

Cudgegong Alluvial Groundwater Source

Groundwater annual report 2023.

Introduction

This report is a summary of water accounts, volume pumped and groundwater levels for the Cudgegong Alluvial Groundwater Source to 2023 including the start of year water account volumes for the 2023/2024 water year (1 July to 30 June).

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 Macquarie-Castlereagh Groundwater Sources:

www.industry.nsw.gov.au/___data/assets/pdf_file/0017/192221/macquarie-castlereagh-alluvium-appendix-a-water-resource-description.pdf

Description

The Cudgegong Alluvial Groundwater Source is located within the Macquarie-Castlereagh River catchment. It covers a 40 km reach along the regulated Cudgegong River through Mudgee and along the lower reaches of the unregulated Lawsons Creek (Figure 1).

The Cudgegong Alluvial Groundwater Source is made up of unconsolidated alluvial sediments. These sediments form an extensive alluvial fan deposited by the Cudgegong River and Lawsons Creek, comprised of clay, silt, sand and coarse gravel.

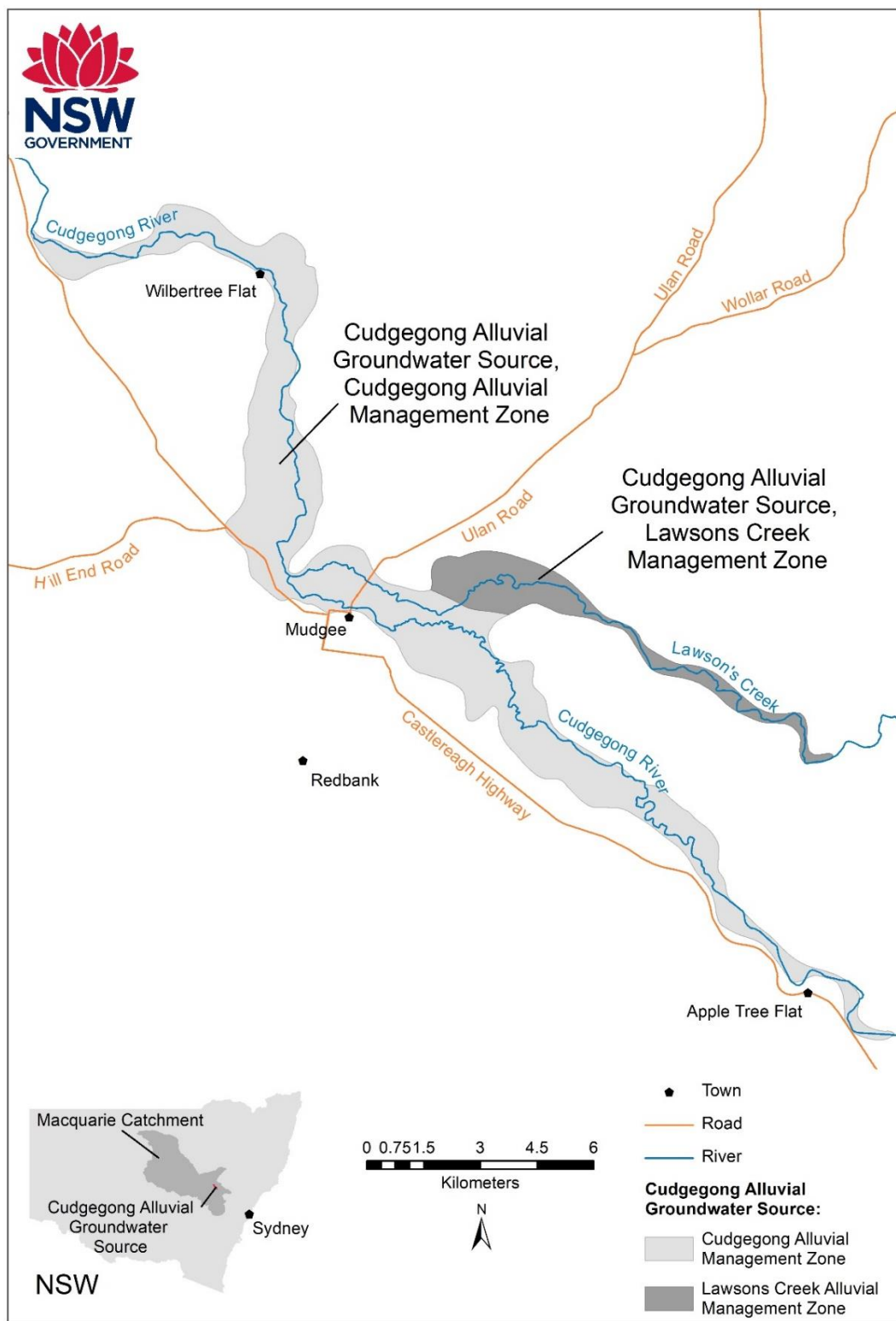
Water resource management

Water sharing plan

The Cudgegong Alluvial Groundwater Source is managed by the rules defined in the Water Sharing Plan for the Macquarie-Glenreagh Groundwater Sources 2020.

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

Figure 1: Location Map



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 27 megalitres (ML).

An approval holder is responsible for monitoring water quality from the bore 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 are the responsibility of the water user.

Groundwater access licences

Groundwater access licence share components to 30 June 2023 are presented in Table 1.

Table 1: Cudgegong Alluvial Groundwater Source share component 30 June 2023

Access Licence Category	Number of Licences	Total Volume
Local Water Utility ¹	2	3,000
Aquifer (High Security) ¹	87	8,891
Aquifer ²	12	1,828

¹Megalitres/year (ML)

²Megalitres 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 Cudgegong Alluvial Groundwater Source is 2,533 ML/year. Extraction in the groundwater source is not compliant if the 5 years average annual extraction 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.

Information on tracking groundwater extraction against extraction limit for the groundwater source including the likelihood of compliance being triggered in the current water year can be found at: water.dpie.nsw.gov.au/allocations-availability/extraction-limits/tracking-groundwater

