Lower Tertiary Aquifer (Dilwyn Formation) Paaratte Groundwater Management Area

Expression of Interest 2025

Bore and Aquifer Information

This information summary has been developed to assist applicants who want to express an interest in securing groundwater entitlement in the Dilwyn Formation (Lower Tertiary Aquifer) Paaratte Groundwater Management Area (Refer Appendix 1 for location boundary).

This information must be considered as indicative only, and it is the applicant's responsibility to investigate the costs and risks associated with purchasing entitlement and drilling, and to determine whether water quality and yield are suitable for the intended purpose.

It should be noted that the deep aquifer is not well developed in this area and the available information is somewhat limited

The Paaratte Groundwater Management Area (GMA) is located east of Nullawarre and extends from Cobden in the North to the coast (refer location in Appendix 1). The Paaratte GMA targets the confined Dilwyn Formation. Substantial investment is required to install a bore to access this groundwater.

Depths are greater than 120m in the east around the Swan Marsh and Irrewillipe areas and deepen moving west with the top of the aquifer over 400m below surface at the coast (refer Appendix 2).

Groundwater salinity is generally less then 1000mg/L but deteriorates significantly moving north (Appendix 3).

Licence applications will be referred to the relevant catchment management authority (CMA) and they have advised Southern Rural Water that applications for new irrigation developments will need to provide further information to Southern Rural Water and the CMA.

This information can be provided after water entitlement has successfully been obtained through a water sales process. Further details of the requirements are included in item 6 below and in Appendix 4.

1. Licencing requirements

   - You are required to hold two licences to access and use groundwater including a Section 51 take and use licence and a section 67 licence to operate works (in this case a bore).

- When you submit an expression of interest, we will do an initial assessment of the potential take and use licence prior to a tender/auction. This will determine the likelihood of being able to secure a Section 51 licence.
- Eligible expression of interest applicants will be invited to take part in an auction/tender and successful bidders will be issued a Section 51 take and use licence.
- Before any water can be taken or used, applicants must also apply for a Section 67 operating licence. This will occur once the bore(s) have been drilled. The S67 application process may require information to be provide to Southern Rural Water on bore construction, bore yields and groundwater quality, and the potential impacts of pumping on surrounding bores, and the environment. This application process may require a pumping test, and an irrigation and drainage plan. If the S67 licence process is successful then the applicant will be authorised to use the bore.
- When assessing your application, we need to consider several things including impacts on current users and nearby waterways, local and government policies, irrigation guidelines (if they apply) and items under section 40 of the Water Act 1989.
- All applications will require neighbour notification processes and be referred to stakeholder agencies (e.g. Catchment Management Authorities) for consideration and comment.
- For simple applications, the process may take a few weeks or up to 12 months for more complex ones.
- We cannot guarantee application approval and would strongly advise you talk to us before applying so we can advise you before you commit to the application process.

2. Bore construction costs

- Drilling depths vary between 120m and 650m, with approximate costs ranging between $500,000 and $1,000,000. Applicants are advised to fully investigate potential drilling costs with a licensed Class 3 driller.

3. Bore construction requirements

- When drilling and constructing a bore, the Minimum Construction Requirements for Water Bores in Australia must be adhered to. Please click this link to access a copy of the requirements. https://adia.com.au/wp-content/uploads/2020/09/Minimum-Construction-Requirements-Edition-4.pdf
- A class 3 driller will be needed for any new bores constructed into the Lower Tertiary Aquifer.

4. Salinity

- An indicative salinity map has been included (Appendix 3) which illustrates potential groundwater salinity in the Lower Tertiary Aquifer. Salinity is generally better towards the south and along the coast, deteriorating as the aquifer thins to the north. Applicants should be aware that salinity may vary laterally and vertically within the Dilwyn Aquifer and it may vary over time once pumping has commenced.

