Cudgegong Alluvial Groundwater Source

Introduction

This report is a summary of water accounts, volume pumped and groundwater levels for the Cudgegong Alluvial Groundwater Source for the period 1 July 2020 to 30 June 2021. It will be updated on a regular 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 Cudgegong Alluvial 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 (Error! Reference source not found.).

The Cudgegong Alluvial Groundwater Source (Error! Reference source not found.) 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-Castlereagh Groundwater Sources 2020.

These water sharing plans are available for viewing on the Department of Planning Industry and Environment website at: www.industry.nsw.gov.au/water/plans-programs/water-sharing-plans/status/macquarie-castlereagh-region

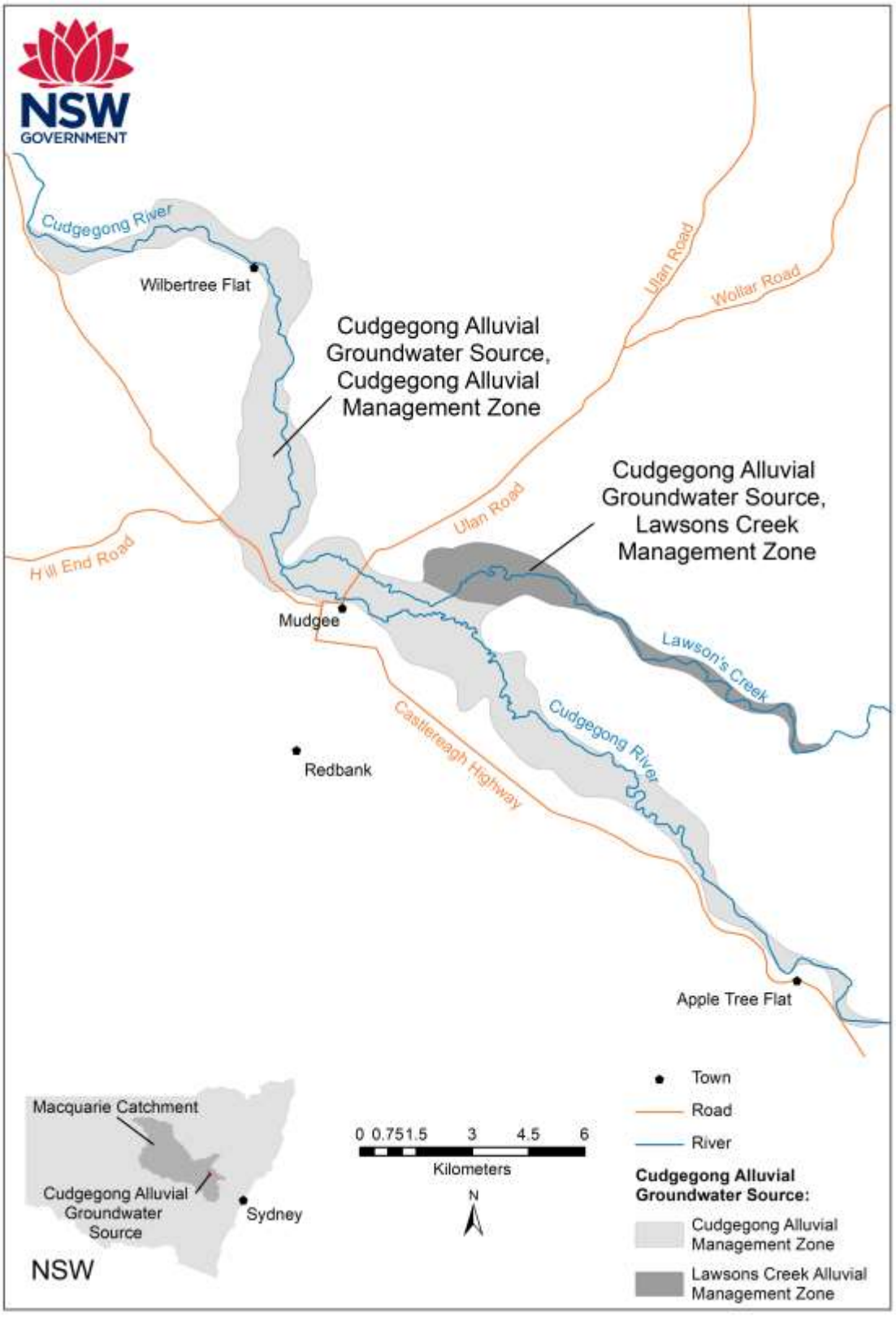
Basic rights

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 27 megalitres (ML).