For each inland groundwater source, the dashboard shows for the current water year:

- volume that if extracted will reach the compliance trigger (in ML, calculated annually)
- volume remaining to be extracted before reaching the compliance trigger (in ML, calculated throughout the year)
- the likelihood that access to groundwater may be reduced in the next water year.

Note: the information on the dashboard is limited by the extraction data available at the time.

Available water

Carryover of unused account water from one water year to the next is not available in this groundwater source. Total water availability in a water year is controlled by the available water determinations credited to an access licence account.

The maximum amount of water that can be debited from an account in any one water year can't exceed the available water determination (AWD) plus any allocation transferred in (temporary trade), and minus any allocation transferred out. This means that metered extraction plus transfers cannot exceed the AWD, unless water is transferred in.

The water source is divided into the following zones (Figure 1):

- Cudgegong Alluvial Management Zone
- Lawsons Creek Alluvial Management Zone.

The alluvium within the Cudgegong Alluvial Management Zone is highly connected to the Cudgegong River. The available water determination for the aquifer (high security) access licences in the Cudgegong Alluvial Management Zone are linked to those of the Macquarie and Cudgegong Regulated Rivers high security access licences. The allocations for these licences are based on 0.4 ML per unit share of the aquifer (high security) access licence share component, plus 60% of the available water determination made for regulated river (high security) access licences in the Macquarie and Cudgegong Regulated Rivers Water Sources.

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 Lower Namoi Groundwater Source are provided in Table 2.

Table 2: Cudgegong Alluvial Groundwater Source access licence account rules

Access Licence Category	Carryover Limit	Annual Use Limit	Maximum AWD
Local Water Utility	0%	100%	100%
Stock and Domestic	0%	100%	100%
Aquifer (High Security)	0 ML/share	0.4 ML/share plus 60% of the AWD made for regulated river (high security) access licences	0.4 ML/share plus 60% of the AWD made for regulated river (high security) access licences
Aquifer	0 ML/share	1 ML/share	1 ML/share

