Barwon Downs licence renewal project

Barwon Water

Groundwater licence renewal objectives

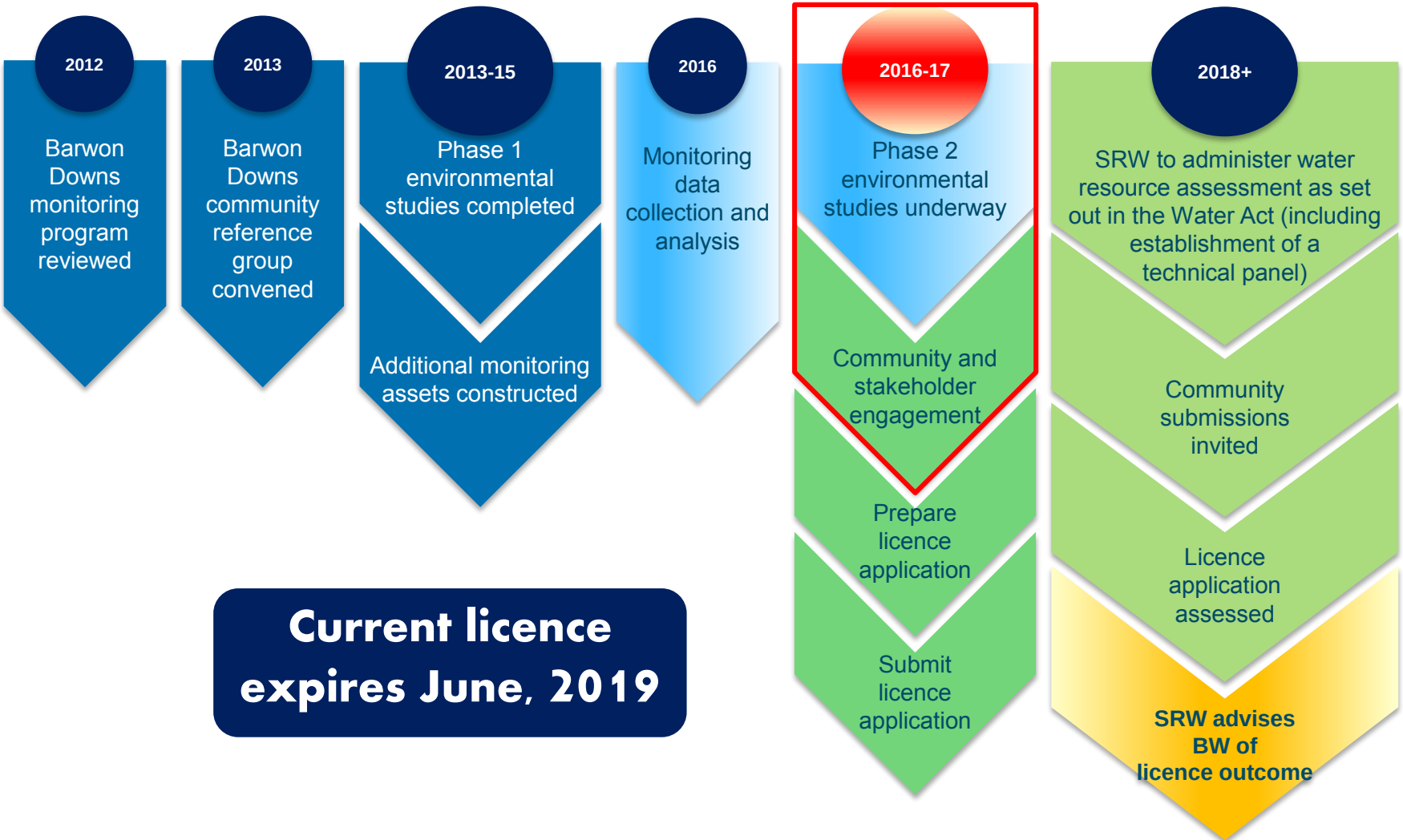
A groundwater licence that:

Secures an affordable water supply for the region {**economic**}

Recognises the water needs of the environment and other beneficial users {**environment**}

