

Belubula Valley Alluvial Groundwater Source

Introduction

This report is a summary of water accounts, volume pumped and groundwater levels for the Belubula Valley Alluvial Groundwater Source. The report is for the period 1 July 2019 to 30 June 2020 based on the water sharing plan that applied over the period. It will be updated on an annual basis.

For detailed information of the hydrogeology, management and past long-term water level behaviour of this water source refer to the Groundwater Resource Description Report for the Lachlan Alluvial Groundwater Sources:

www.industry.nsw.gov.au/__data/assets/pdf_file/0010/175969/Lachlan-alluvium-appendice-a-water-resource-description.pdf

Description

The Belubula Valley Alluvial Groundwater Source is located within the Lachlan River catchment. The water source extends approximately 12 km upstream to 10 km downstream of Canowindra and is up to 2 km wide (**Figure 1**).

The Belubula Valley Alluvial Groundwater Source (**Figure 1**) is made up of the alluvial sediments. These sediments form a paleochannel deposited by the Belubula River and its tributaries, comprised of clay, silt, sand and gravel.

Water resource management

Water sharing plan

For the period of reporting, the Belubula Valley Alluvial Groundwater Source was managed by the rules defined in the Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2012. It was replaced on 1 July 2020 by the Water Sharing Plan for the Lachlan Alluvial Groundwater Sources 2020.

This water sharing plan is available for viewing on the Department of Planning Industry and Environment - Water website at: www.industry.nsw.gov.au/water/plans-programs/water-sharing-plans/status/lachlan-region

Basic rights

Basic landholder rights are available in this groundwater source for domestic and stock watering requirements. While landholders don't need an access licence to take water for domestic and stock purposes from groundwater below their property, the bore must be authorised by WaterNSW.

The volume of water set aside in the water sharing plan for basic landholder rights is 36 megalitres (ML).

An approval holder is responsible for monitoring water quality from the water supply work to ensure it is suitable for its intended purpose for the duration of the approval. Inherent water quality and land use activities may make the water in some areas unsuitable for use. Water from the groundwater sources should not be used without first being tested and, if necessary, appropriately treated to ensure it is fit for purpose. Such testing and treatment is the responsibility of the water user.

