

Orange Basalt Groundwater Source

Introduction

This report is a summary of water accounts, volume pumped and groundwater levels for the Orange Basalt 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 NSW Murray-Darling Basin Fractured Rock:

www.industry.nsw.gov.au/__data/assets/pdf_file/0017/236510/draft-mdb-fractured-rock-wrp-resource-description.pdf

Description

The Orange Basalt Groundwater Source is located within the Lachlan and Macquarie River catchments. The water source extends from around 10km east of Milthorpe to 25 km west of Cudal and from 20 km south of Cargo to around 15 km north of Molong (**Figure 1**).

The Orange Basalt Groundwater Source (**Figure 1**) is made up of basalt extrusions which are strewn around the edges of the Canobolas Volcano near Orange, with a maximum thickness of approximately 150 metres.

Water resource management

Water sharing plan

For the period of reporting, the Orange Basalt Groundwater Source was managed by the rules defined in the Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011. It was replaced on 1 July 2020 by the Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock 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

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 1,158 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.

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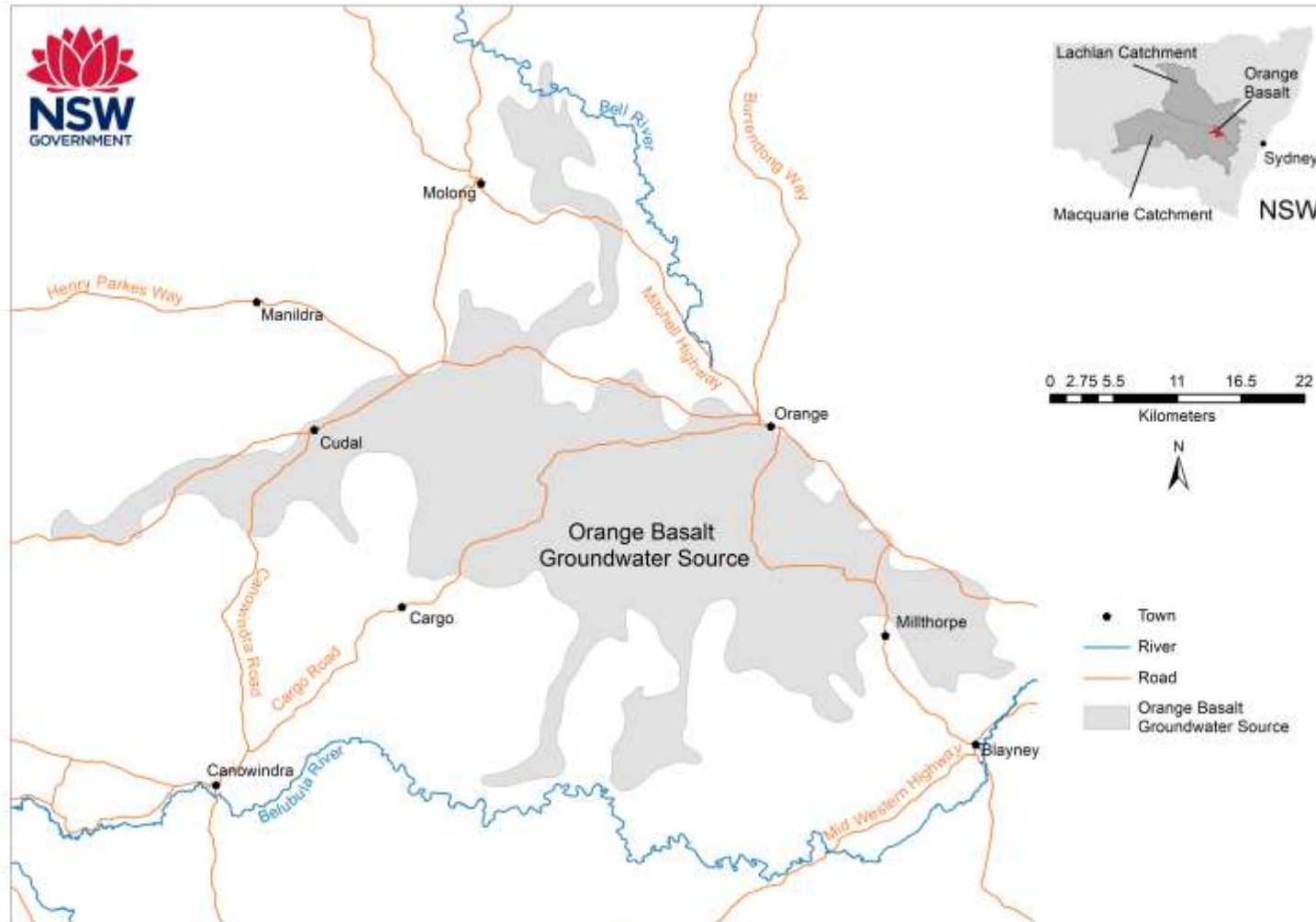


Figure 1: Location Map

Orange Basalt Groundwater Source

Groundwater access licences

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

Table 1: Orange Basalt Groundwater Source share component 30 June 2020

Access License Category	Orange Basalt Groundwater Source	
	Number of Licenses	Total Volume (ML*)
Local Water Utility	3	250
Aquifer	163	9,561

*ML = megalitres

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 Orange Basalt Groundwater Source was 10,700 ML/year. It has been revised under the Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020 to 9,561 ML/year.