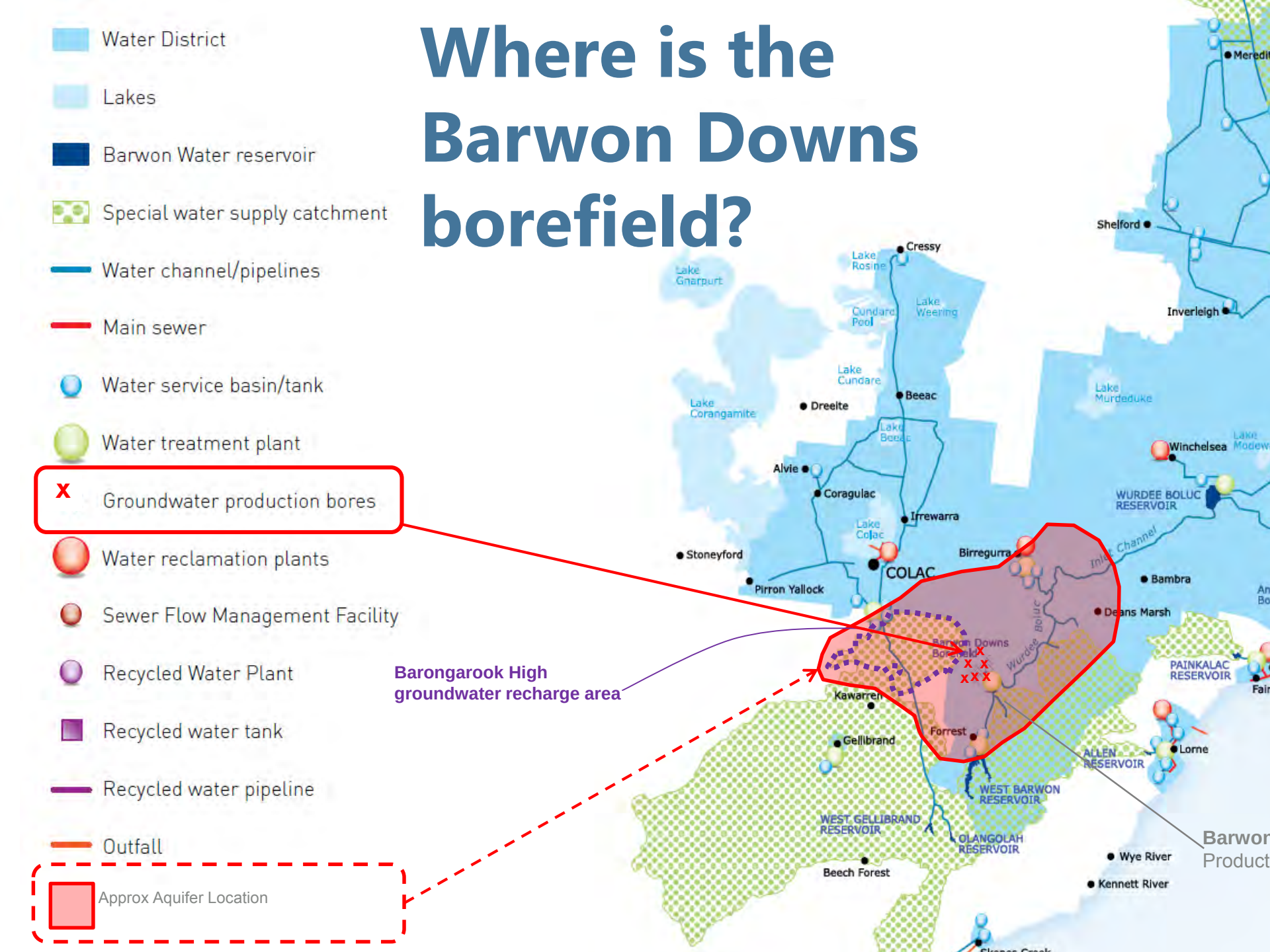
Has general support from the community to continue management of the groundwater resource within the constraints of the new licence {**social**}