Belubula Valley Alluvial Groundwater Source

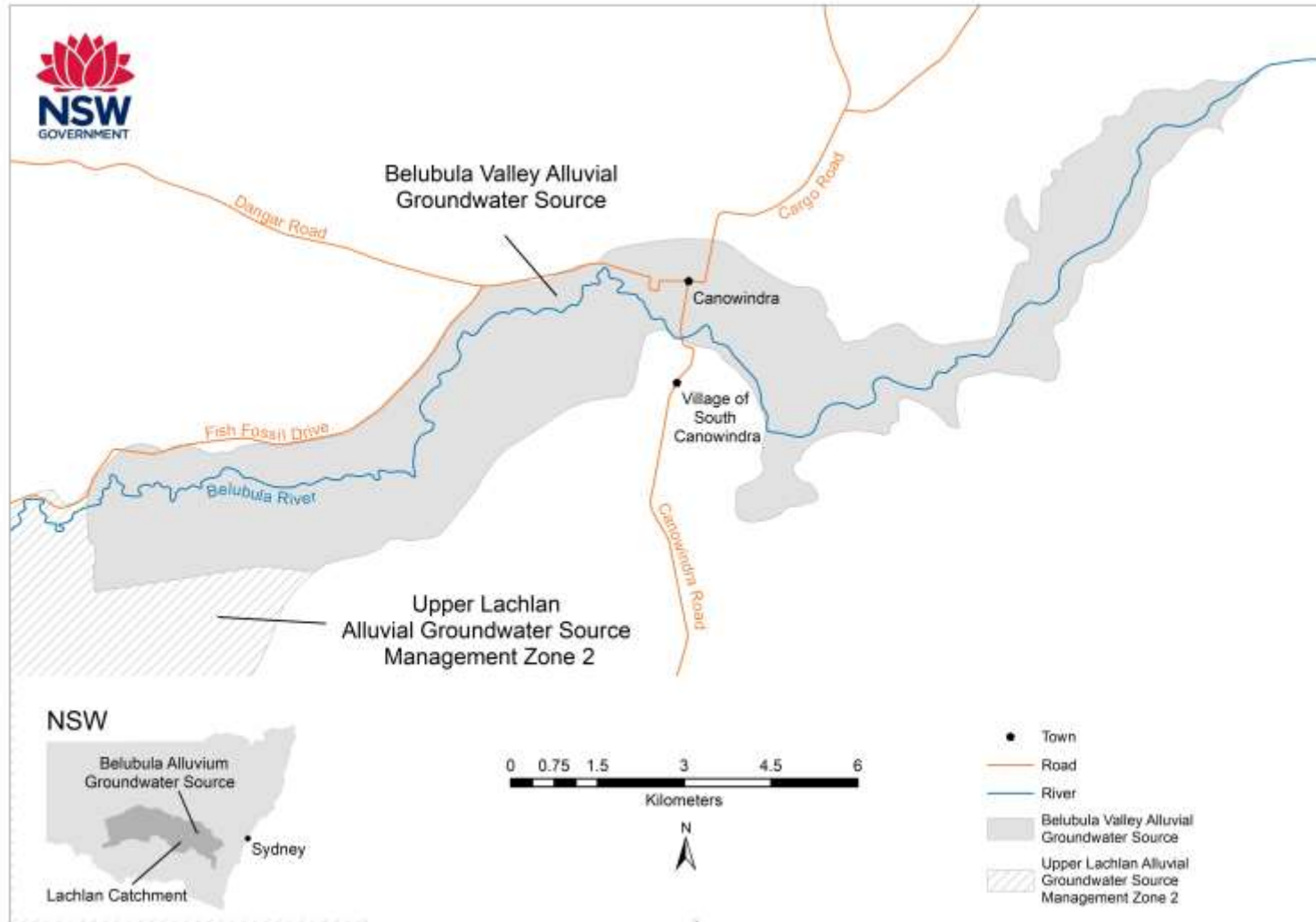


Figure 1 Location Map

Belubula Valley Alluvial Groundwater Source

Groundwater access licences

Groundwater access licence share components for 2019 - 2020 are presented in **Table 1**.

Table 1: Belubula Valley Alluvial Groundwater Source share component 30 June 2020

Access Licence Category	Number of Licences	Total Volume
Aquifer (High Security) ¹	35	8,250

¹ Megalitres per unit share

Extraction limit

All groundwater sharing plans have rules to manage extraction in a water source to the long-term average annual extraction limit. The extraction limit for this groundwater source is 2,919 ML/year.

Extraction in the Belubula Valley Alluvial Groundwater Source is not compliant if the **5 years** average annual extraction is more than **110%** of the extraction limit (known as the compliance trigger). If average extraction exceeds the compliance trigger, then the available water determination made for aquifer access licences for the following water year, may be reduced by an amount that would return subsequent total water extraction to the extraction limit.

Compliance against the extraction limit for the Belubula Valley Alluvial Groundwater Source are illustrated in **Figure 2**.

Belubula Valley Alluvial Groundwater Source

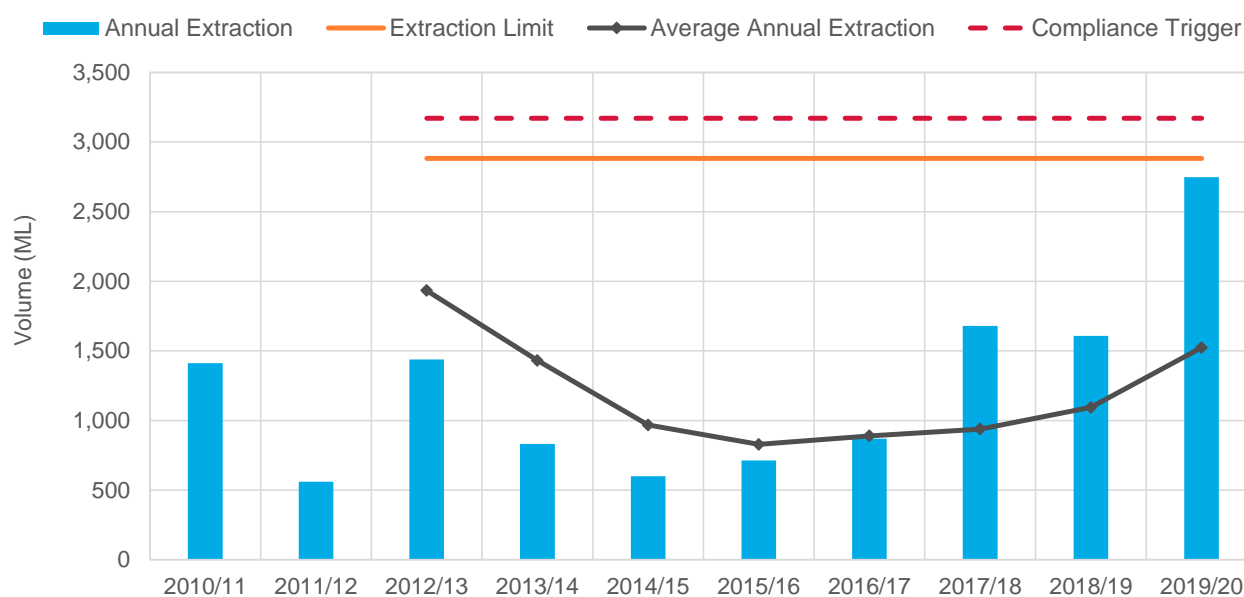


Figure 2: Belubula Valley Alluvial Groundwater Source groundwater extraction compared to the extraction limit compliance trigger

Available water

Total water credited to an access licence account in a water year is controlled by the available water determinations and the carryover rules that dictate the allowable volume to be brought forward from one year to the next.

Total available water for use is controlled by the annual account usage limits, which define the maximum volume of allocated water that can be taken in that water year. The rules and limits that are applicable to the Belubula Valley Alluvial Groundwater Source are provided in **Table 2**.