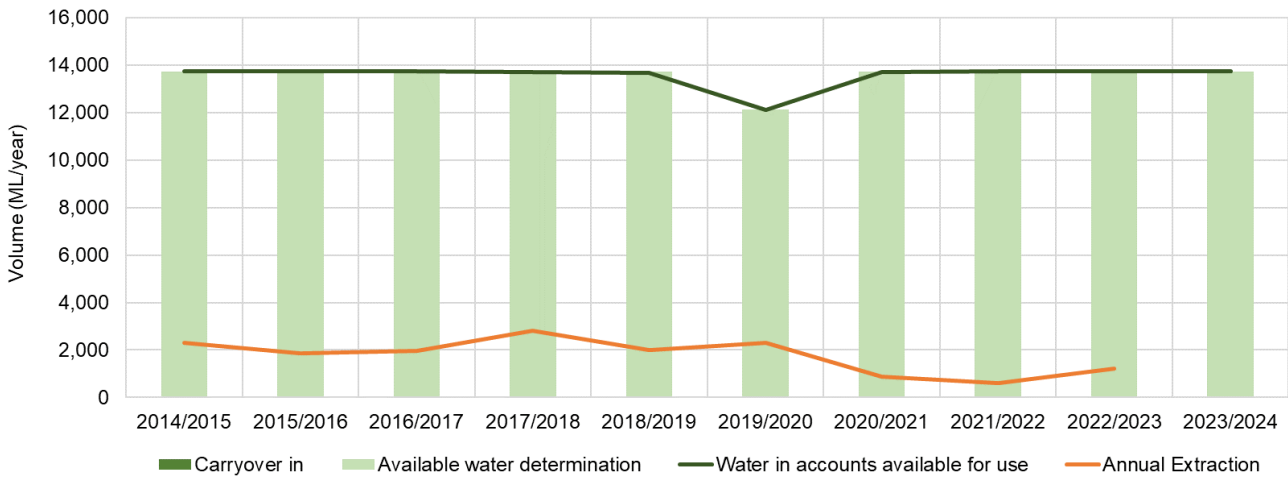
Total account water for period 2014/2015 to 2023/2024 is displayed in Figure 2 showing the proportion available for use and what is not available for use in a year. Total yearly extraction is also displayed. Note, all access licence categories have been combined in Figure 2.

The 2022/2023 allocations made available the full entitlement for each category and subcategory of access licences.

The access licence account information for the Cudgegong Alluvial Groundwater Source on 1 July 2023 is summarised below:

- Carryover In: 0 ML
- Available water determination: 13,719 ML
- Total water in account: 13,719 ML
- Total water available for use: 13,719 ML

Figure 2: Account water availability and usage summary for Cudgegong Alluvial Groundwater Source



Groundwater trading

Trading is permitted within the management zones of the Cudgegong Alluvial Groundwater Source but not between the management zones or with any other groundwater source.

Allocation assignments (temporary trade)

There is limited temporary trading data available for the groundwater source. There were no trades in the 2021/22 or 2022/2023 water years.

Further information on water licences, approvals, water trade and water dealings and other matters related to water entitlements in NSW can be found on the NSW Water Register at:

waterregister.watarnsw.com.au/water-register-frame

Bores

There are approximately 214 registered bores across the Cudgegong alluvial groundwater source (Figure 3). A large proportion of these bores are used for stock and domestic purposes (Basic Landholder Rights). The most significant use of groundwater is for irrigation (Error! Reference source not found.).

Some bores can yield up to 440 ML/year, while most production bores produce supply in the range of 20-90 ML/year (Figure 4). This is based on average extraction from 2017/2018 to 2021/2022 and unlikely to have changed significantly.

Table 3: Approximate number of licensed bores in Cudgegong Alluvial Groundwater Source (2023)

Groundwater Source	Registered Bore Purpose		
	Basic Landholder Rights	Production	Local Water Utility
Cudgegong Alluvial	33	147	33

Water level monitoring

WaterNSW monitors groundwater levels at 13 monitoring bores at 12 sites in the Cudgegong Alluvial Namoi Groundwater Source (Figure 5). 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 Figure 6 to Figure 11.

Data for the monitored bores as well as private bore information can be obtained from the WaterNSW real time data portal at: realtimedata.waternsw.com.au/

It includes data for 4 groundwater monitoring sites in real-time via telemetry. You can also request information via: Customer.Helpdesk@waternsw.com.au