Licence renewal approach

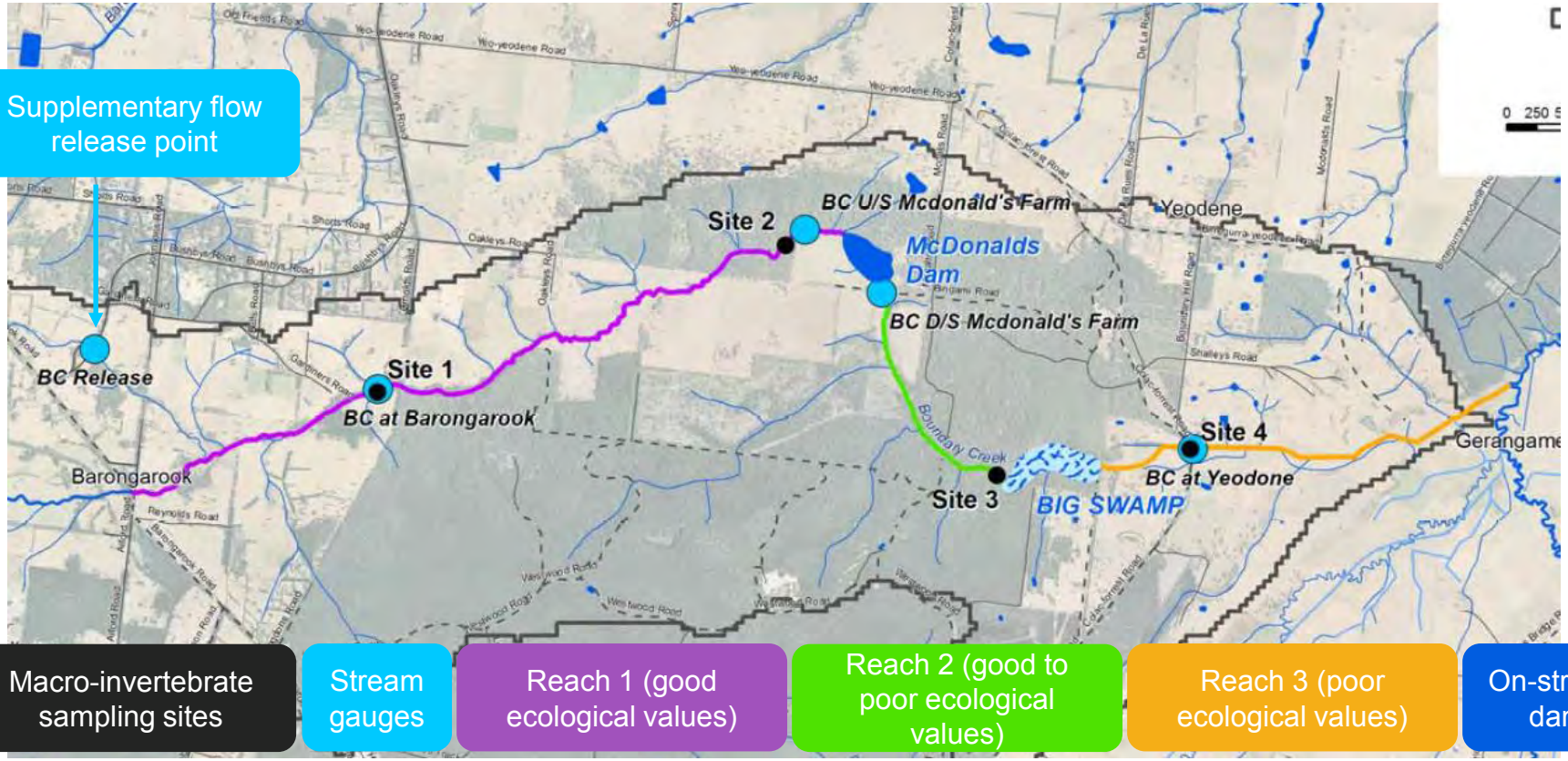


Current licence expires June, 2019

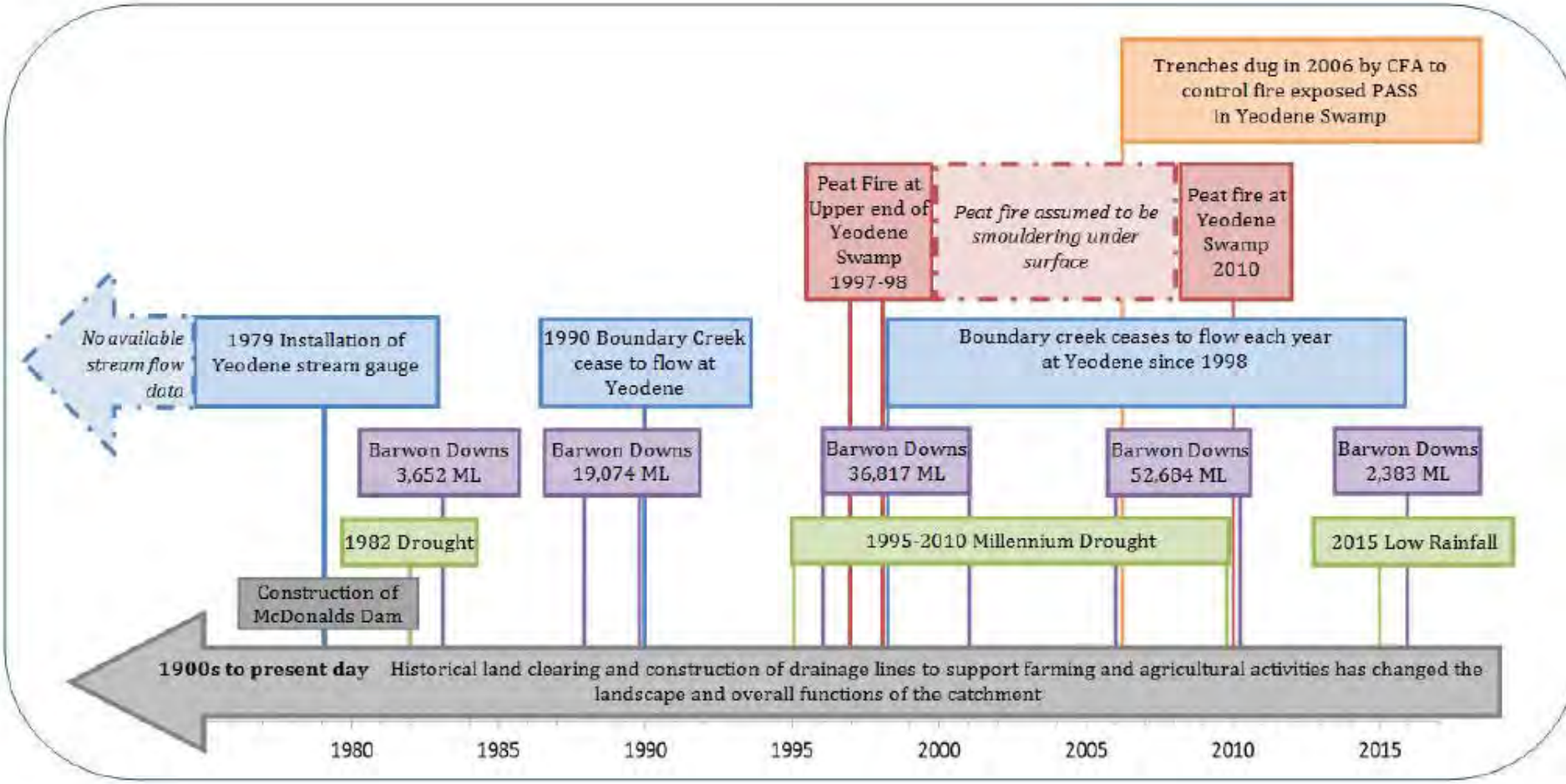
Where is the Barwon Downs borefield?