The bore owner 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 are the responsibility of the water user.

Figure 1: Location Map



Groundwater access licences

Groundwater access licence share components for 2020 - 2021 are presented in **Table 1**.

Table 1: Cudgegong Alluvial Groundwater Source share component at 30 June 2021

Access Licence Category	Number of Licences	Total Volume
Local Water Utility[1]	3	3,000
Aquifer (High Security)[1]	85	8,891
Aquifer[2]	12	1,828

[1]Megalitres/year (ML)

[2] 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 water source is 2,533 ML/year.

Extraction in the Cudgegong Alluvial Groundwater Source is not compliant if the **5 years** average annual extraction (the assessment period) is more than **110%** of the extraction limit (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: www.industry.nsw.gov.au/water/allocations-availability/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), minus any allocation transferred out. This means that metered extraction plus transfers out cannot exceed the AWD, unless water is transferred in.

Total account water for period 2012-13 to 2021-22 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 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:

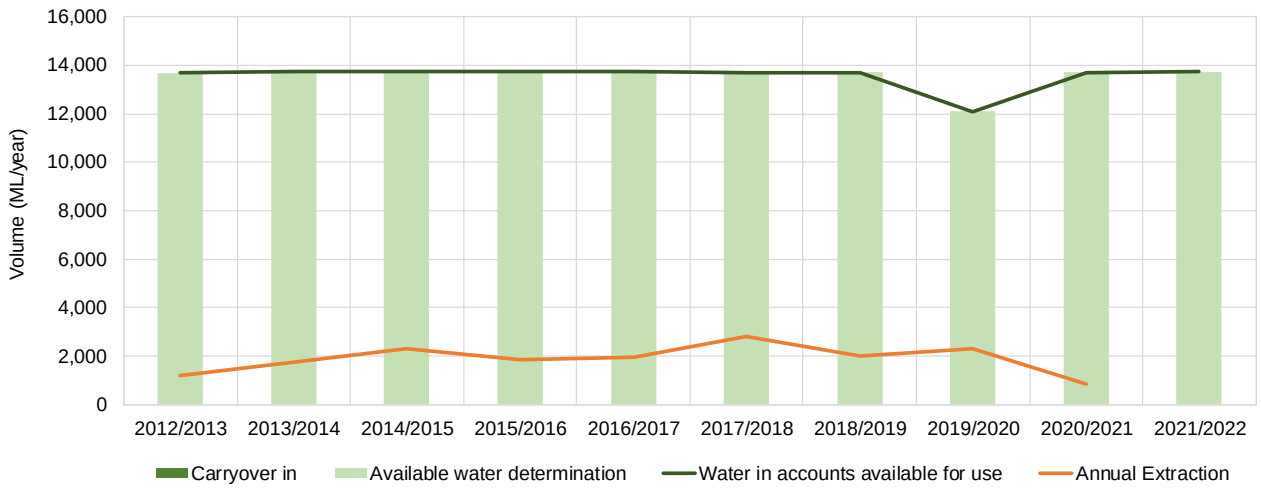
- 0.4 ML per unit share of the aquifer (high security) access licence share component.
- Plus 60% of the available water determination made for regulated river (high security) access licences in the Macquarie and Cudgegong Regulated Rivers Water Sources.

The 2020-2021 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 2021 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. Trading statistics for 2019-20 are summarised in **Table 3**, this excludes temporary trades for less than $1 per megalitre.

Table 3: Trading statistics

Water Year	Number of Trades	Total Volume Traded (ML)	Total Trade Value ($)	Average price per ML ($)
2019-20	4	169	9,400	62.50

Further information on water licences, approvals, water trade, water dealings and other matters related to water entitlements in NSW, can be found on the NSW Water Register at: waterregister.waternsw.com.au/water-register-frame

Bores

There are approximately 211 registered bores across the Cudgegong Alluvial Groundwater Source (**Figure 3**). 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 4**).

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**).