Extraction in the Orange Basalt Groundwater Source is not compliant if the **5 years** average annual extraction (known as the assessment period) is more than **105%** 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.

The compliance with the extraction limit assessment period changed in 2020 (from 3 year to 5 years) with the start of the new water sharing plan.

Compliance against the extraction limit for the Orange Basalt Groundwater Source is illustrated in **Figure 2**.

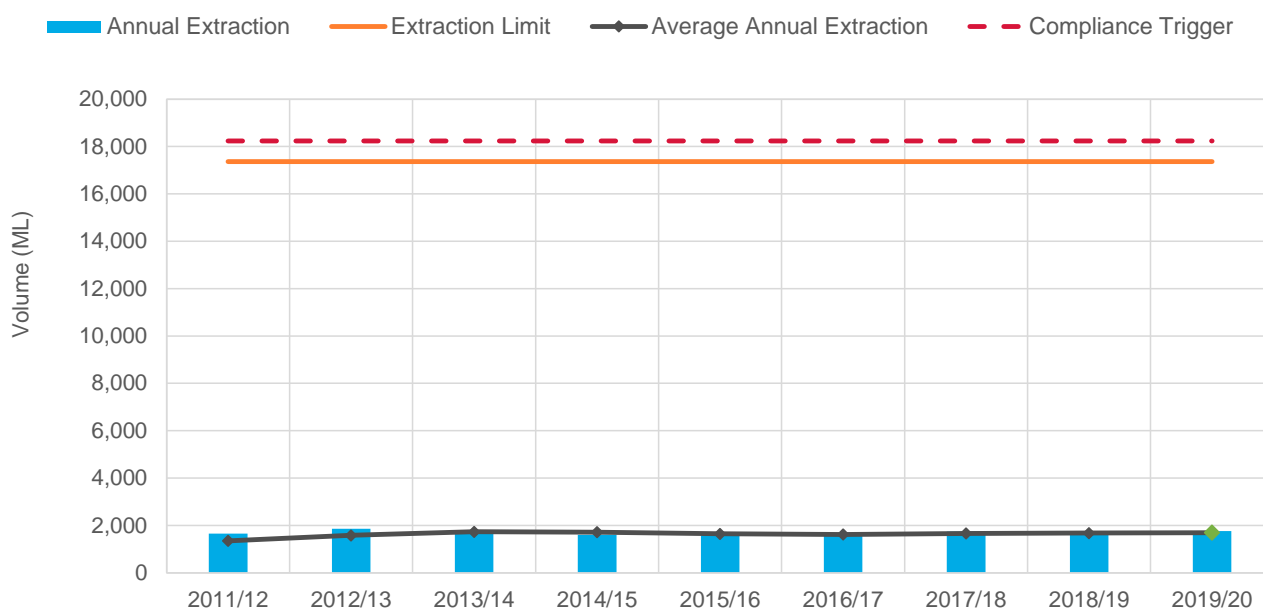


Figure 2: Orange Basalt groundwater extraction compared to the extraction limit compliance trigger

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Available water

Total water availability in a water year is controlled by the available water determinations credited to an access licence account, 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 Orange Basalt Groundwater Source are provided in **Table 2**.

Table 2: Orange Basalt Groundwater Source Access licence account rules

Access Licence Category	Carryover Limit	Annual Use Limit	Maximum AWD
Aquifer	0.1 ML/share	1.1 ML/share	1 ML/share
Local Water Utility	none	100%	100%

The maximum amount of water that can be debited from an aquifer access licence account in a water year can't exceed 1.1 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 110 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. Note, all access licence categories have been combined in **Figure 3**.

There has been no reduction in the available water determination (AWD) for aquifer access licences in the Orange Basalt Groundwater Source since the water sharing plan first started in 2006.