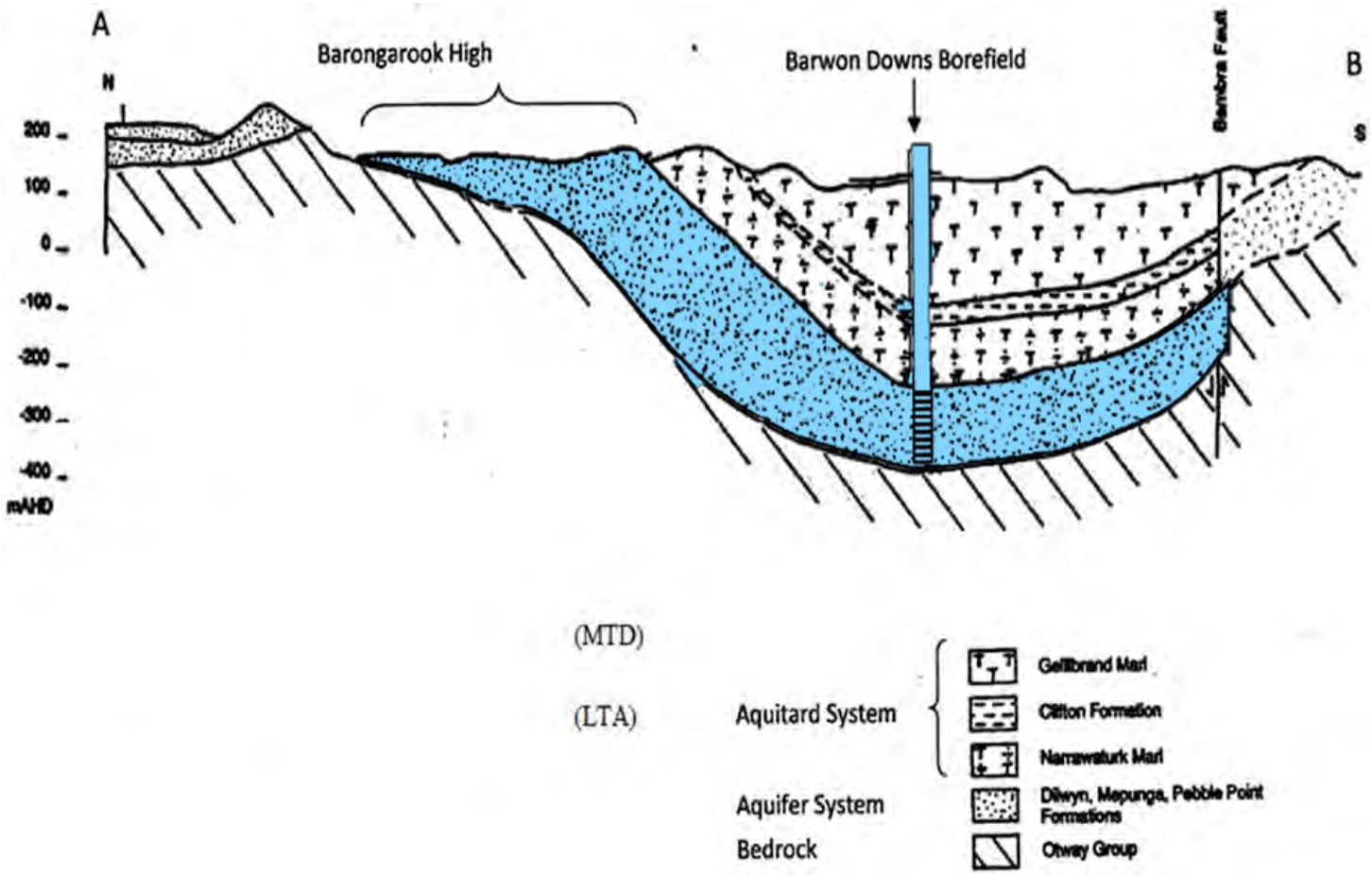
Boundary Creek key features



Historic activities in the catchment



Boundary Creek aquifer outcrop