Table 4: Approximate number of licensed bores in Cudgegong Alluvial Groundwater Source (at June 2021)

Groundwater Source	Registered Bore Purpose		
	Basic Landholder Rights	Production	Local Water Utility
Cudgegong Alluvial Groundwater Source	32	146	33

Water level monitoring

WaterNSW monitors groundwater levels at 13 monitoring bores at 12 sites in the Cudgegong Alluvial Groundwater Source (**Figure 5**). At most 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 6** 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/). It includes data for four groundwater monitoring sites in real-time via telemetry. You can also request information via: Customer.Helpdesk@waternsw.com.au

Figure 3: Cudgegong Alluvial Groundwater Source registered bores

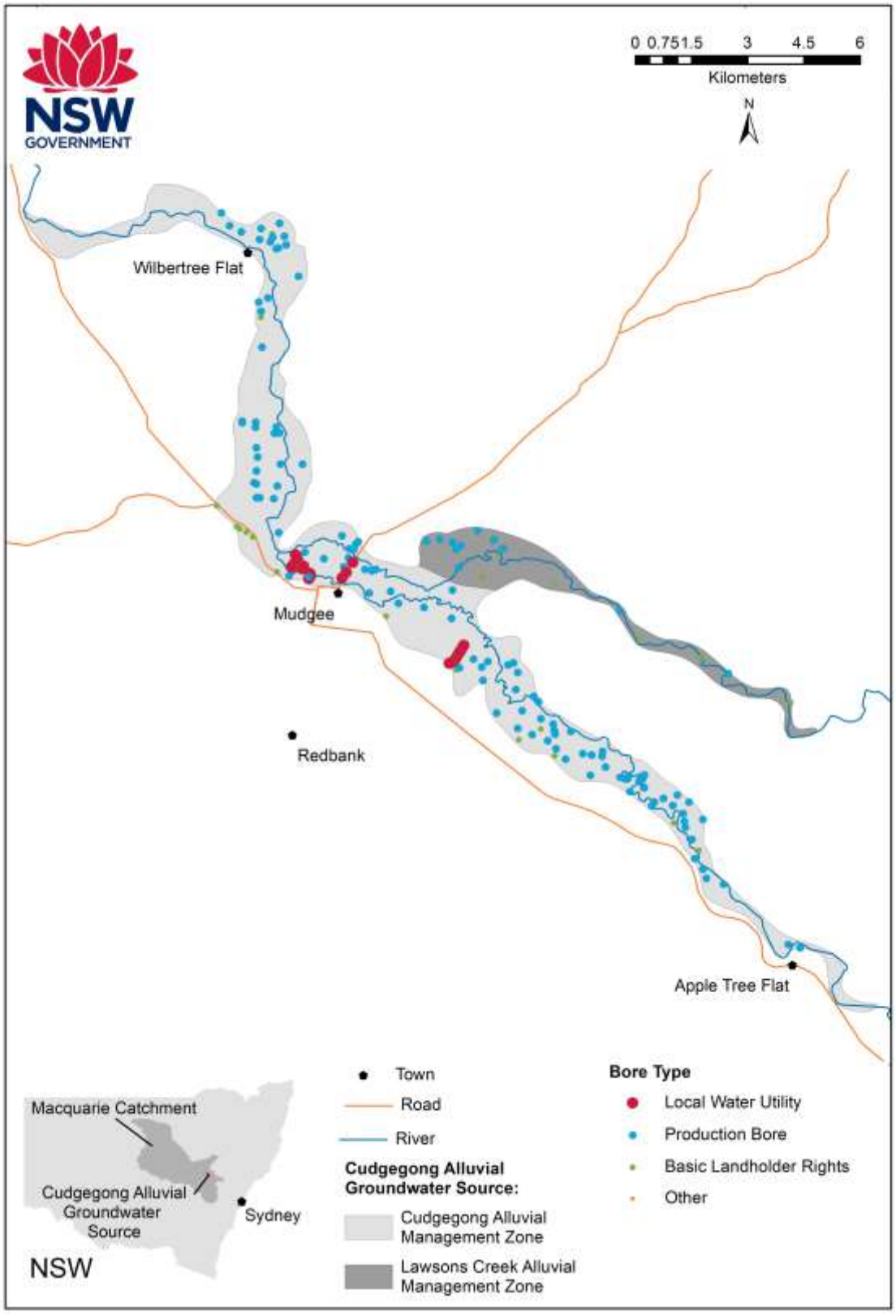


Figure 4: Cudgegong Alluvial Groundwater Source water supply bores and distribution of extraction