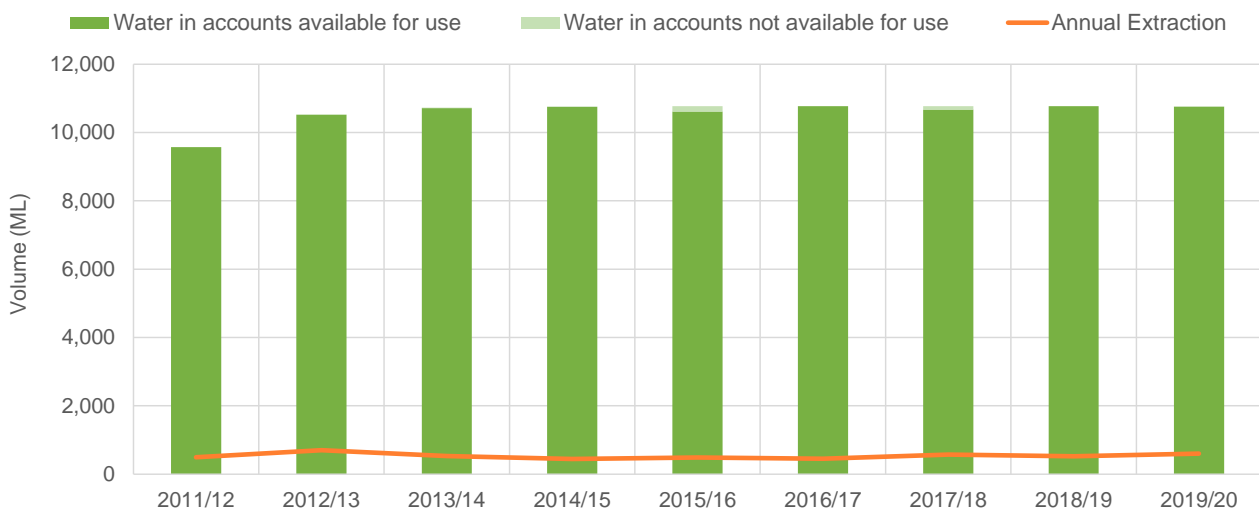


Figure 3: Account water availability and usage summary for the Orange Basalt Groundwater Source

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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 Orange Basalt Groundwater Source for the period 1 July 2019 to 30 June 2020.

The data is presented in **Table 3**. Account summary components have been rounded to the nearest megalitre.

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Table 2: Orange Basalt Groundwater Source access licence account summary 2019-20, volumes in ML or shares

Access licence category	Share 30 June 2015	Opening balance	AWD	Assignments (Temporary Trades)		Account usage	End of year balance		End of year forfeit	Carry forward
				In	Out		Available	Unavailable		
Aquifer	9,561	955	9,561	0	0	586	9,930	0	8,975	955
Local Water Utility	250	0	250	0	0	15	235	0	235	0
Supplementary Water	0	0	0	0	0	0	0	0	0	0

Explanatory information for Table 2

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

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Groundwater trading

Trades are permitted within but not between the Orange Basalt Groundwater Source and any other groundwater source.

Allocation assignments (temporary trade)

Trading statistics for the Orange Basalt Groundwater Source are illustrated in **Figure 4**, excludes trades for less than \$1 per megalitre. There were no temporary trades in the water year 2019-20.

Assignment or transfer of rights (permanent trade)

A summary of the assignment or transfer of water access rights dealings in the Orange Basalt Groundwater Source is provided in **Table 3**.

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 3**.