Table 2: Belubula Valley Alluvial Groundwater Source access licence account rules

Access Licence Category	Carryover Limit	Annual Use Limit	Maximum AWD
Aquifer	0.25 ML/share	1.25 ML/share	1 ML/share

The maximum amount of water that can be debited from an aquifer access licence account in a water year can't exceed 1.25 ML per unit share component (annual use limit) plus any allocation transferred in (temporary trade), and minus any allocation transferred out. This means that metered extraction plus transfers out can't exceed 125 per cent of the of share component, unless water is transferred in.

Total account water is displayed in **Figure 3** showing the proportion available for use and what is not available for use in a year. Total yearly extraction is also displayed. All access licence categories have been combined in **Figure 3**.

The alluvium within the groundwater source is highly connected to the Belubula River. The available water determinations for the aquifer (high security) access are linked to those of the Belubula River high security access licences. The allocations for these licences are based on:

- 0.3 ML per unit share of the aquifer (high security) access licence shares

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- 70% of the AWD made for regulated river (high security) access licences in the Belubula Regulated River Water Source

There has been no reduction in the available water determination (AWD) for aquifer access licences in the Belubula Valley Alluvial Groundwater Source since the water sharing plan first started in 2012.

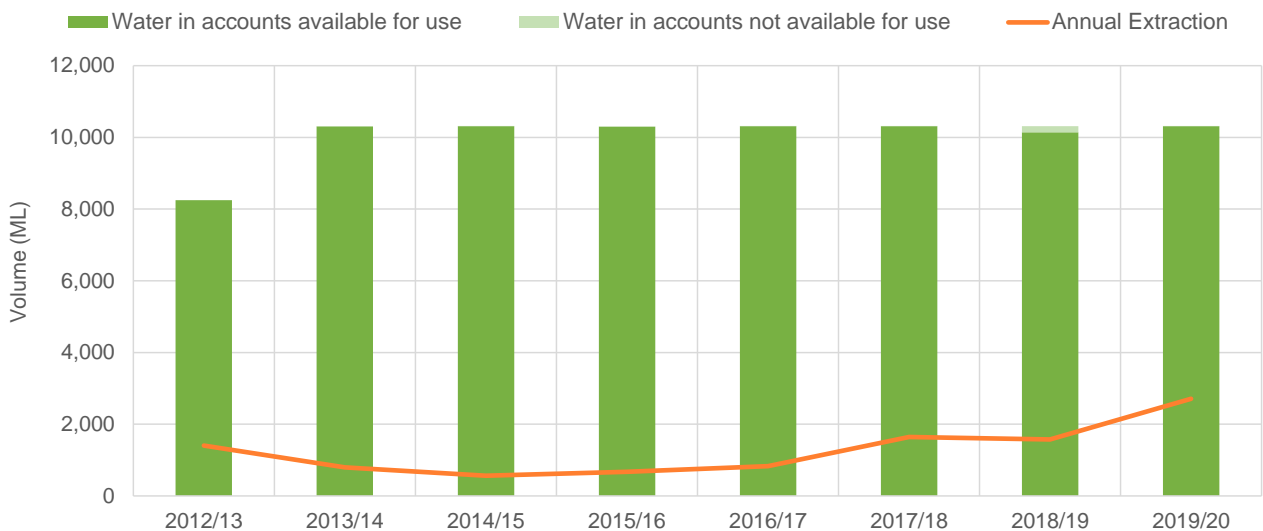


Figure 3: Account water availability and usage summary for the Belubula Valley Alluvial Groundwater Source

Access licence account summary for the 2019/2020 water year

The following section summarises the water accounting information applicable to the access licences in the Belubula Valley Alluvial Groundwater Source for the period 1 July 2019 to 30 June 2020, as shown in **Table 3**. Account summary components have been rounded to the nearest megalitre.

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Table 3: Belubula Valley Alluvial Groundwater Source access licence account summary 2019-20, volumes in ML or shares

Access licence category	Share 30 June 2020	Opening balance	AWD	Assignments (Temporary Trades)		Account usage	During year forfeit	End of year balance		End of year forfeit	Carry forward
				In	Out			Available	Unavailable		
Aquifer (High Security)	8,250	2,063	8,250	218	218	2,711	0	7,601	0	5,598	2,004

Explanatory information for Table 3

Heading		Description
Share		This is the total share component (entitlement) in the specific licence category and the end of the relevant water year
Opening balance		The volume of water that has been carried forward from previous years access licence accounts for the relevant licence category.
AWD		Increase to total account water as a result of available water determinations (a process which distributes a volume of water to access licence accounts at the commencement of each water year)
Assignments	In	Increase in account water as a result of allocation assignments (temporary trade) in.
	Out	Decrease in account water as a result of allocation assignments (temporary trade) out.
Account usage		Decrease in account water due to account usage
End of year balance	Available	The available (accessible for use) account balance reported and the end of the relevant water year. The total account balance is equal to the available plus unavailable volumes. The volume stated is prior to any end of year forfeits.
	Unavailable	The amount in accounts that is unavailable for use at the time of reporting due to account usage limits defined in the relevant water sharing plan. The volume is reported at the end of the relevant water year. The total account balance is equal to the available plus unavailable volumes. The volume stated is prior to any end of year forfeits.
End of Year Forfeit		Account water that is forfeited at the end of the water year as a result of carryover rules defined in the relevant water sharing plan that may restrict the volumes allowed to be carried forward.
Carry Forward		This represents the account water that is permitted to be carried forward into the next water year as determined by the carryover rules.
(123)		Denotes a negative value

Belubula Valley Alluvial Groundwater Source

Groundwater trading

Trades are permitted within but not between Belubula Valley Alluvial Groundwater Source and any other groundwater source.