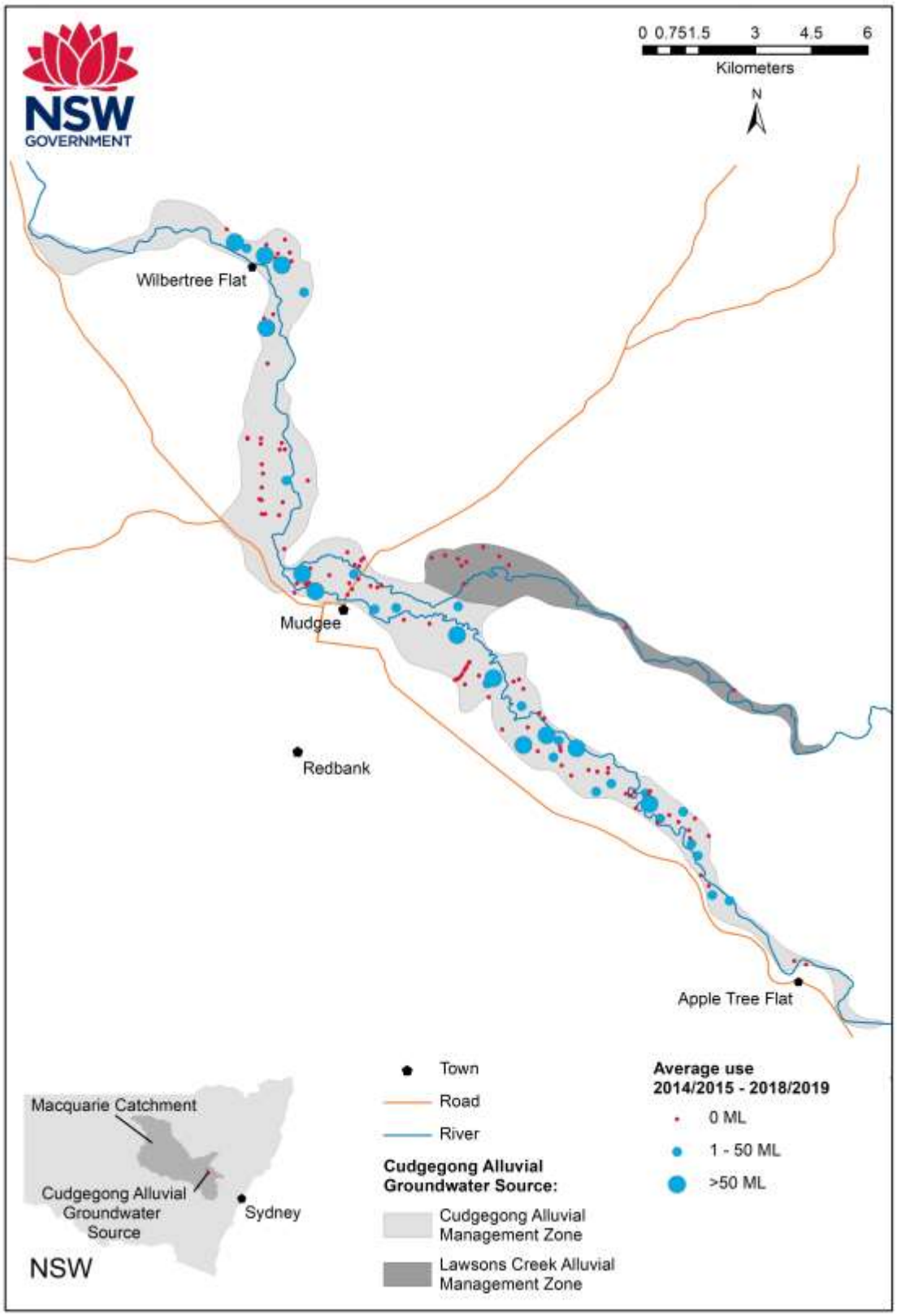


Figure 5: Cudgegong Alluvial Groundwater Source monitoring bore sites

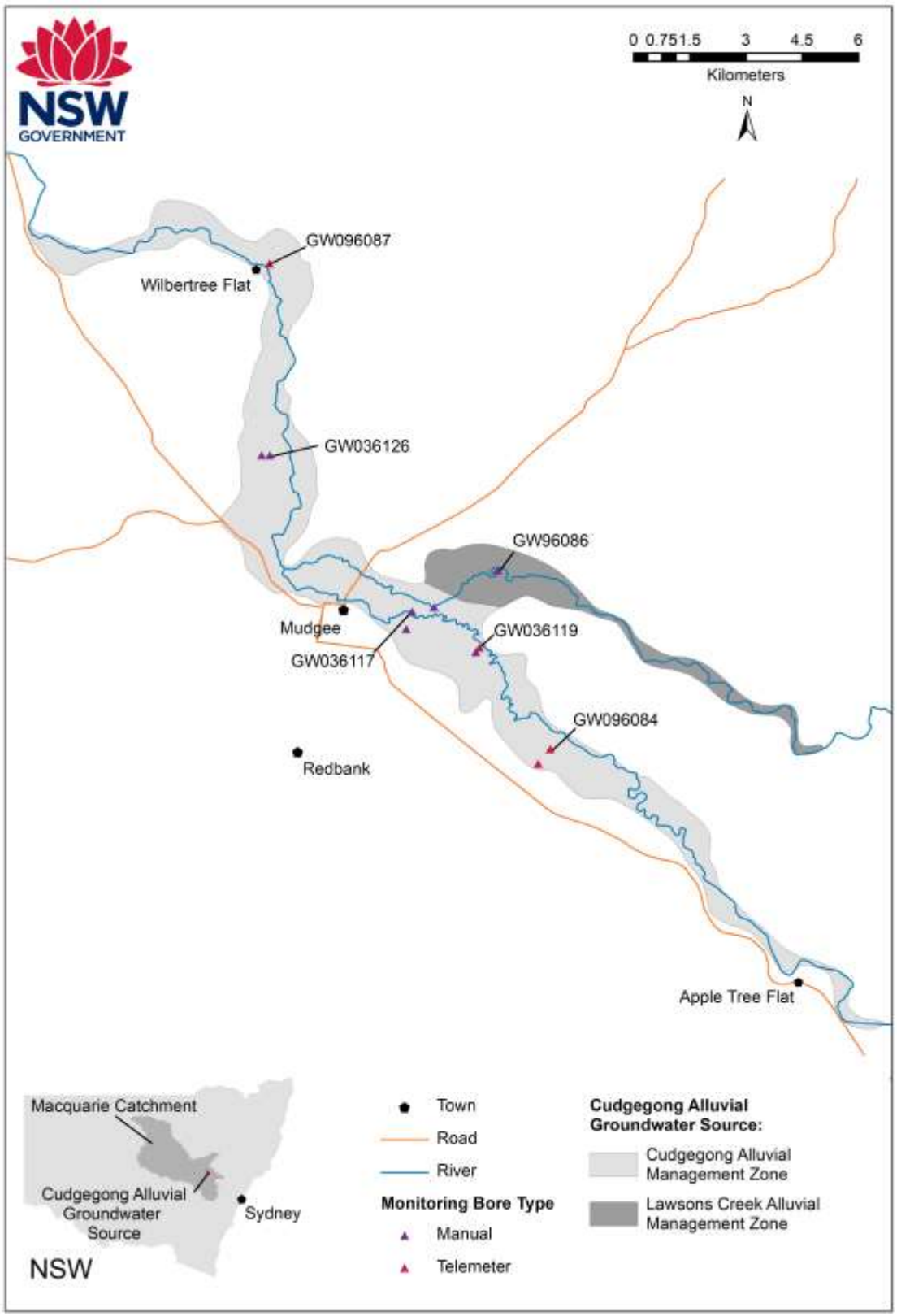