Figure 3: Cudgong Alluvial Groundwater Source registered bores

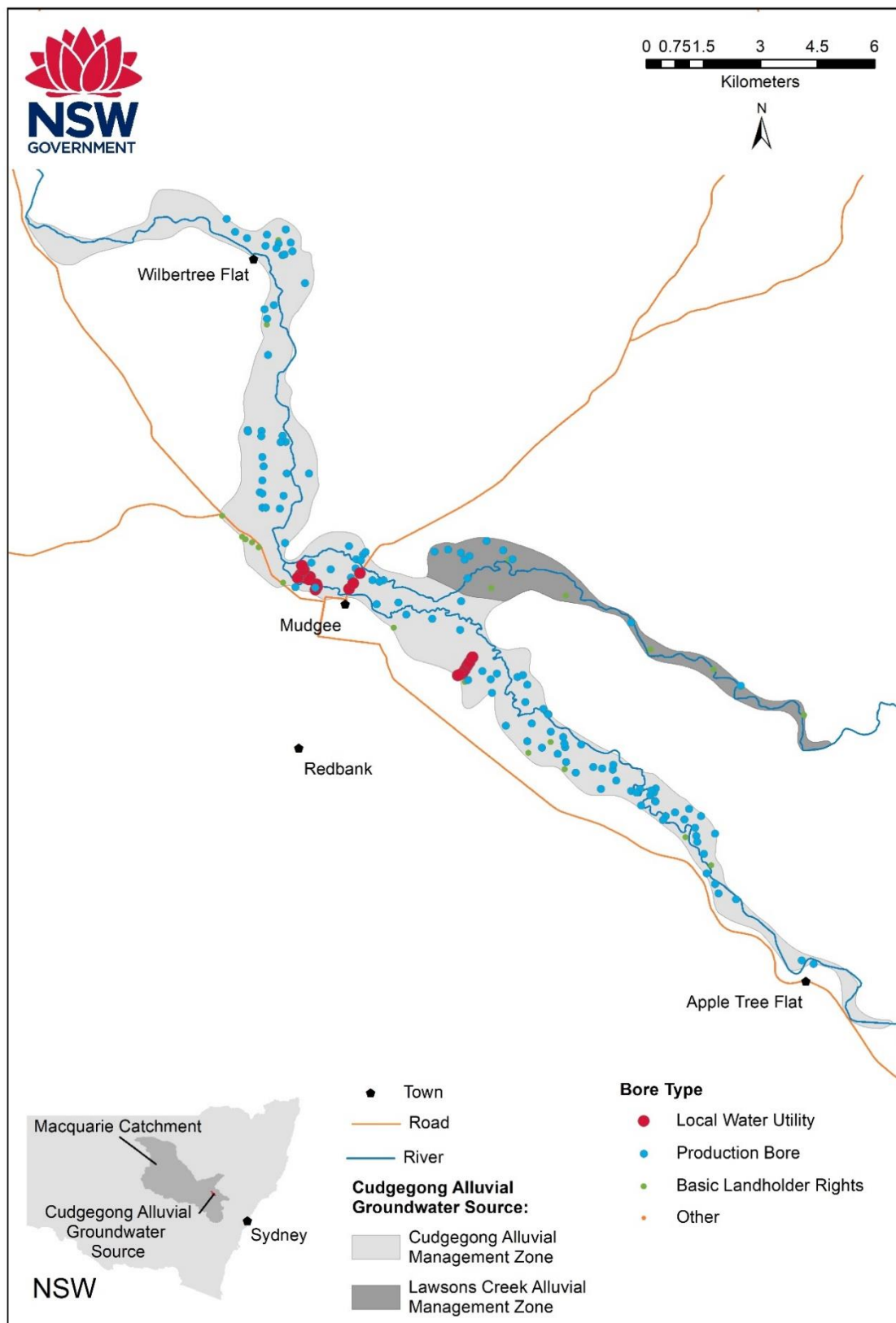


Figure 4: Cudgegong Alluvial Groundwater Source water supply bores and distribution of extraction (for period 2017/2018 to 2021/2022)