Allocation assignments (temporary trade)

There was one temporary transfer made in the Belubula Valley Alluvial Groundwater Source, which occurred during 2019-20 water year. The price paid for this trade was not reported.

Assignment or transfer of rights (permanent trade)

A summary of the assignment or transfer of water access rights dealings in the Belubula Valley Alluvial Groundwater Source is provided in **Table 4**.

Other dealings that can result in increased extractions at existing locations or at new locations such as adding or removing approvals from an access licence, or subdivision and consolidation of access licences have not been included in **Table 4**.

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Table 4: Summary of assignments or transfers of water access rights

Dealing		2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Belubula Valley Alluvial Groundwater Source											
Transfer of WAL (excludes transfers for less than \$1 per share)	Number	0	0	0	0	1	3	0	2	1	4
	Total share transferred	0	0	0	0	170	1,986	0	548	232	777
Assignment of share component (excludes assignments for less than \$1 per share)	Number	0	0	0	0	0	0	0	0	0	0
	Total share assigned	0	0	0	0	0	0	0	0	0	0
	Average price per ML	0	0	0	0	0	0	0	0	0	0

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Bores

There are approximately 115 registered bores in the Belubula Valley Alluvial Groundwater Source (**Figure 4**). The majority of these bores are used for stock and domestic purposes (Basic Landholder Rights). There is also significant use of groundwater for irrigation (**Table 5**).

Available information from production bores in this groundwater indicates that bores can yield up to 500 ML/year (**Figure 5**).

Table 5: Number of licensed water supply bores in the Belubula Valley Alluvial Groundwater Source (at June 2020).

Water Source	Registered Bore Purpose		
	Basic Landholder Rights	Production	Local Water Utility
Belubula Valley Alluvial Groundwater Source	64	51	0

Water level monitoring

WaterNSW monitors groundwater levels at 14 monitoring bores at eight sites in the Belubula Valley Alluvial Groundwater Source (**Figure 6**). At the majority of monitoring sites there are two or more pipes monitoring different depths. The depth monitored by each pipe reflects the depth where the casing is slotted to allow groundwater entry into the pipe.

A hydrograph is a plot of groundwater level or pressure from a monitoring bore over time. A representative sample of hydrographs from monitoring bores have been selected and are presented in **Figures 7 to 11**.

The alluvium within the groundwater source is highly connected to the Belubula River. Data from monitoring site GW090014 (**Figure 7**) shows that groundwater responds quickly to changes in the river levels. It demonstrates the high level of connectivity between the surface and groundwater resources.

Data for the monitored bores as well as private bore information can be obtained from the WaterNSW real time data portal (realtimedata.waternsw.com.au/). You can also request information via: Customer.Helpdesk@waternsw.com.au

The manually monitored sites are read every four to eight weeks. Data is also available for 3 of the groundwater monitoring sites in real-time via telemetry.