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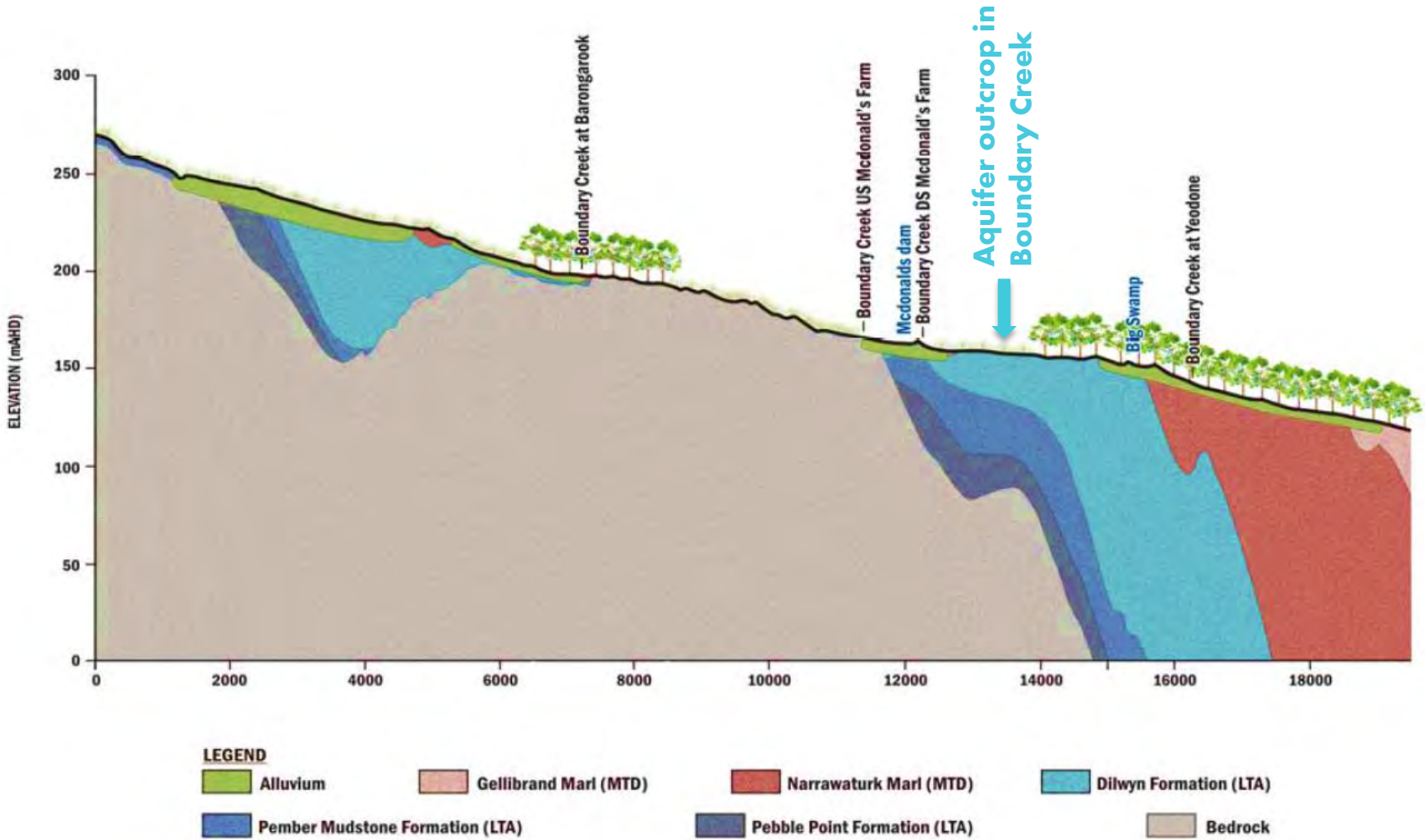
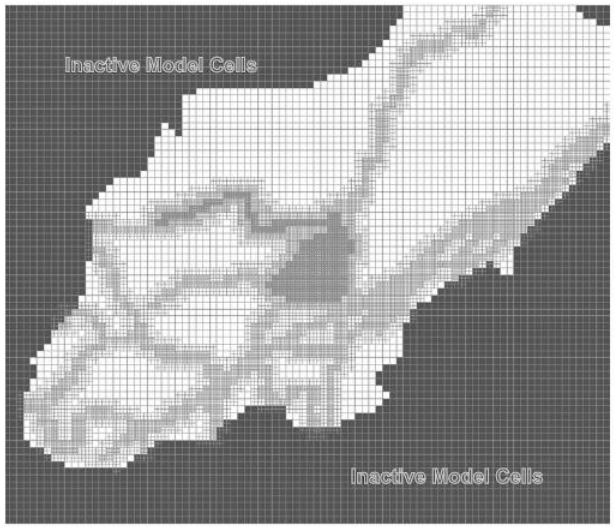