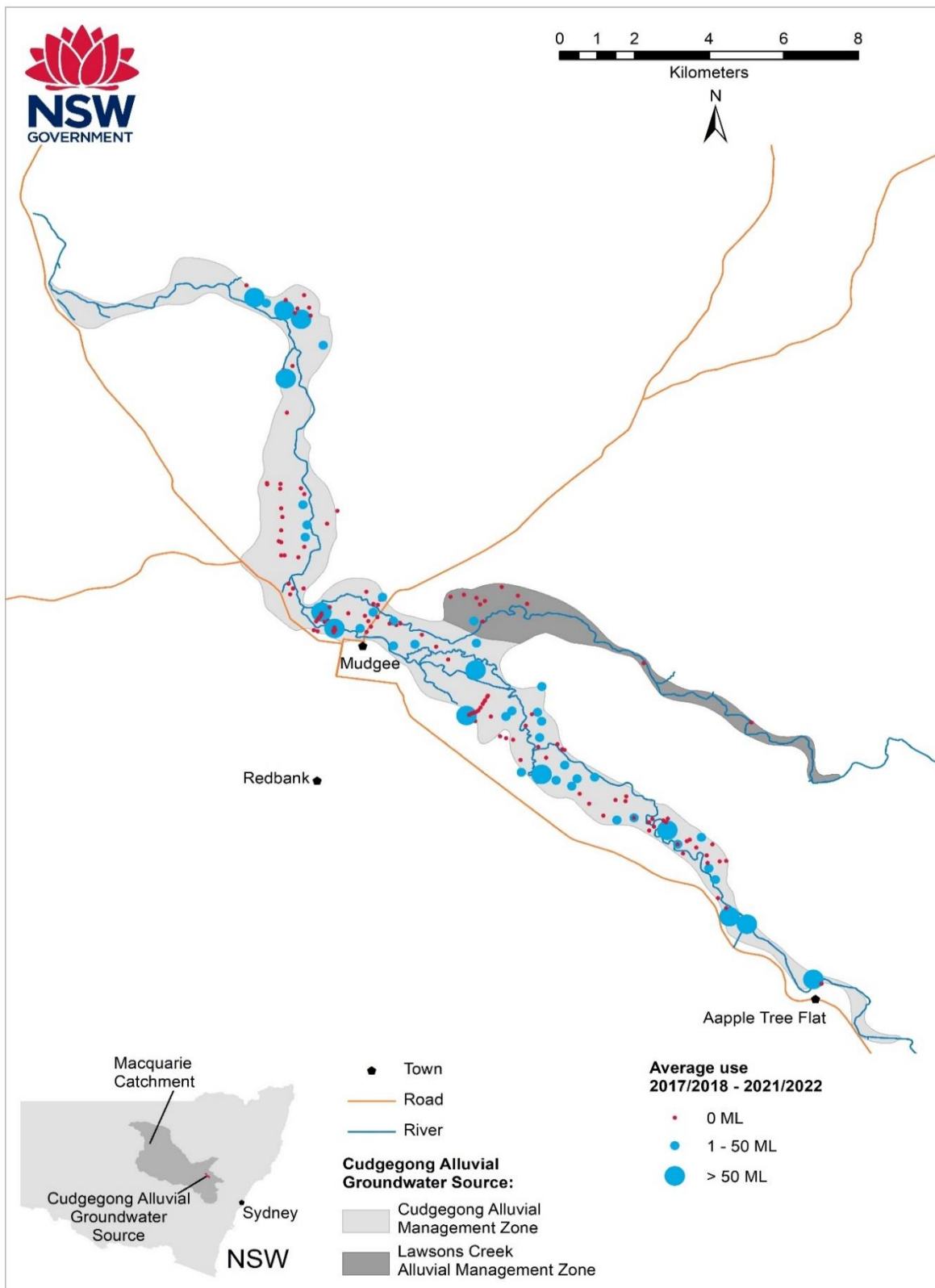


Figure 5: Cudgegong Alluvium Groundwater Source monitoring bore sites

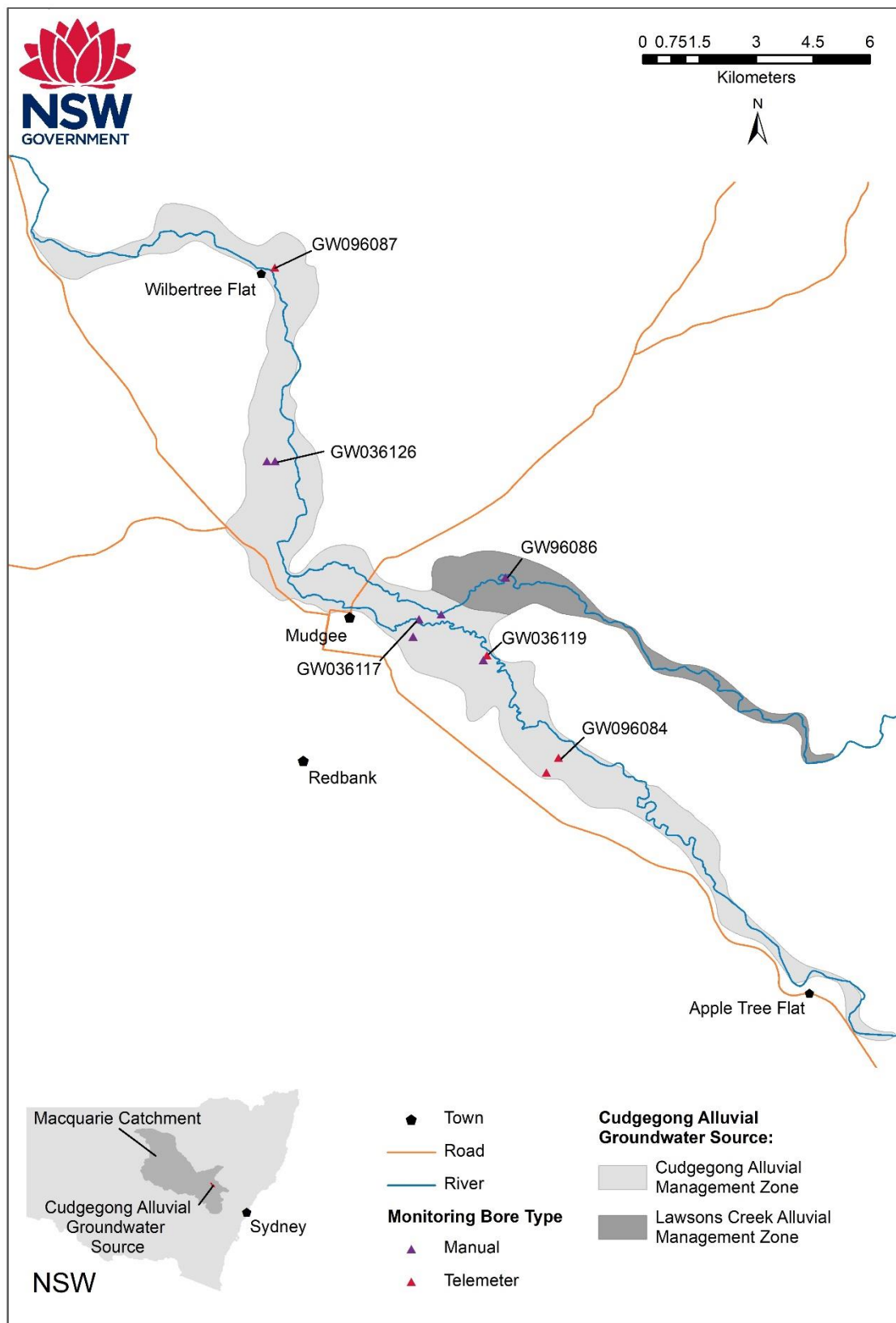