Figure 6: Hydrograph for monitoring bore GW096084

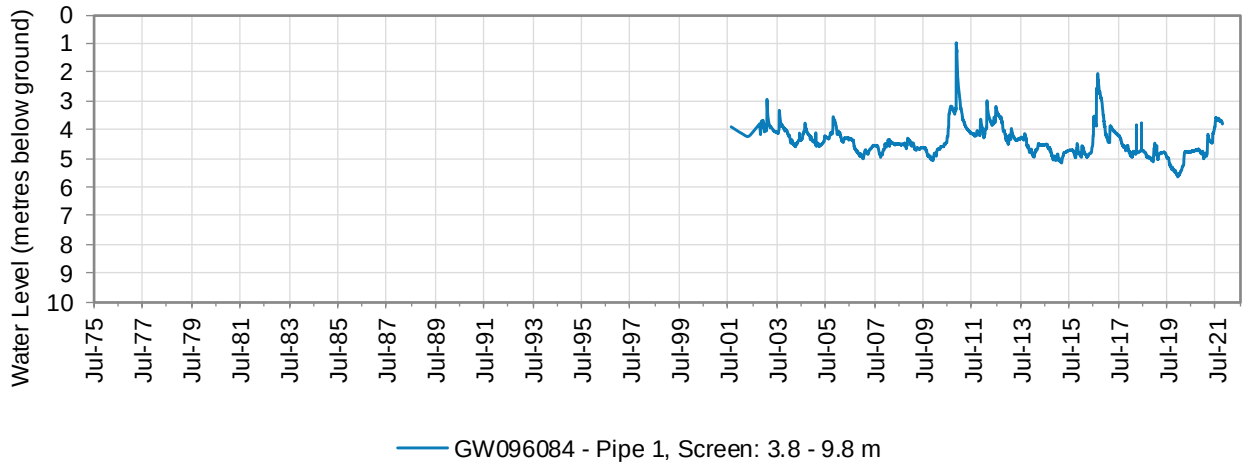


Figure 7: Hydrograph for monitoring bore GW036119

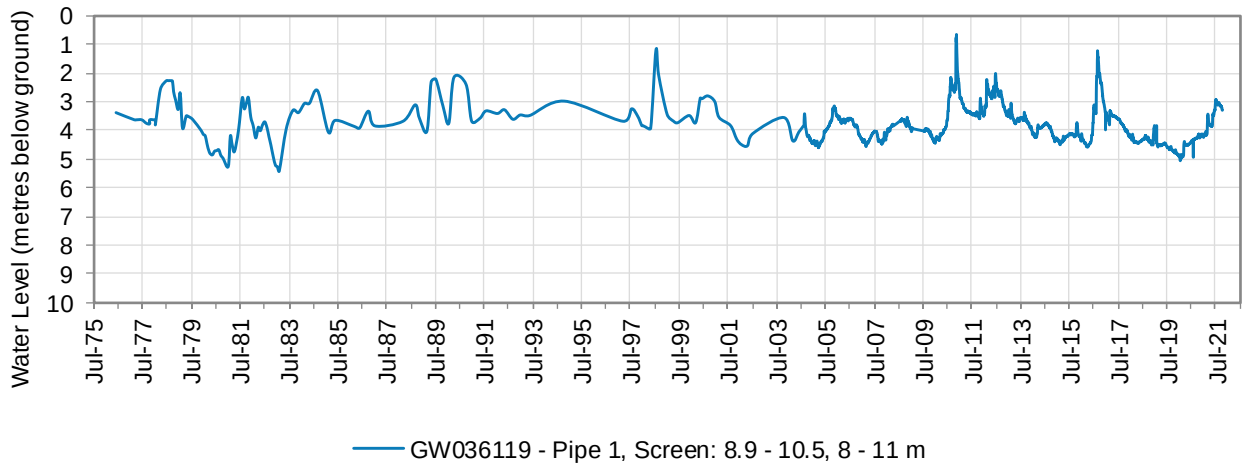