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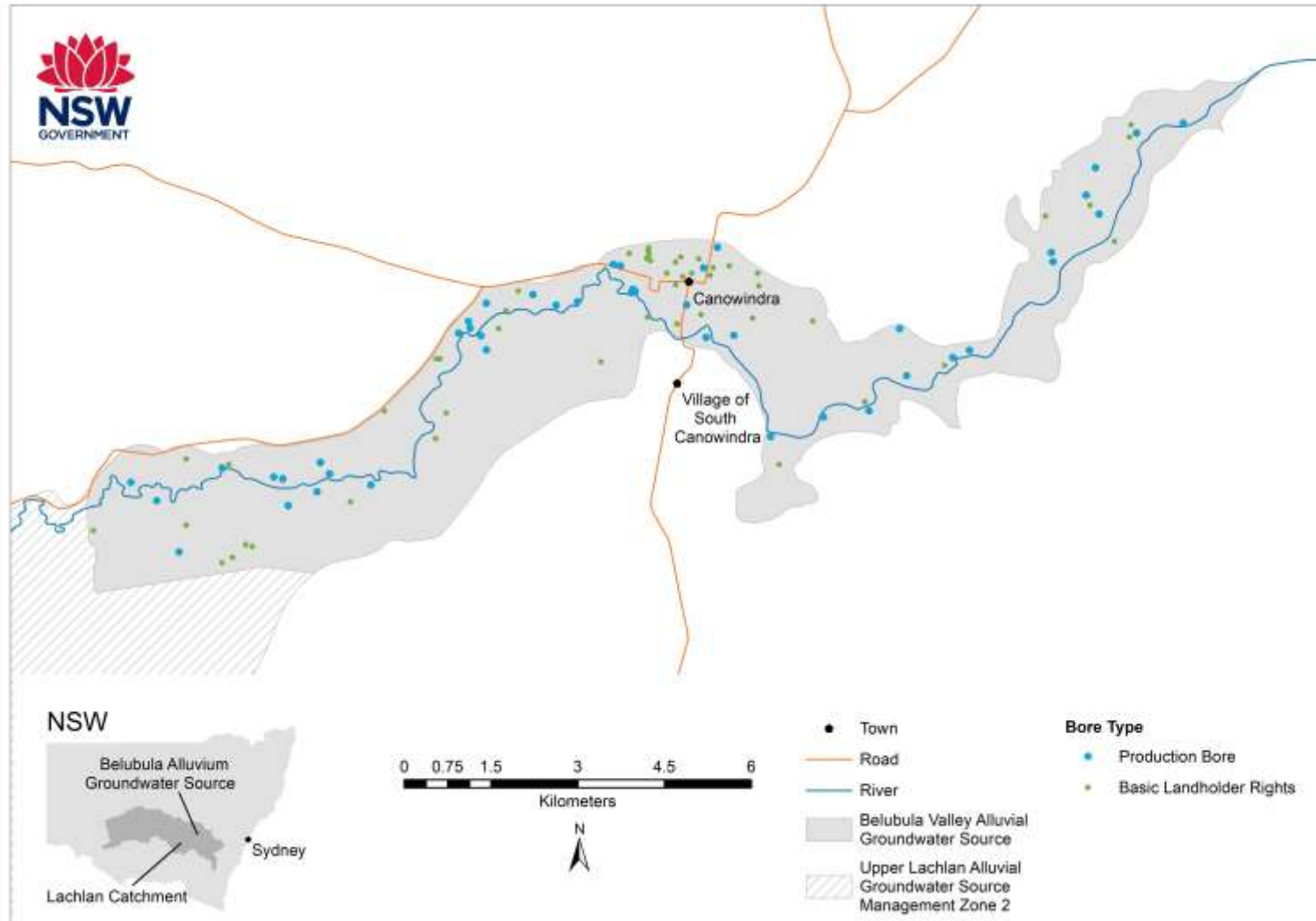


Figure 4: Belubula Valley Alluvial Groundwater Source water supply bores

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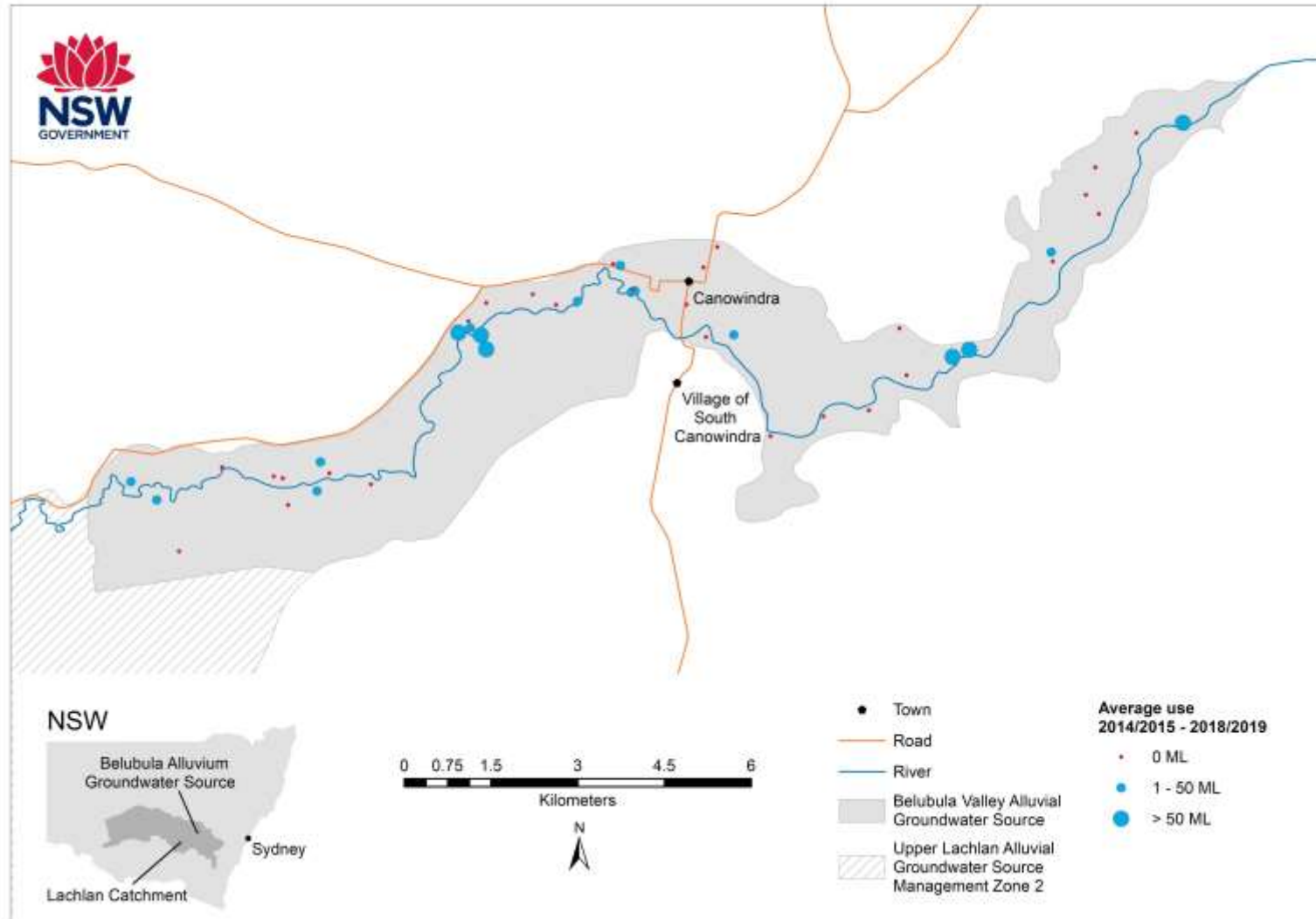


