MEMORANDUM

To	Terry Dwyer	**Ref**	
cc	Sophie Thomson		
From	Ken McLeod	**Date**	28.03.25
Subject	Bega Urban Release Proposal – water supply/extraction issues		

Hi Terry,

Response to your emails 19.03.25 and 26.03.35.

Request

1. future water supply demands/needs re: the additional population generated by the urban release area over the course of its development (30 + years)
2. the impacts of any additional groundwater extraction for urban growth on agricultural uses/users

Future water supply demand needs with additional population generated by proposed urban release area

Table 1. Water demands

	Permanent population + average visitors	Annual demand	Average day demand	Peak day demand	Licenced annual entitlement Bega borefield
	# people	ML/y	ML/d	ML/d	ML/y
2025	8300	1025	2.8	7.6	2640
2048 forecast	9500	1180	3.2	9.0	
Future >30 years with additional 2227 dwellings & 5315 people	15000	1850	5.0	14.0	

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Impacts of any additional groundwater extraction for urban growth on agricultural uses/uses

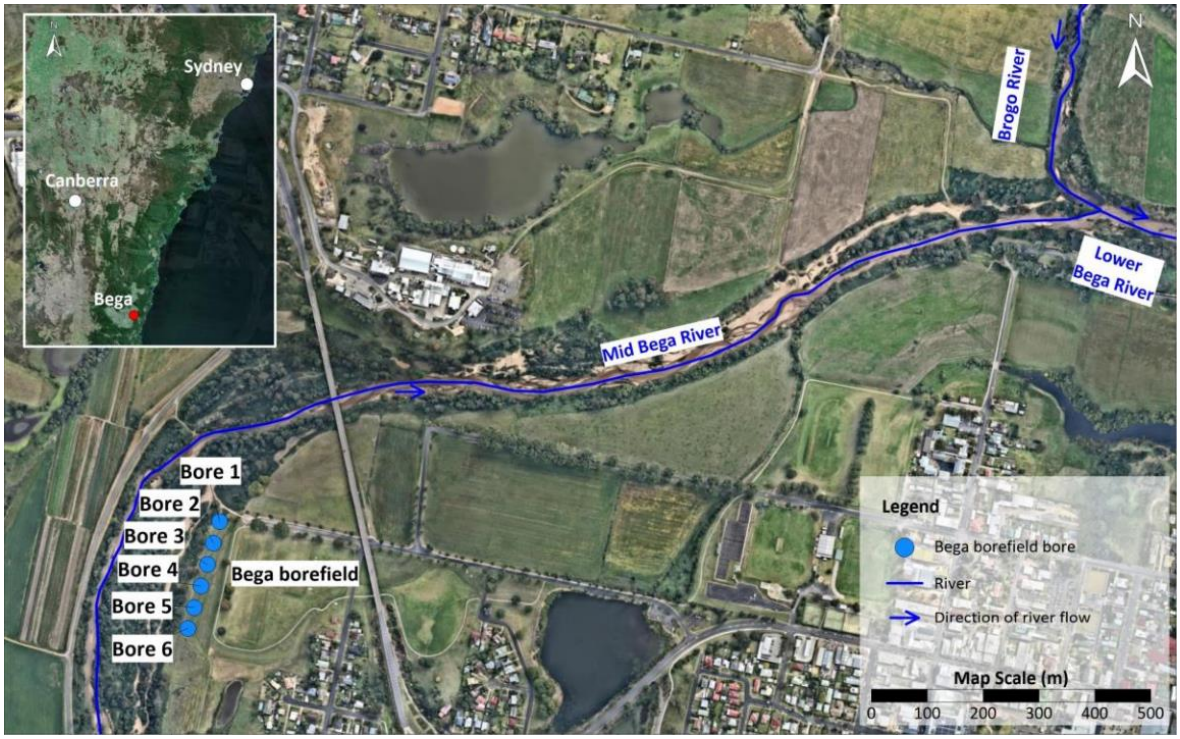

Figure 1. Bega borefield

Bega borefield is located on the floodplain on the western side of Bega. It is the source of water for Bega-Tathra water supply system (BTWSS).