Figure 8: Hydrograph for monitoring bore GW096086

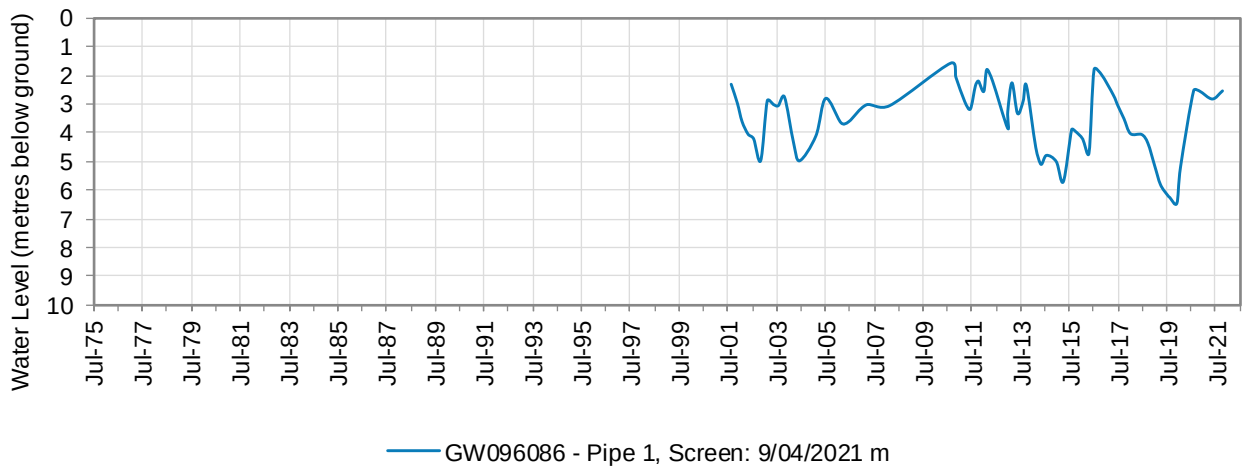


Figure 9: Hydrograph for monitoring bore GW036117