Figure 6: Hydrograph of monitoring bore GW096084

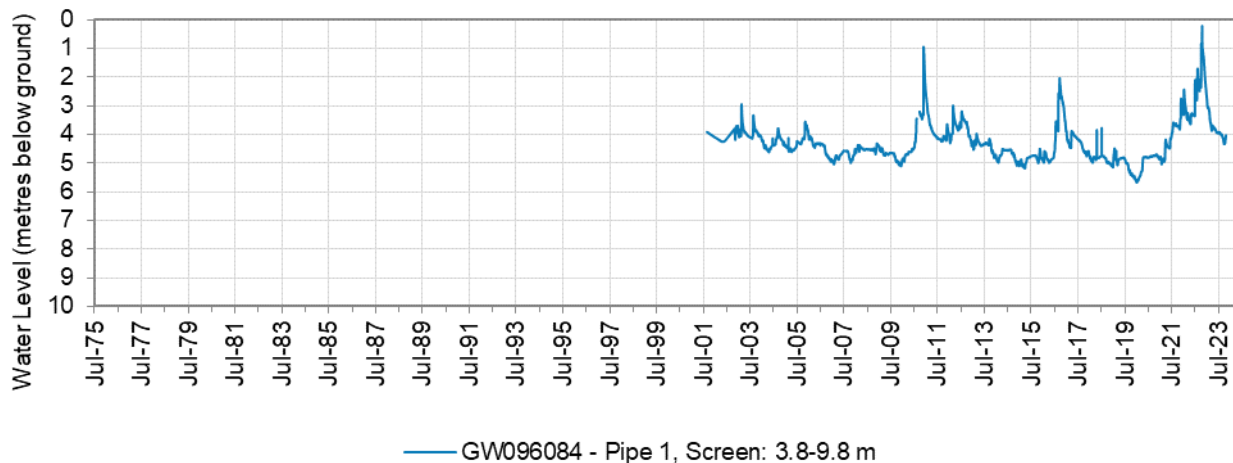


Figure 7: Hydrograph of monitoring bore GW036119

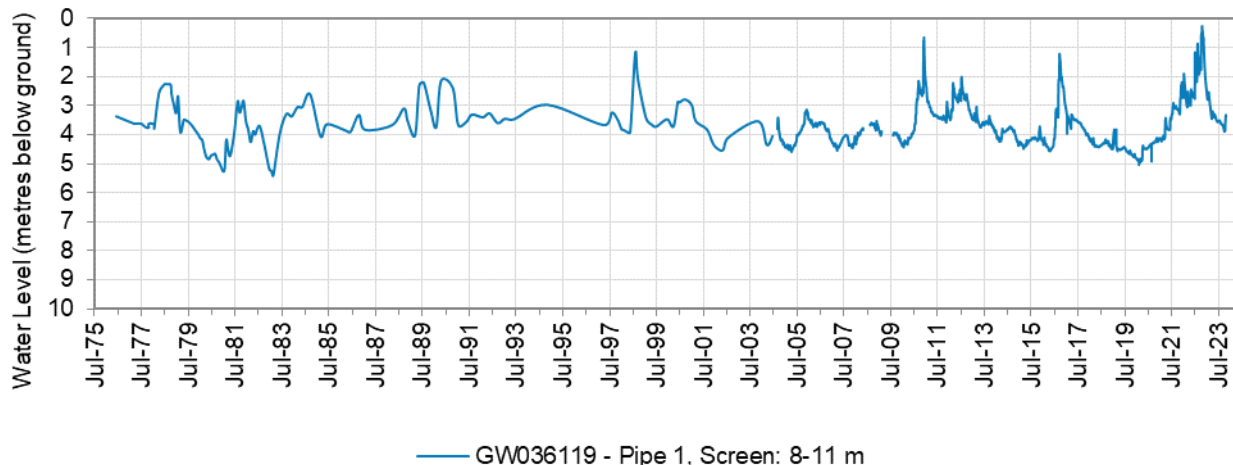