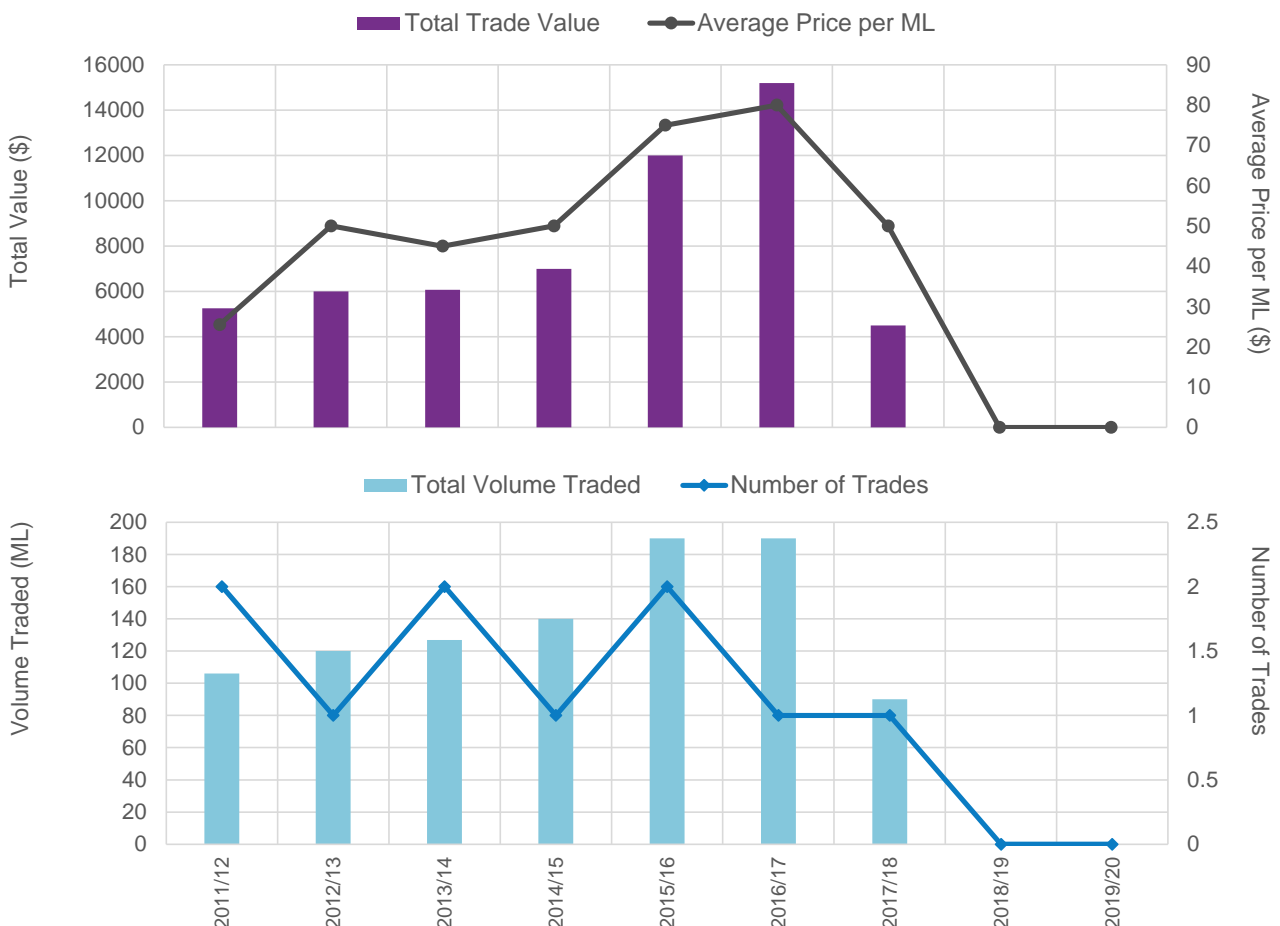


Figure 4: Orange Basalt Groundwater Source temporary trade statistics

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Table 3: 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
Orange Basalt Groundwater Source											
Transfer of WAL (excludes transfers for less than \$1 per share)	Number	0	0	5	2	3	1	2	3	2	1
	Total share transferred	0	0	359	37	235	50	90	274	53	41
Assignment of share component (excludes assignments for less than \$1 per share)	Number	0	0	0	1	1	1	0	1	0	1
	Total share assigned	0	0	0	10	15	140	0	90	0	10
	Average price per ML	0	0	0	500	800	750	0	950	0	800

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Bores

There are approximately 1,900 registered bores across the Orange Basalt Groundwater Source (**Figure 5**). 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 7**).

Production bores in the Orange Basalt Groundwater Source are concentrated around Orange in the central part of the water source. Bores constructed in the deeper more productive aquifer systems can yield up to 580 ML/year, while most production bores produce supply in the range of 20 ML/year (**Figure 6**).

Table 4: Approximate number of licenced water supply bores in the Orange Basalt Groundwater Source (at June 2020).

Water Source	Registered Bore Purpose		
	Basic Landholder Rights	Production	Local Water Utility
Orange Basalt Groundwater Source	1,676	220	8

Water level monitoring

WaterNSW monitors groundwater levels at 10 monitoring bores at 7 sites in the Orange Basalt Groundwater Source (**Figure 7**). At some 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 8 to 11**.

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 twelve weeks. There are no telemetered monitoring sites in Orange Basalt Groundwater Source.