Figure 5: Belubula Valley Alluvial Groundwater Source water supply bores and distribution of extraction

Belubula Valley Alluvial Groundwater Source

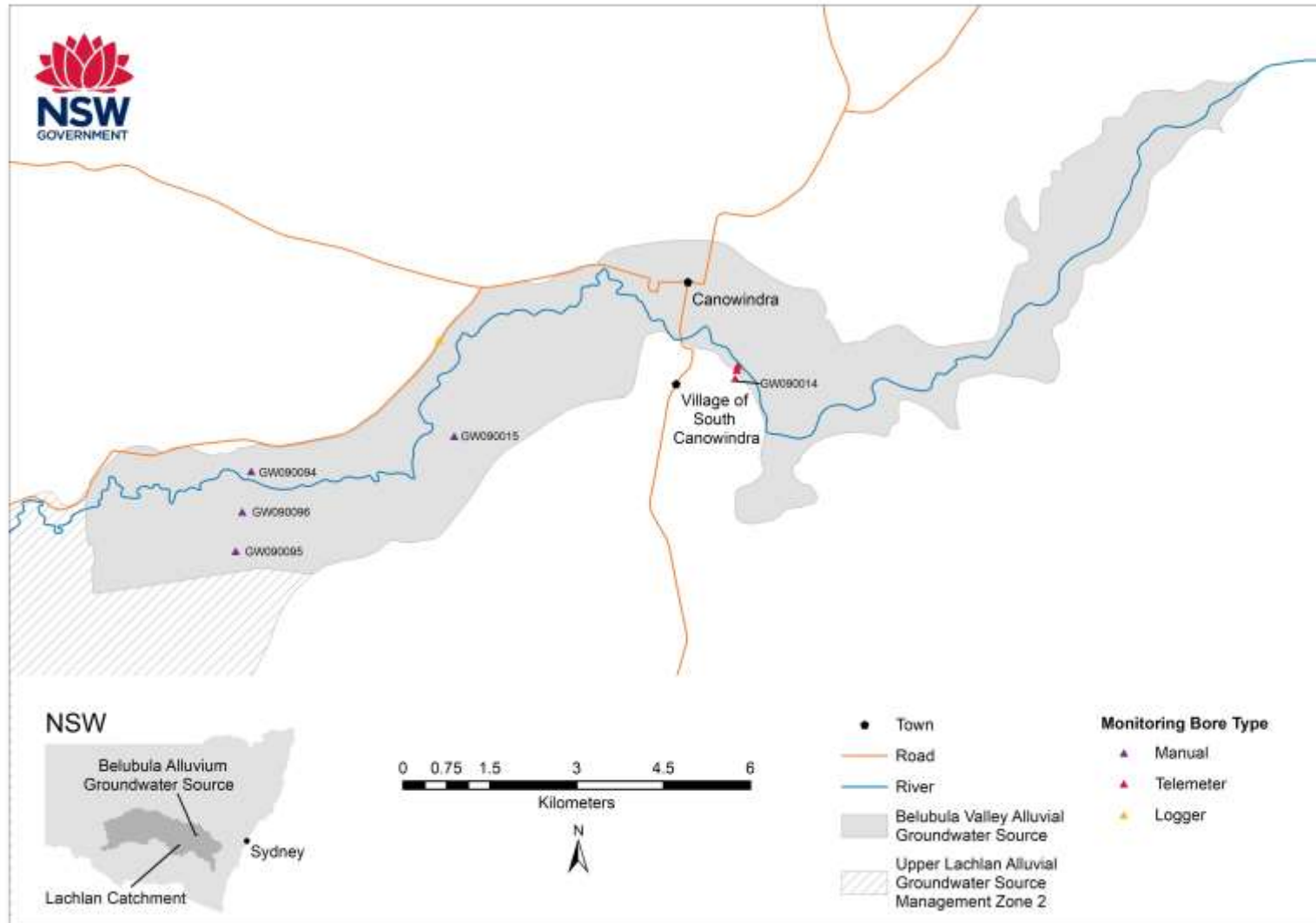


Figure 6: Belubula Valley Alluvial Groundwater Source monitoring bore sites

Belubula Valley Alluvial Groundwater Source