Figure 8: Hydrograph of monitoring bore GW096086

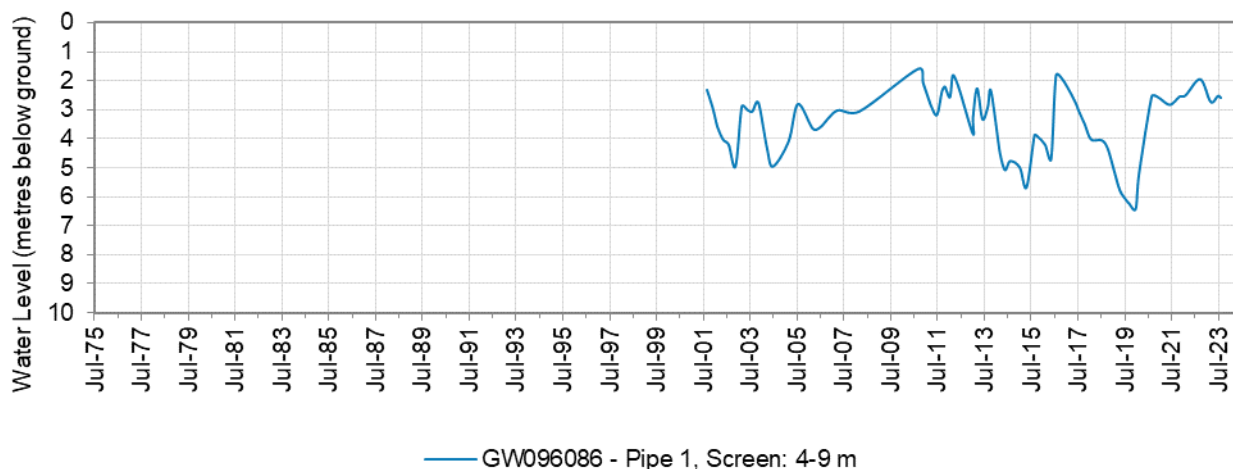


Figure 9: Hydrograph of monitoring bore GW036117