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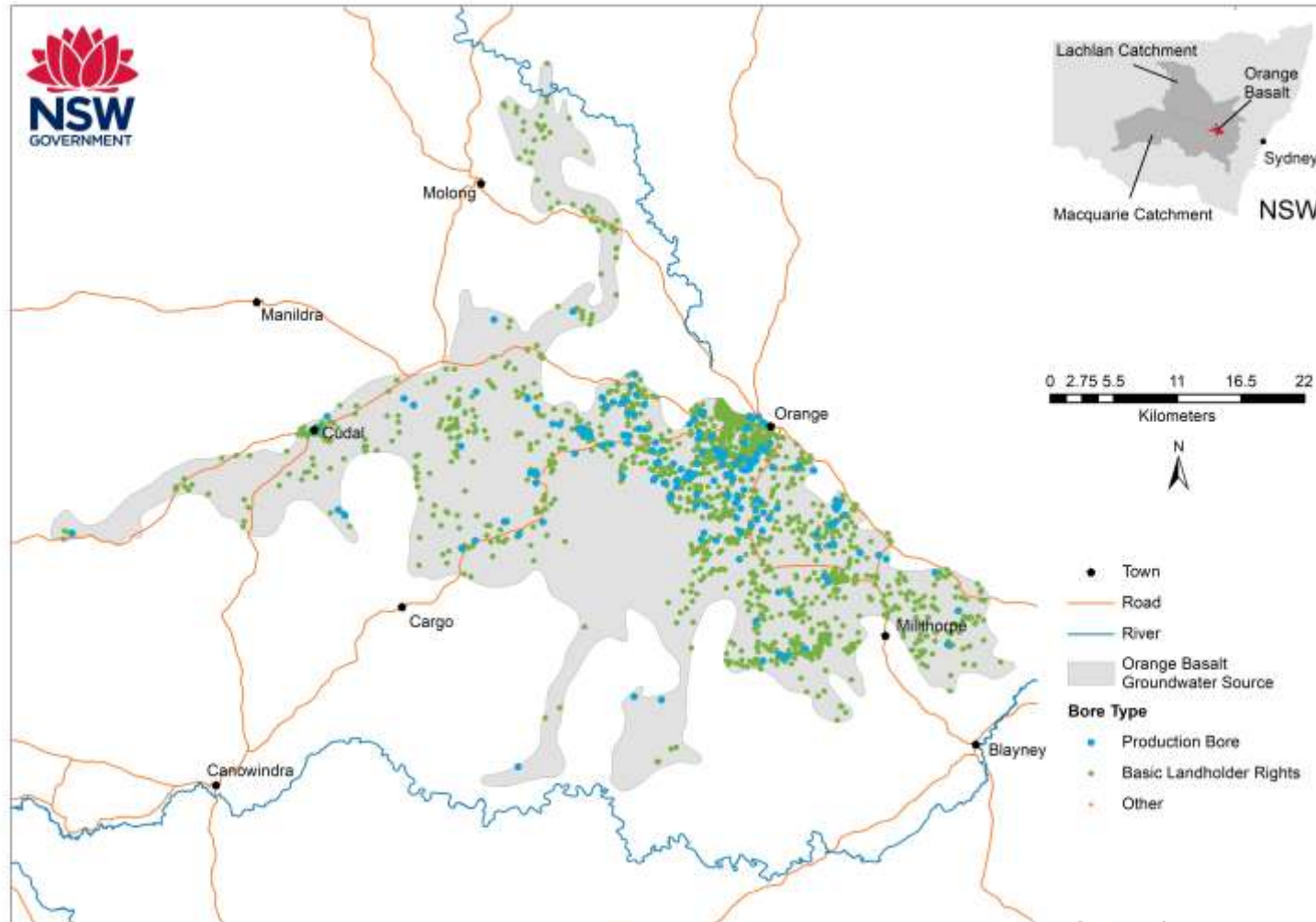