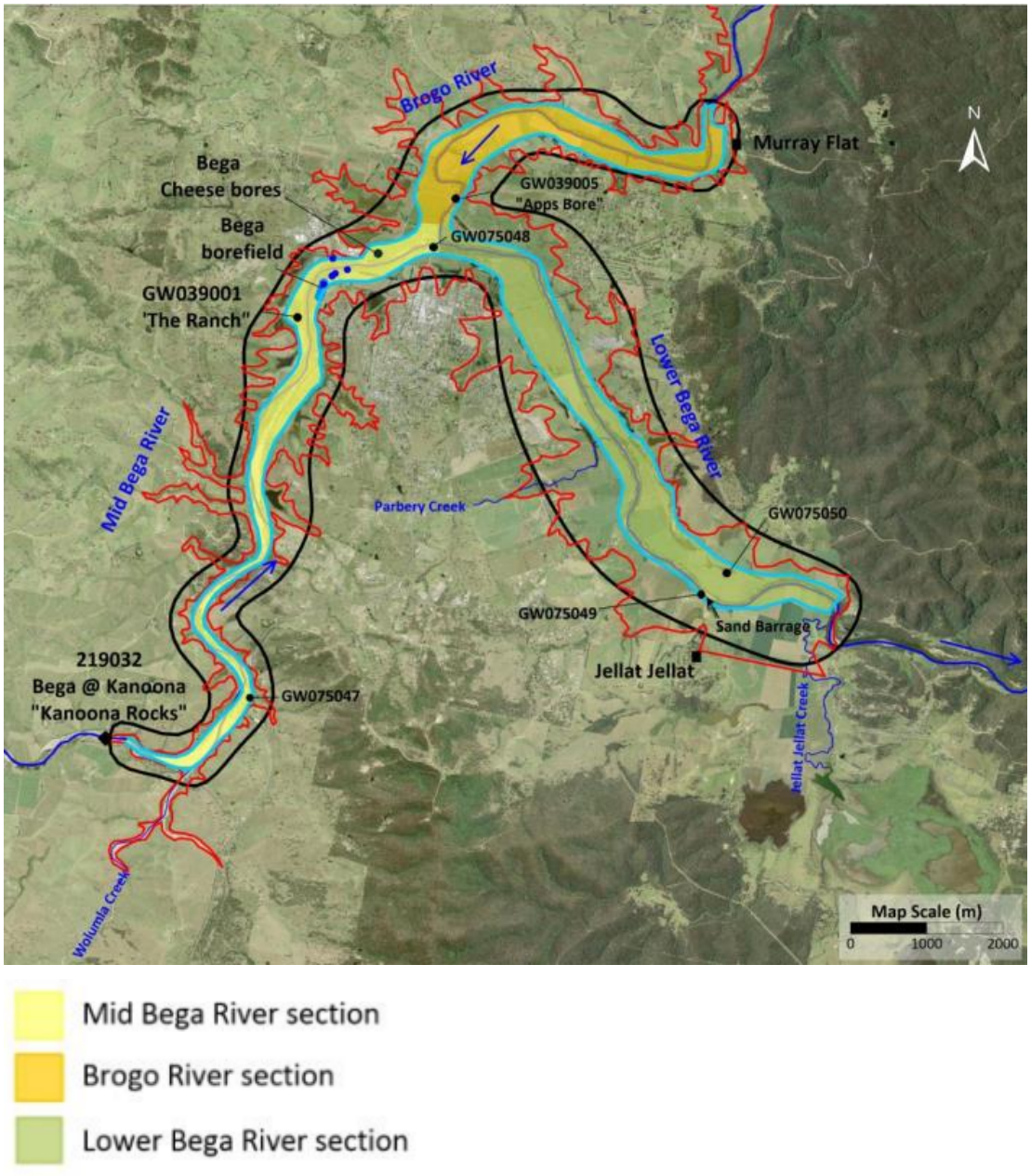

Figure 2. River sections

The bores are in the Mid Bega River section of the Bega-Brogo River system. The Mid-Bega River extends from Kanoona Rocks on the Bega River downstream to the confluence with the Brogo River at Bega. The confluence with the Brogo River is approximately 1.7 km downstream of the borefield.

There is no off-stream storage (dam) for the BTWSS. Available storage is water stored in the sand/gravel alluvial material within the Mid Bega River section. Estimates of the volume of water stored in the Mid Bega River aquifer range from 10,000 ML to 16,000 ML.