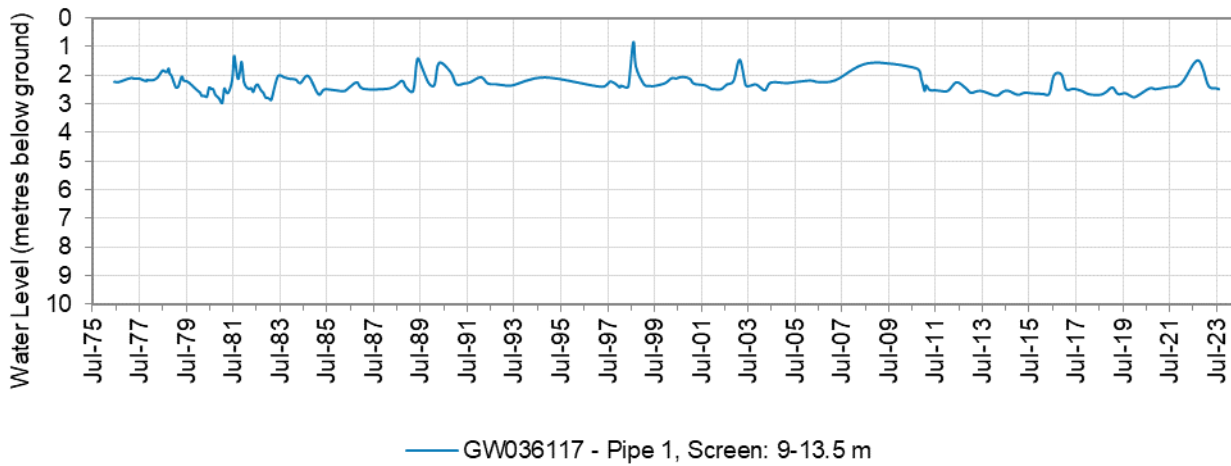


Figure 10: Hydrograph of monitoring bore GW036126

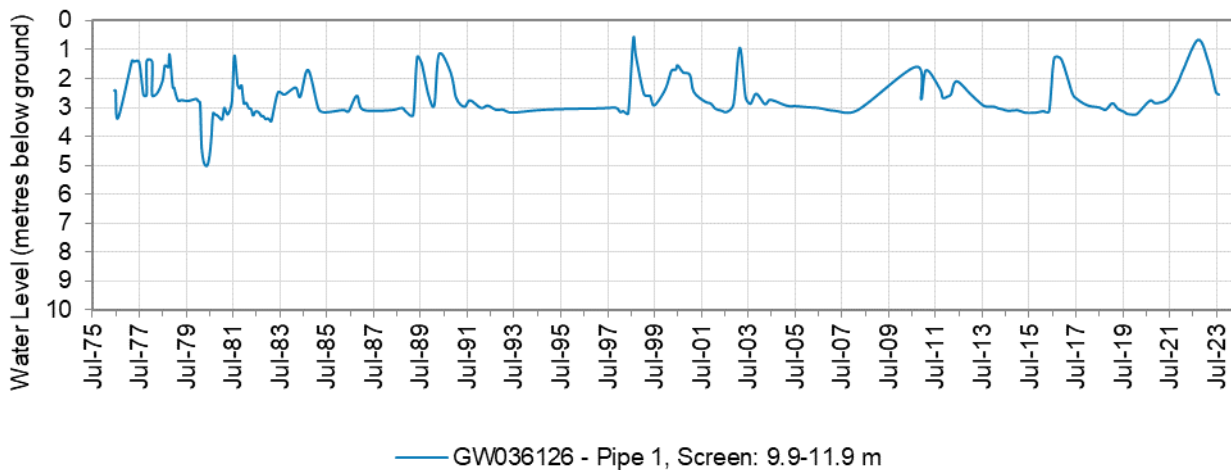


Figure 11: Hydrograph of monitoring bore GW096087