Figure 5: Orange Basalt Groundwater Source water supply bores

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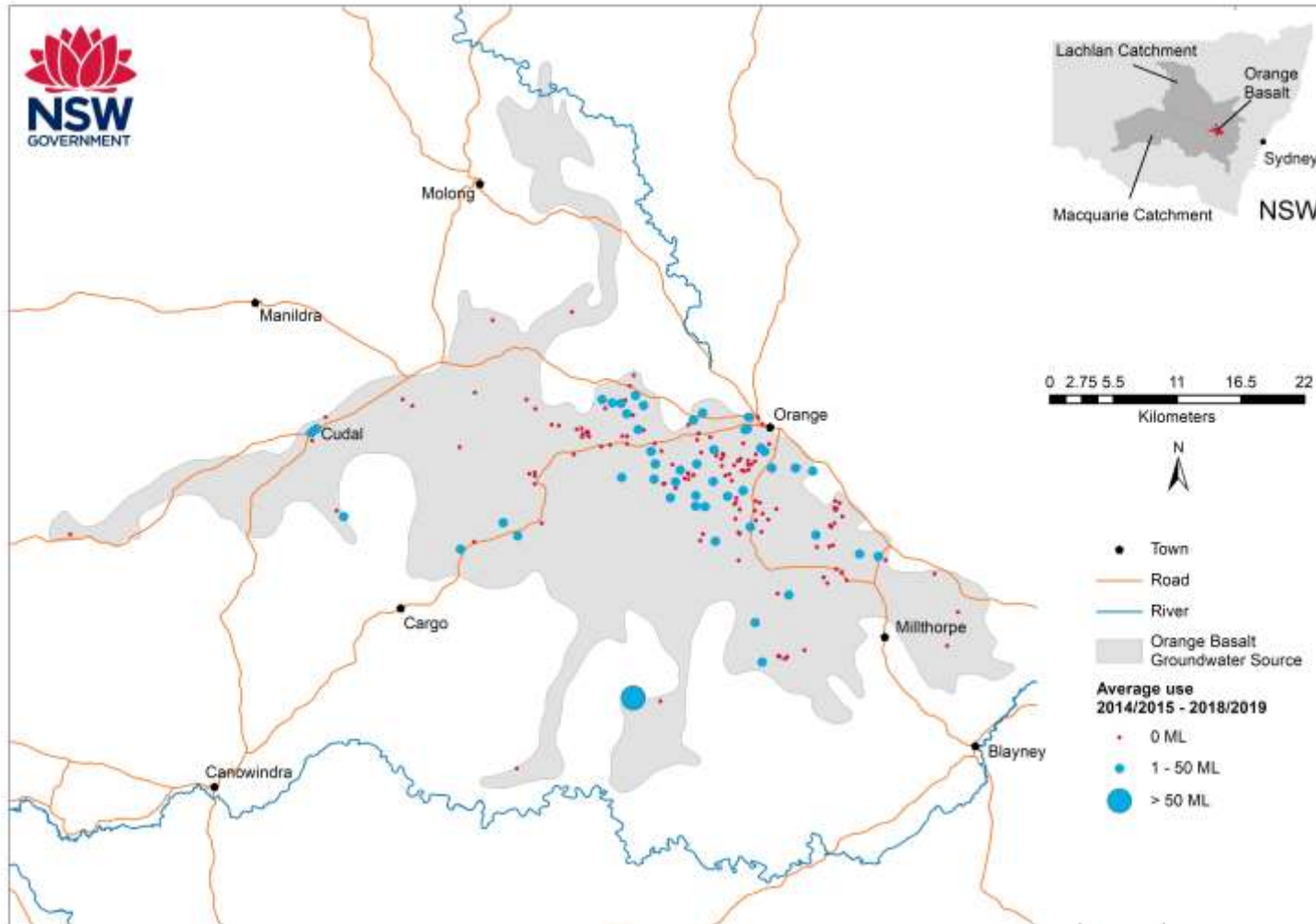


Figure 6: Orange Basalt Groundwater Source distribution of extraction

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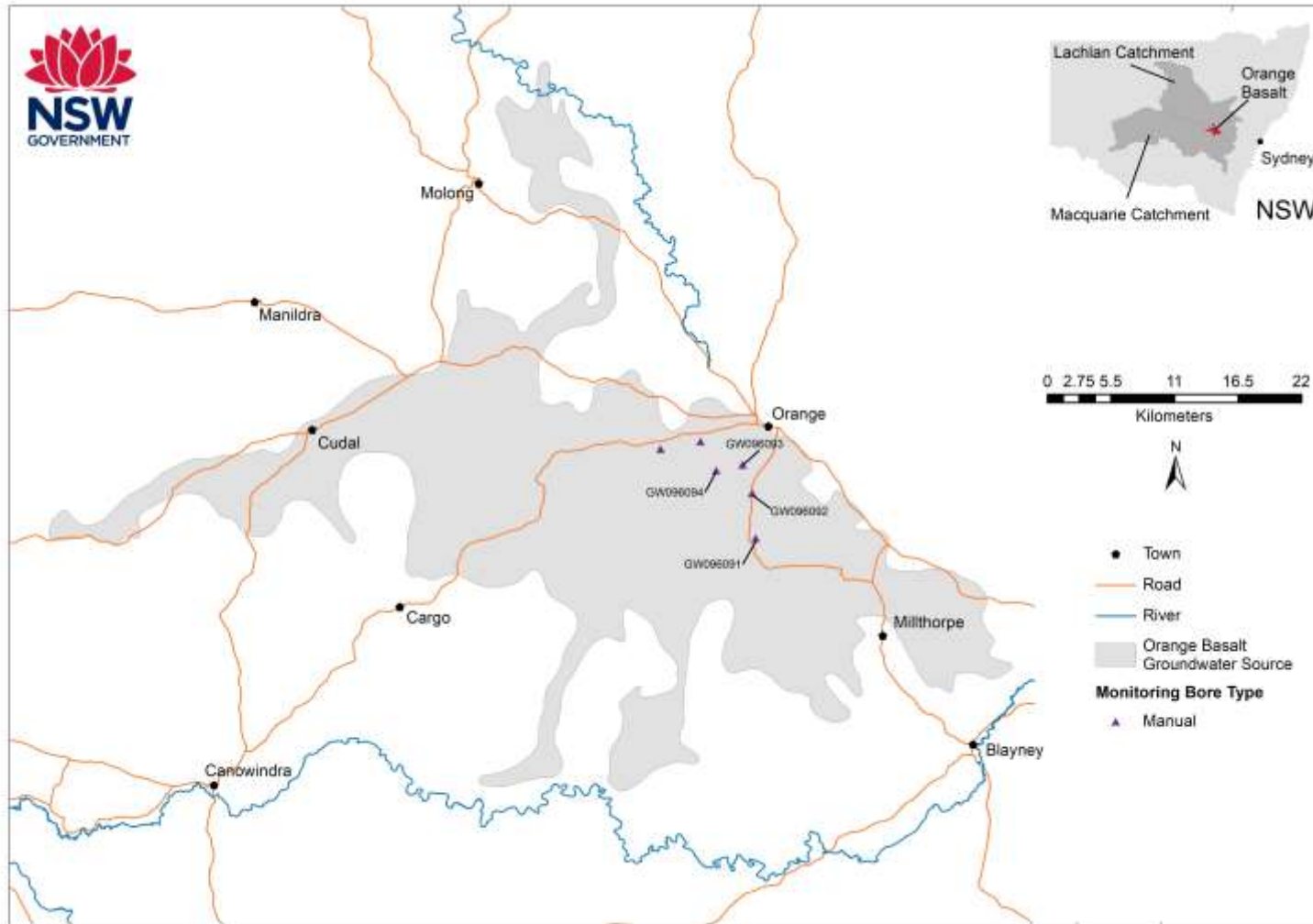