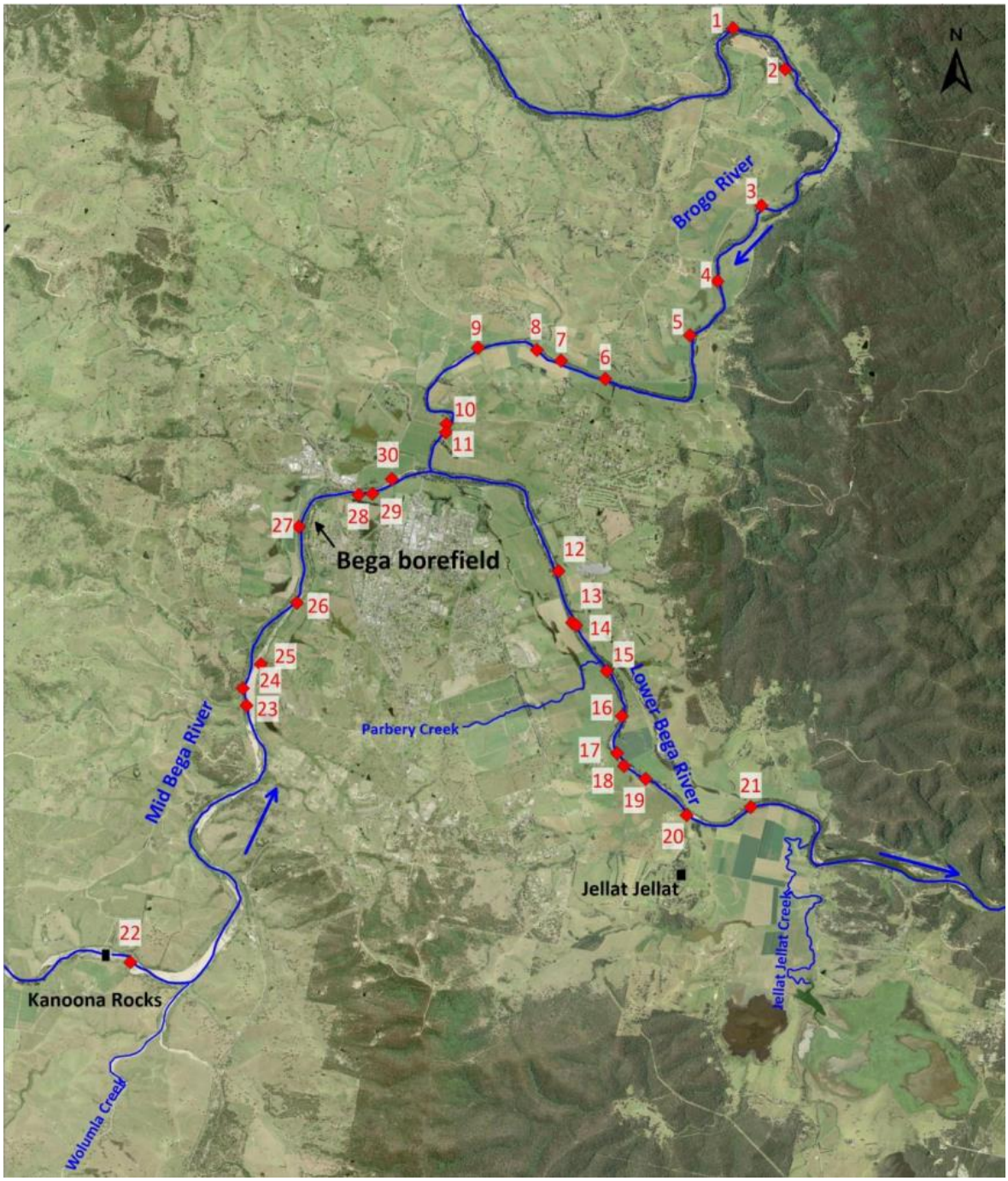

Figure 3. Approximate surface water take locations for agricultural use (irrigation)

Figure 3 shows surface water take locations for the main licenced irrigators in the Mid Bega River, Lower Brogo and Lower Bega River sections of the Bega-Brogo River system. These licence holders take surface water for irrigation of pastures and crops for agricultural use, primarily dairy pasture irrigation.

Numbers 1 to 21 are reliant on regulated river flows in the Brogo and Lower Bega River sections. Regulated river flow in these sections is controlled by Brogo Dam releases, operated by WaterNSW. BVSC water take from the Bega borefield, current and future, has no impact on water availability for agricultural use (#1 to 21 irrigators) in the Brogo and Lower Bega River sections.

In the Mid Bega River section near to the borefield, there are four (4) licenced surface water take locations for agricultural use (#27 – 30 irrigators) and two (2) Bega Cheese bores, used for cheese production.

When there is surface flow in the Mid Bega River, the aquifer in the Mid Bega River section is full and there is no restriction on availability or water take.

In drought times, when surface flow can cease in the Mid Bega River section, there is a large volume of water stored and available in the aquifer to utilise. Irrigators 27-30 are allowed to dig holes in the river-bed at licenced pump sites to access this stored water (Photo 1) under their surface water licence.

Photo 1. Irrigator #29 pump hole Mid Bega River section

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It is only after an extended period of no-flow in the Mid-Bega River section, during a severe drought, that water take by BVSC, Bega Cheese and irrigators 27-30 causes a localised drawdown in aquifer water storage and groundwater level in the locality.

Groundwater level is monitored at DEECCW monitoring bore GW039001 and is used in the *Water Sharing Plan for the Bega River Area Regulated, Unregulated and Alluvial Water Sources 2023* for limiting daily water take in the Mid Bega River section as groundwater level declines.

At 4.5 mAHD (approximately 2.5m below the bed of the river) surface water take by irrigators in the Mid Bega River section is suspended. Only groundwater licence holders (including BVSC and Bega Cheese) are allowed to continue pumping, along with stock and domestic licence holders and water take for basic landholder rights.

Table 1. shows 1.8 ML/d additional water take from the borefield will be required to meet average day demand in the >30 year time horizon with 2227 additional dwellings & 5315 additional people. This relatively small increase in potential future water take will, in times of drought only:

- cause groundwater level to decline slightly faster in the Mid Bega River between Bega borefield and Brogo River confluence than it would otherwise

It is unknown how many days earlier an increased rate in groundwater level decline, caused by an additional 1.8 ML/d water take, would cause surface water licence holders 27-30 to be suspended from taking water and what the significance of this would be for them in >30 years. It is only likely to occur rarely and be for a short time. The aquifer recovers within hours of a surface flow returning from catchment rainfall.