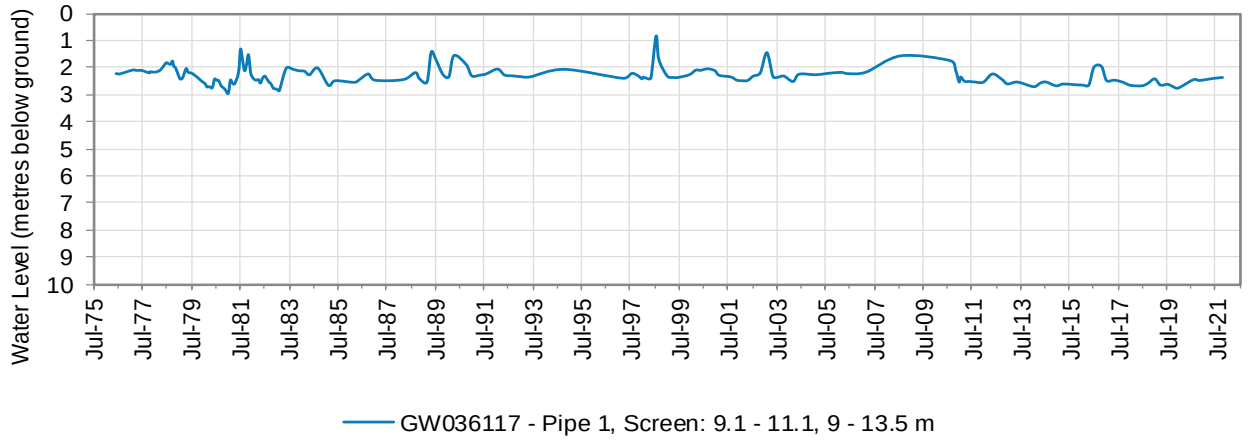


Figure 10: Hydrograph for monitoring bore GW036126

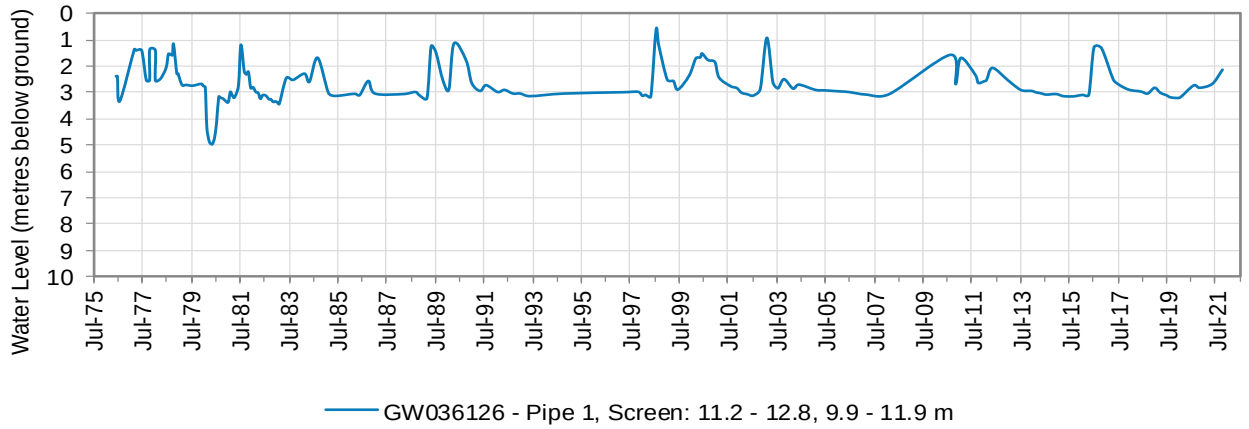


Figure 11: Hydrograph for monitoring bore GW096087