Figure 7: Orange Basalt Groundwater Source monitoring bore sites

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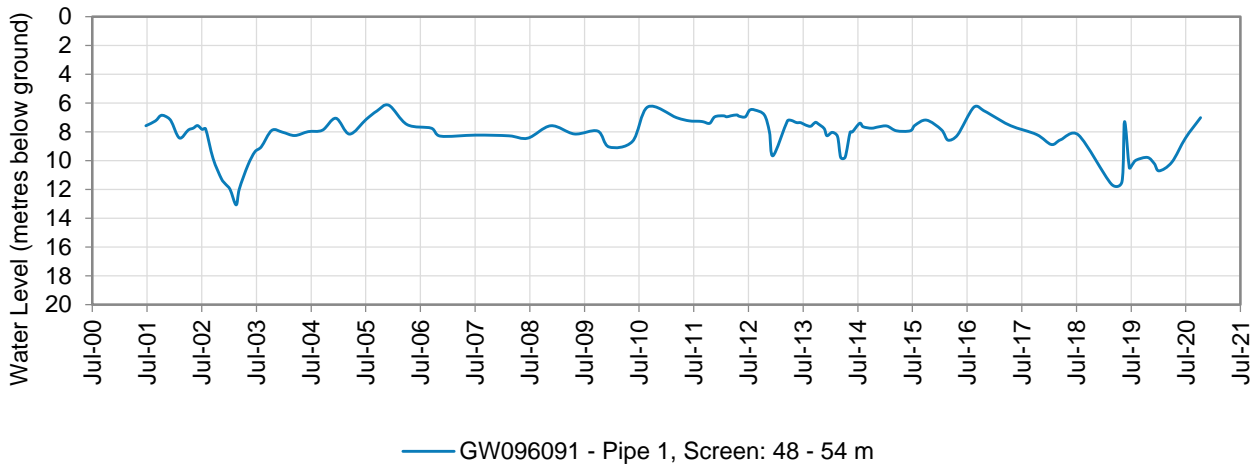