5. Yield

- Bore yield is dependent on a range of factors such as bore depth, bore diameter, aquifer thickness and the amount of sand/gravel in the aquifer.
- Bore yields in the northern areas, where the aquifer is thinner may be lower than in the southern areas where the aquifer is thicker.
- The standing water level in the existing bores is typically 10-50 meters below ground surface. Actual water levels must be confirmed by drilling.

6. Groundwater Temperature

- Applicants should consider the potential water temperature and end use when considering purchasing entitlement.
- Depending on the location of drilling, the temperature of the groundwater could vary significantly.
- Groundwater temperature is likely to fall within the range of 30 to 45 °C, with higher temperature water in deeper bores.

7. Catchment Management Authority requirements

- The applicant may need to submit an Irrigation and Drainage Management Plan as per the requirements specified in Appendix 4.

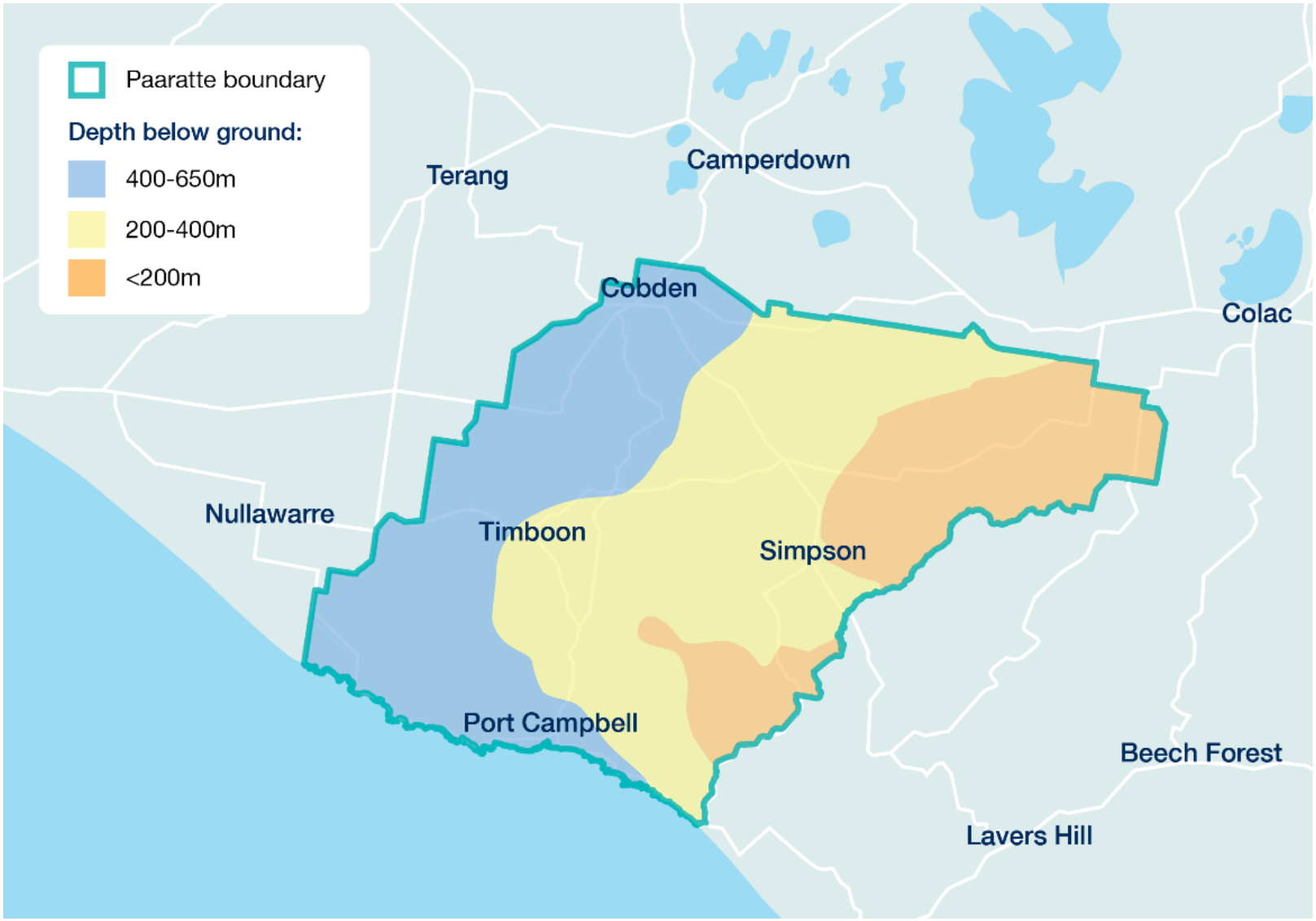
8. Culture Heritage Management Plan

- Some works in a culturally sensitive area may require a Cultural Heritage Management Plan (CHMP). More information is available at Cultural Heritage Management Plans | firstpeoplesrelations.vic.gov.au.
- Applicants should determine if a CHMP is required by using the Aboriginal Heritage Regulations Planning tool: https://heritage.achris.vic.gov.au/aavQuestion1.aspx

Appendix 1 Location: Paaratte Groundwater Management Area

Appendix 2: Depth to Lower Tertiary Aquifer*

**Indicative depths to top of Dilwyn Formation*



Appendix 3: Indicative Groundwater Salinity – Lower Tertiary Aquifer*

**Indicative salinity of Lower Tertiary Aquifer*

Appendix 4: Irrigation and Drainage Management Plan Requirements

Note: the information below is only relevant should Southern Rural Water make a decision to apportion the water following the Expression of Interest process either by auction, tender or other process. This process provides for the Section 51 'Take and use' licence.

Before any water can be accessed or used, applicants must also apply for a Bore Construction Licence and Section 67 operating licence.

As part of the assessment process for the s67 process it is likely that an Irrigation and Drainage Management Plan will be required. This is done after a bore has been drilled and the water yield quality and temperature has been confirmed.

The following information outlines the likely requirements of the Irrigation and Drainage Management Plan.

Part A - Map of proposed development including:

a. property boundaries
b. areas to be irrigated
c. type and location of crops to be planted
d. rivers, creeks and drainage lines
e. location of existing infrastructure (houses, sheds, laneways, channels, dams, etc)
f. proposed location of new infrastructure (or changes to existing)
g. native vegetation and wetlands

Note: Ideally the above mapping would be included as part of a professional designed farm plan. However, for smaller operations it may be achieved by printing off an aerial image (e.g. Google Maps) of the property and clearly marking up proposed changes. Multiple maps may be required to distinguish important features and changes. The CMA can assist with the provision of aerial imagery if required.

Part B – Topographical Survey

A topographical survey is not mandatory however this is highly recommended to ensure appropriate irrigation design, e.g. to maximise pipeline and pumping efficiencies.

Part C – Soil Survey

A detailed soil survey is not mandatory however evidence of some soil testing is required to demonstrate the suitability of the chosen irrigation and production systems for the soil type.

Part D – Irrigation Design and Management

This section should show how the irrigation system will be designed and managed including:

- How much water is required per year
- Method of application (e.g. drip, sprinkler, centre pivot, etc), proposed application rates (e.g. mm per irrigation) and irrigation scheduling methods
- Location of pumps, pipelines, storages and irrigation systems
- Ideally the above items will be demonstrated by provision of a professional irrigation system design prepared by a qualified irrigation designer (note: many irrigation system retailers provide basic designs as part of the standard quotation process).

Part E – Drainage Plan

This section should show how nutrient, and sediment runoff will be minimised including:

- Highlighting proposed vegetated or grassed buffer zones
- Highlighting any sediment traps incorporated in the development
- Fertiliser and/or effluent management plans as appropriate
- How exposure of bare soil will be minimised on cultivated land

Part F – Biodiversity Protection Arrangements

This section should describe arrangements for protecting environmental features on or adjacent to the property including:

i. Buffer zones along waterways or wetlands. Note the CMA require that all major infrastructure and cultivated land maintain a 30m buffer along all waterways (preferably with native vegetation).
ii. Shelter belts or other revegetation areas