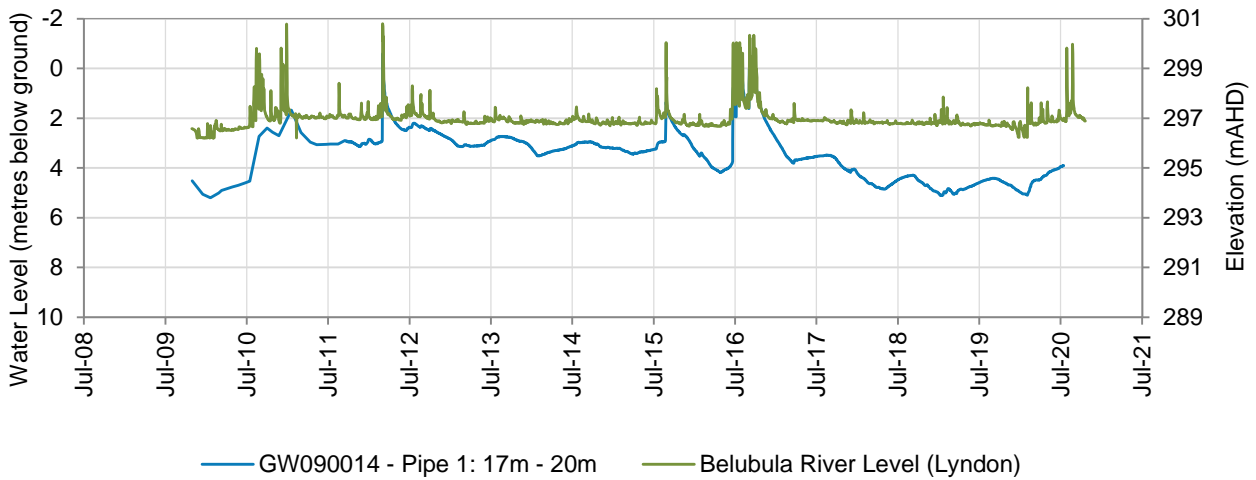


Figure 7: Hydrograph of monitoring bore GW090014

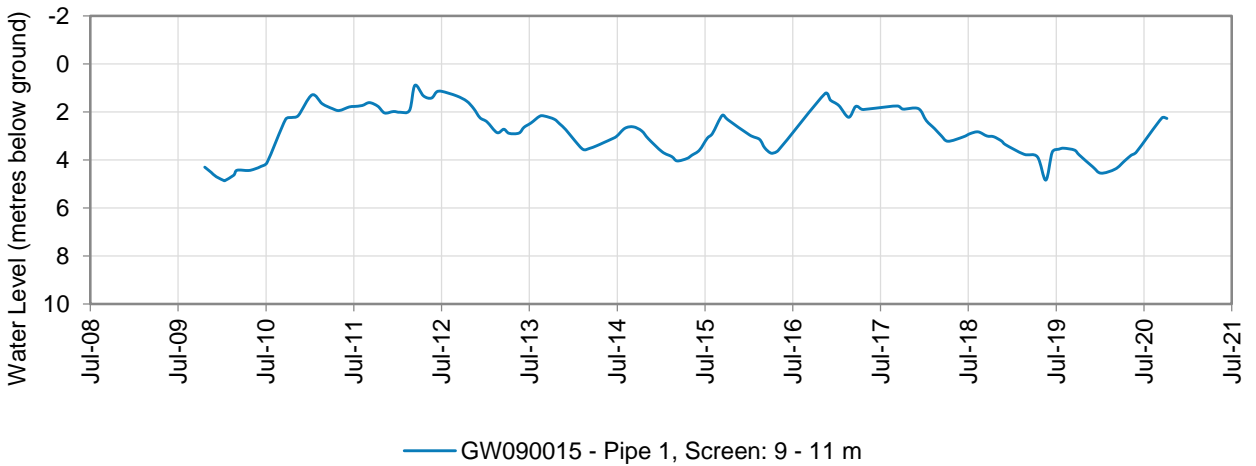


Figure 8: Hydrograph of monitoring bore GW090015

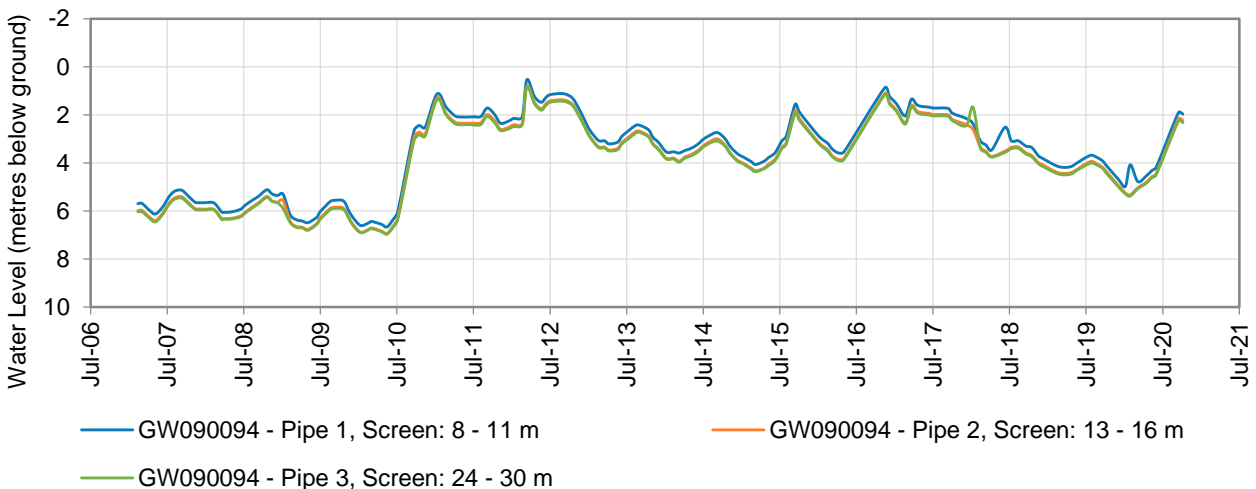


Figure 9: Hydrograph of monitoring bore GW090094