Figure 8: Hydrograph of monitoring bore GW096091

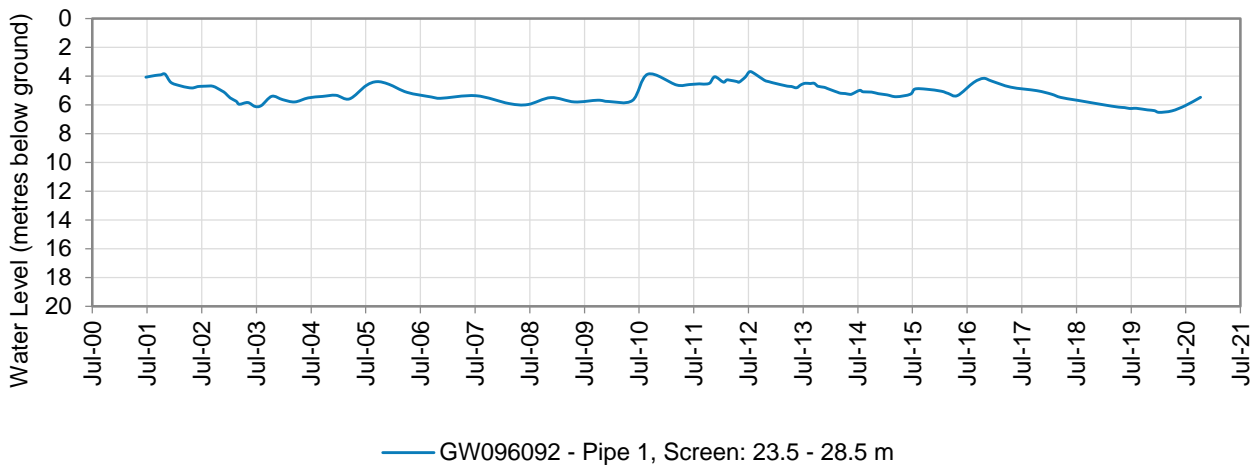


Figure 9: Hydrograph of monitoring bore GW096092

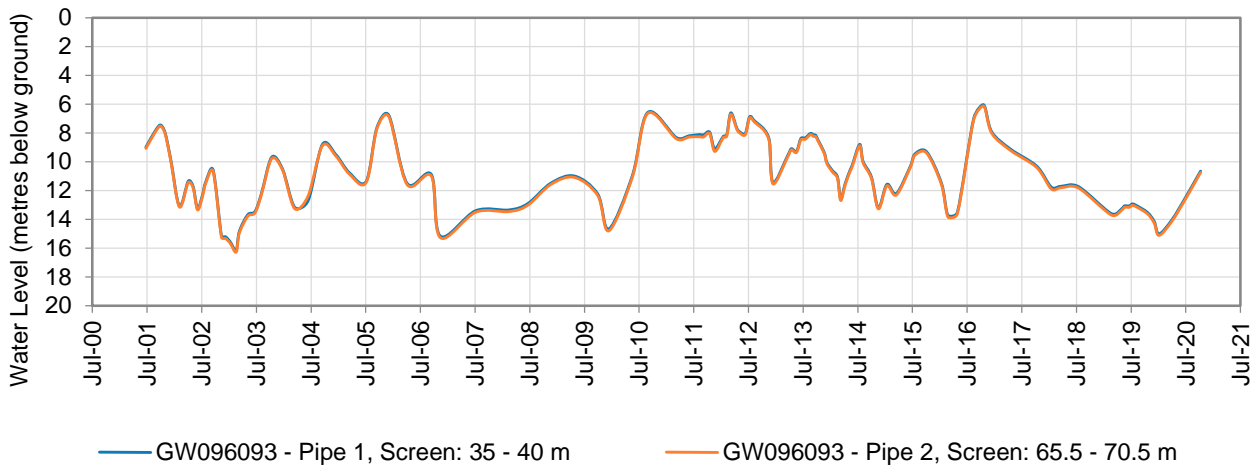


Figure 10: Hydrograph of monitoring bore GW096093

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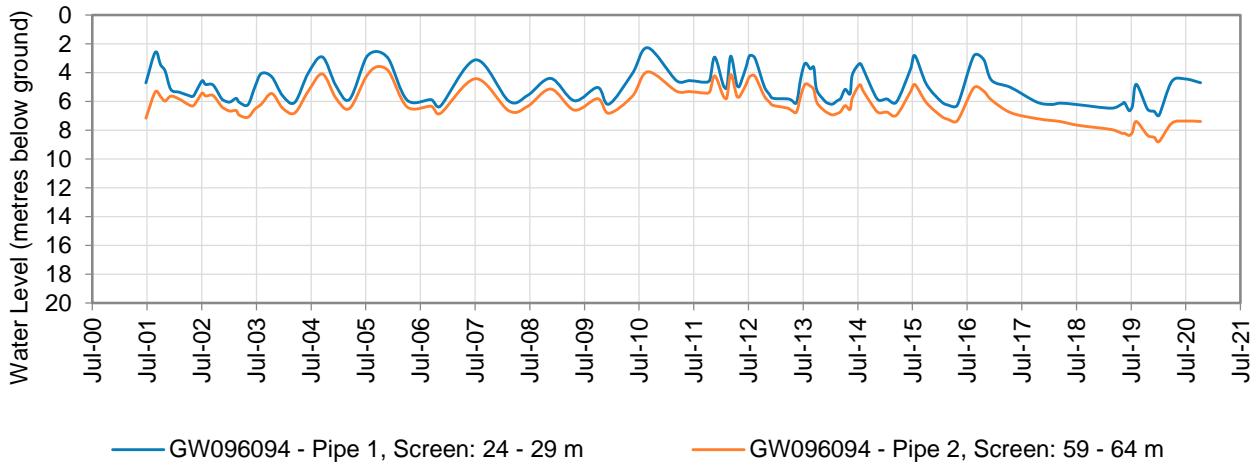


Figure 11: Hydrograph of monitoring bore GW096094

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