Predictive impact assessment

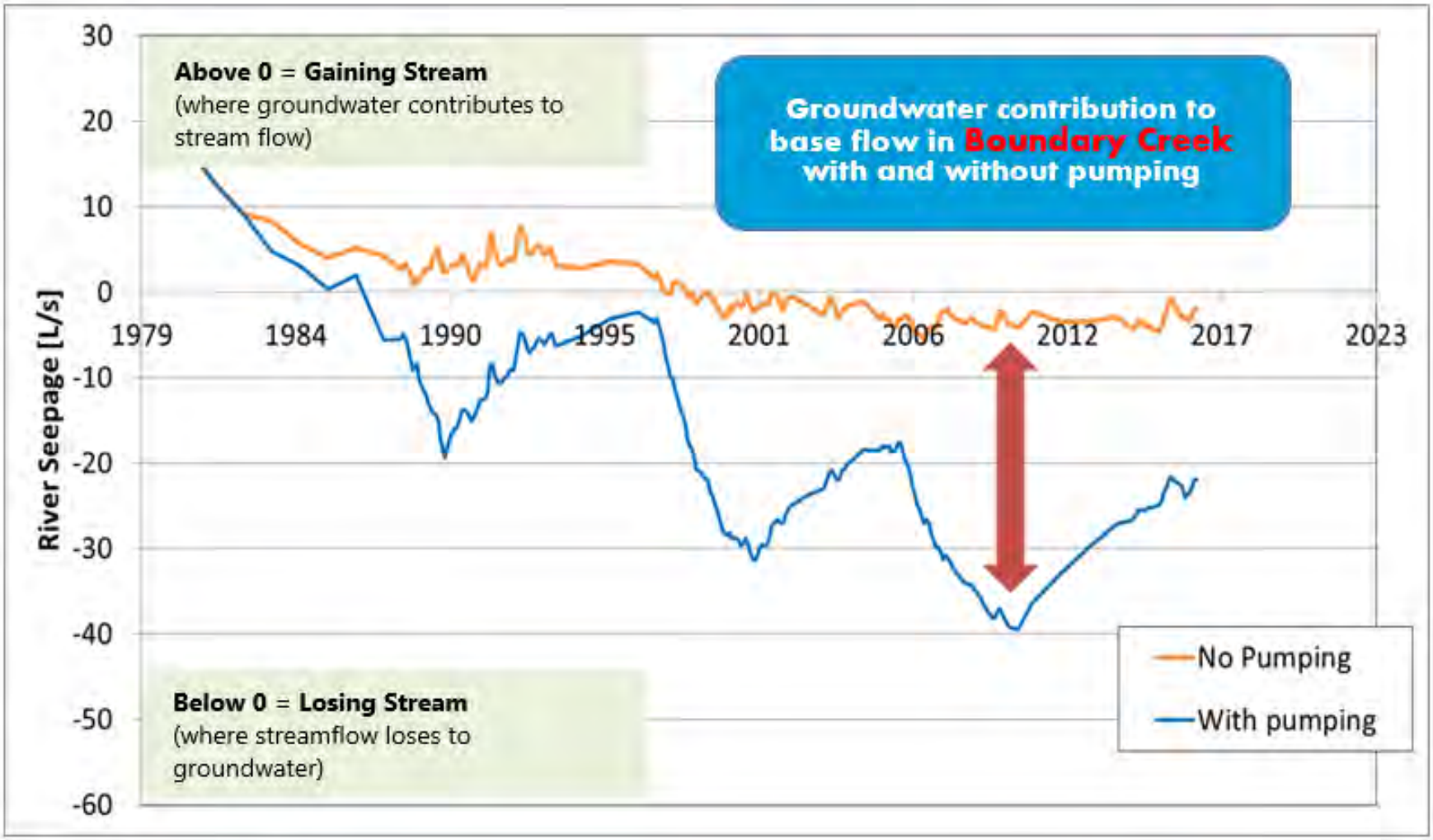
Approach

The groundwater model now has **the highest ranking in confidence level** in accordance with the Australian Groundwater Modelling Guidelines.



Historical impact assessment

Groundwater contribution to Boundary Creek



Historical impact assessment

Groundwater contribution to Boundary Creek

Barwon Water fully acknowledges that past pumping has had an environmental impact in the catchment.

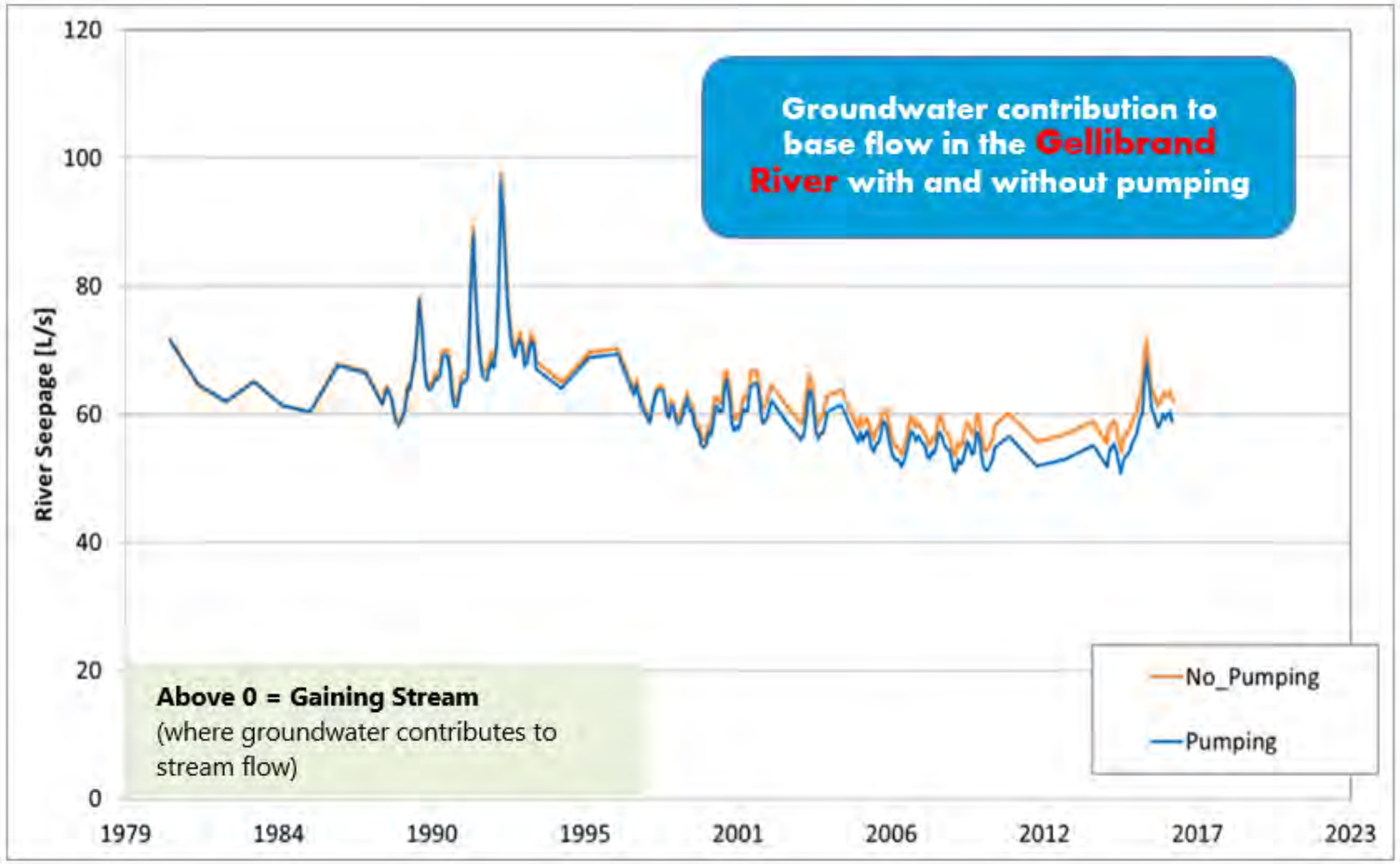
Operation of the borefield over the past 30 years is responsible for **two thirds** of the reduction of base flow into Boundary Creek. The dry climate experienced during the same period accounts for the remaining **third**.