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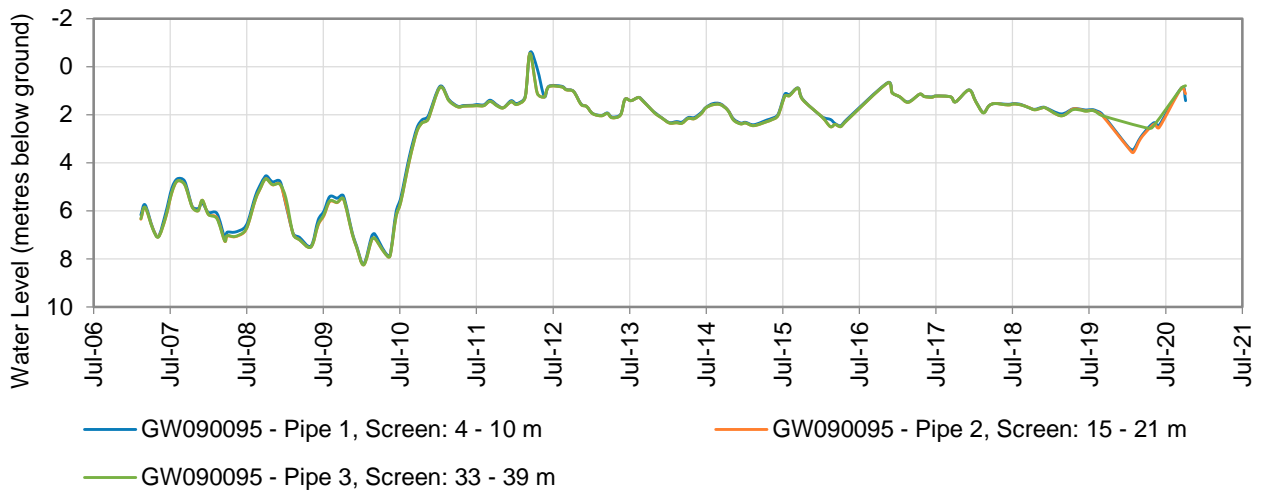


Figure 10: Hydrograph of monitoring bore GW090095

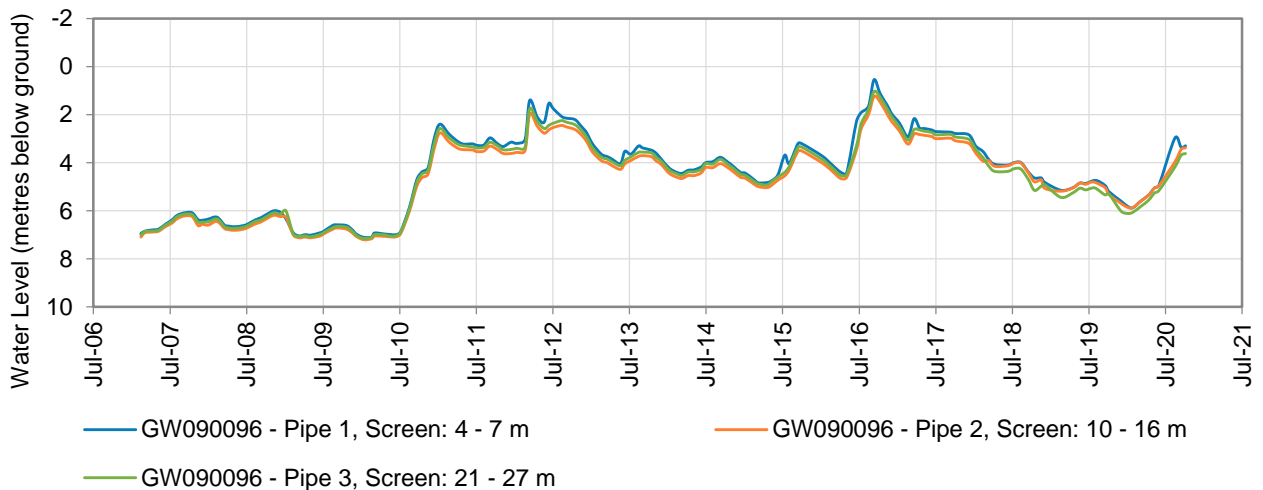


Figure 11: Hydrograph of monitoring bore GW090096

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