked the stakeholders and staff for attending.

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Lower Limestone Coast WAP Stakeholder Advisory Group
Action Table

Action	LLC WAP Stakeholder Advisory Group Actions	Status	Meeting 2 Update
1.1	LC Landscape Board to provide the Group updates on outcomes from the Limestone Coast Water Steering Committee.	Ongoing	Committee to meet 22 May
1.2	LC Landscape Board staff to take the option of proxies in the terms of reference to the LC Landscape Board Governing Body.	Ongoing	Will occur on 2 May 2024
1.3	LC Landscape Board staff to provide an overview of the monitoring network at Meeting 2.	Complete	Overview provided
2.1	Request from Group for extraction and allocation for each management area + holding licences info.	Ongoing	For Meeting 4
2.1	Provide the Group terms of reference for Limestone Coast Water Steering Committee	Ongoing	N/A

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