The lower sections of Boundary Creek would likely have no flow periods during summer regardless of groundwater pumping, however **pumping has increased the frequency and duration of no flow periods** in lower reaches of Boundary Creek.

Barwon Water

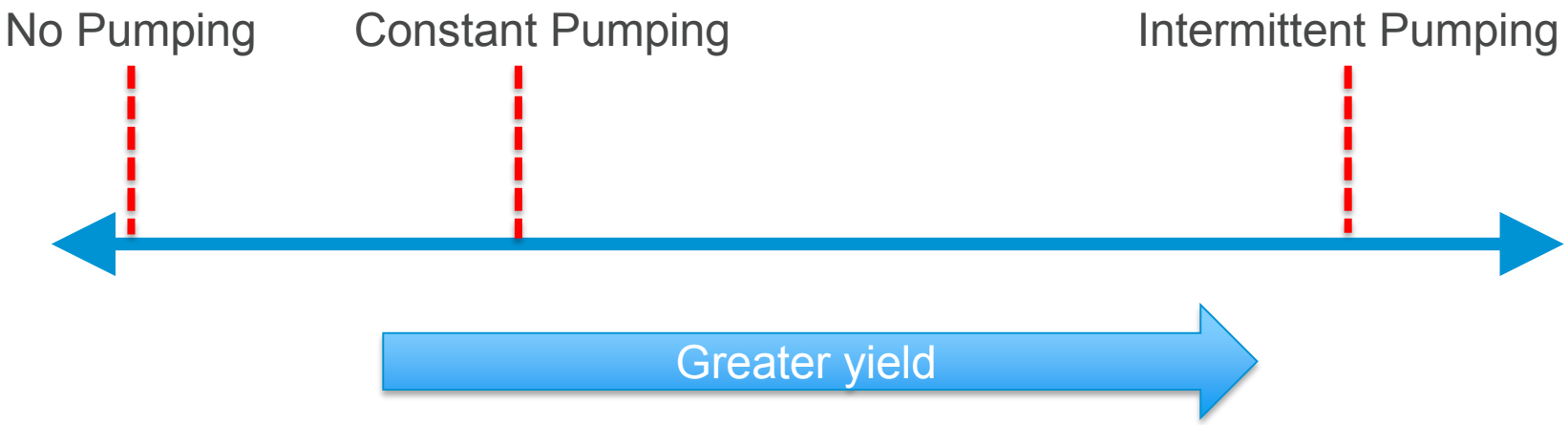
Historical impact assessment

Groundwater contribution to Gellibrand River



Modelled Scenarios

A range of operating scenarios were considered so that we can assess the impacts within that range.



Predictive impact assessment

- 50 year timeframe to understand long term impacts
- Based on a **triple bottom line framework**
- **No mitigation** measures to counter impacts
- Median **climate change**
- **Two proposed pumping regimes** were selected on the basis that they would provide **a range of likely impacts** to key indicators
- A **no pumping** scenario used for baseline comparison. It estimates incremental impacts associated with future pumping

Predictive impact assessment
Environment

Vegetation

- Almost **50%** of the study area is at risk of reduction in vegetation quality as a result of climate. **This increases to 75% with pumping**
- Drawdown over the last 30 years is typically more than what is predicted to occur in the future
- Vegetation has not historically been adversely affected by pumping and is therefore **likely to be resilient to future pumping**
- Ongoing monitoring of these sites should continue

Predictive impact assessment
Environment

Potential Acid Sulphate Soils

- Potential and actual acid sulphate soils are naturally present across the study area
- Predicted drawdown at the 4 PASS monitoring sites is similar to the drawdown historically
- This means that **future drawdown is not expected to be worse** than what has been experienced in the past
- Barwon Water are monitoring high risk PASS sites that are most susceptible to pumping from the borefield

Predictive impact assessment
Environment

Flows in Boundary Creek

- Regardless of future pumping reach 2 of Boundary Creek would continue to lose to groundwater for 20-30 years;
- Without pumping, the maximum loss to groundwater is **2.4ML/day** which is 100% of low flows;
- With pumping, this increases to **3.7ML/day**, which is 100% of low flows;
- Studies are underway to investigate appropriate long term flow regimes to mitigate this impact.

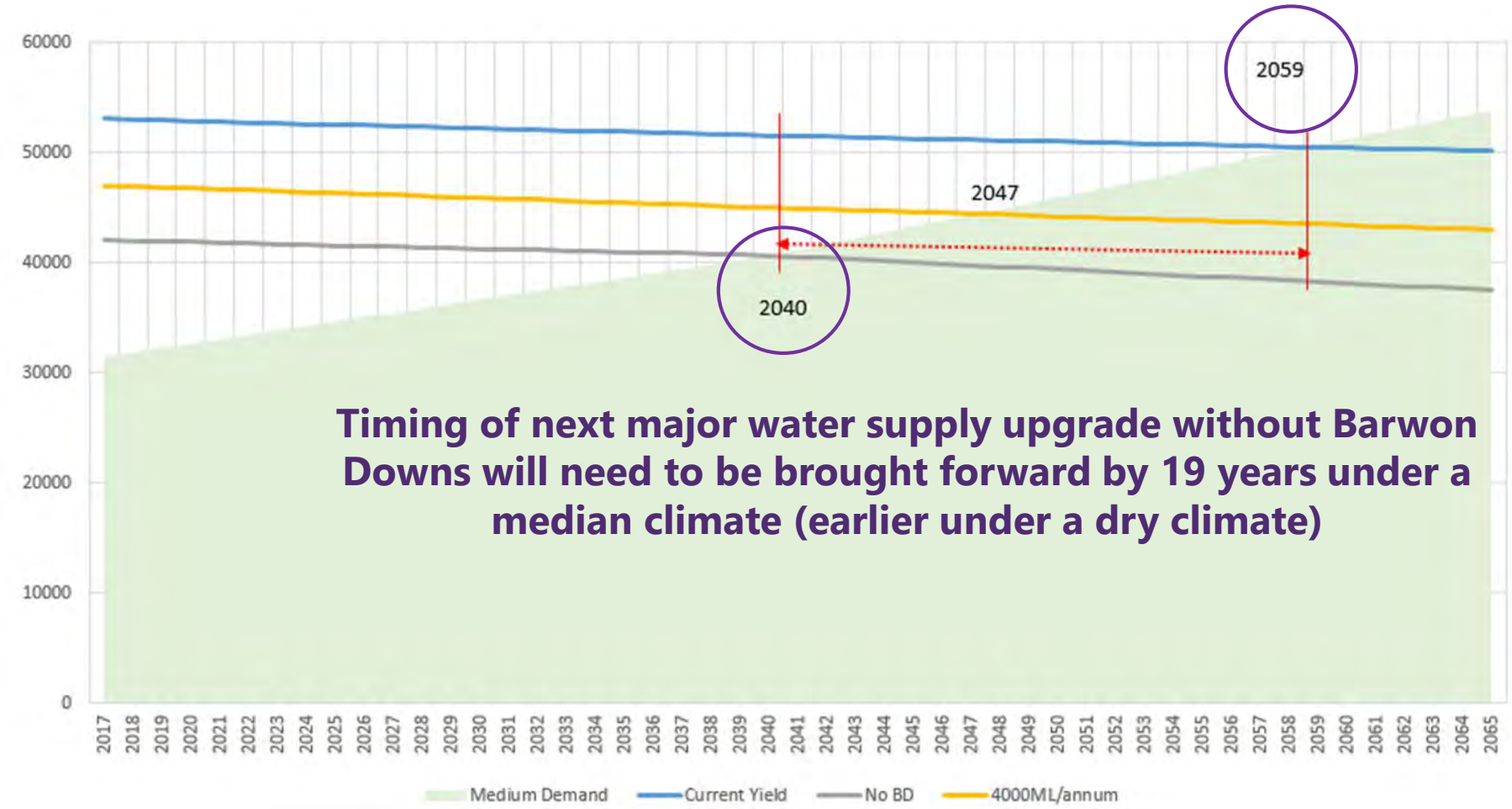
Predictive impact assessment
Environment

Flows in Gellibrand

- Aquifer intersects approx. **16%** of the length of the Gellibrand River
- The river is a **gaining** river
- With no pumping, the river remains gaining and the predicted minimum groundwater inflows to the affected section are approx. **3.9 ML/day**. This is equivalent to **11%** of low flows
- With pumping, the river remains gaining and inflows to the affected section are reduced to approx. **3.6ML/day which is <1% of low flows**.

Predictive impact assessment
Social & Economic

Assessment will also include social and economic criteria for consideration



Timing of next major water supply upgrade without Barwon Downs will need to be brought forward by 19 years under a median climate (earlier under a dry climate)

Barwon Water

What's coming up?

Technical studies to determine flow requirements for Boundary Creek and potential remediation options for Big Swamp

Pipeline for stock and domestic flow for landholders in the lower reach of Boundary Creek

Collaborate with the Barwon Downs Community Reference Group

Scenario modelling to understand potential impact to receptors under different climate and operating regimes

Community engagement activities information sessions & community workshops

Prepare proposed licence conditions based on technical studies, scenario modelling and community input

Recommendations from community and stakeholders considered by **Barwon Water Board**

Submit Barwon Downs groundwater licence application

FEB - NOV 2017

DEC 2017