



Lower Namoi groundwater source

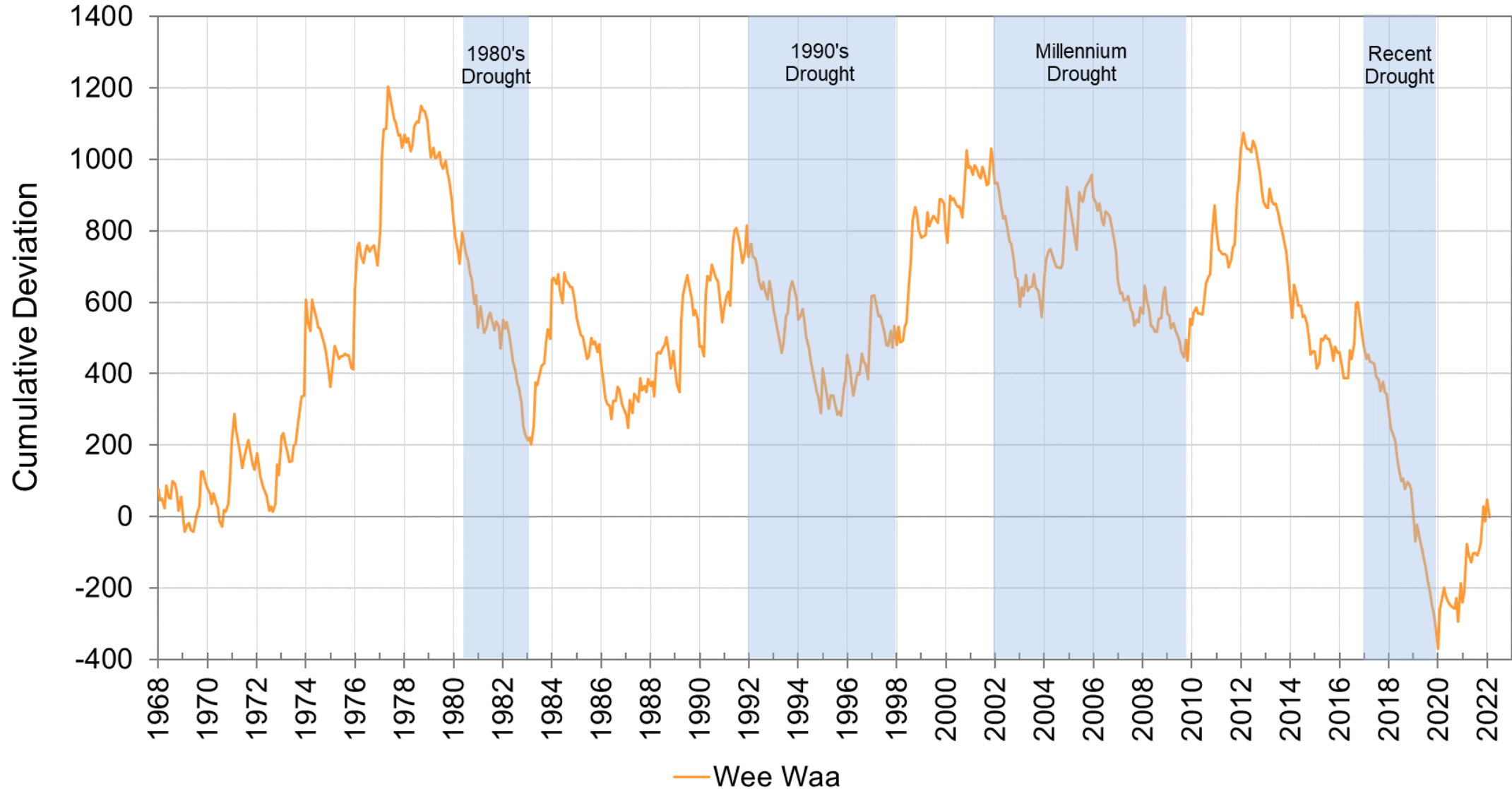
Water level trends

Introduction

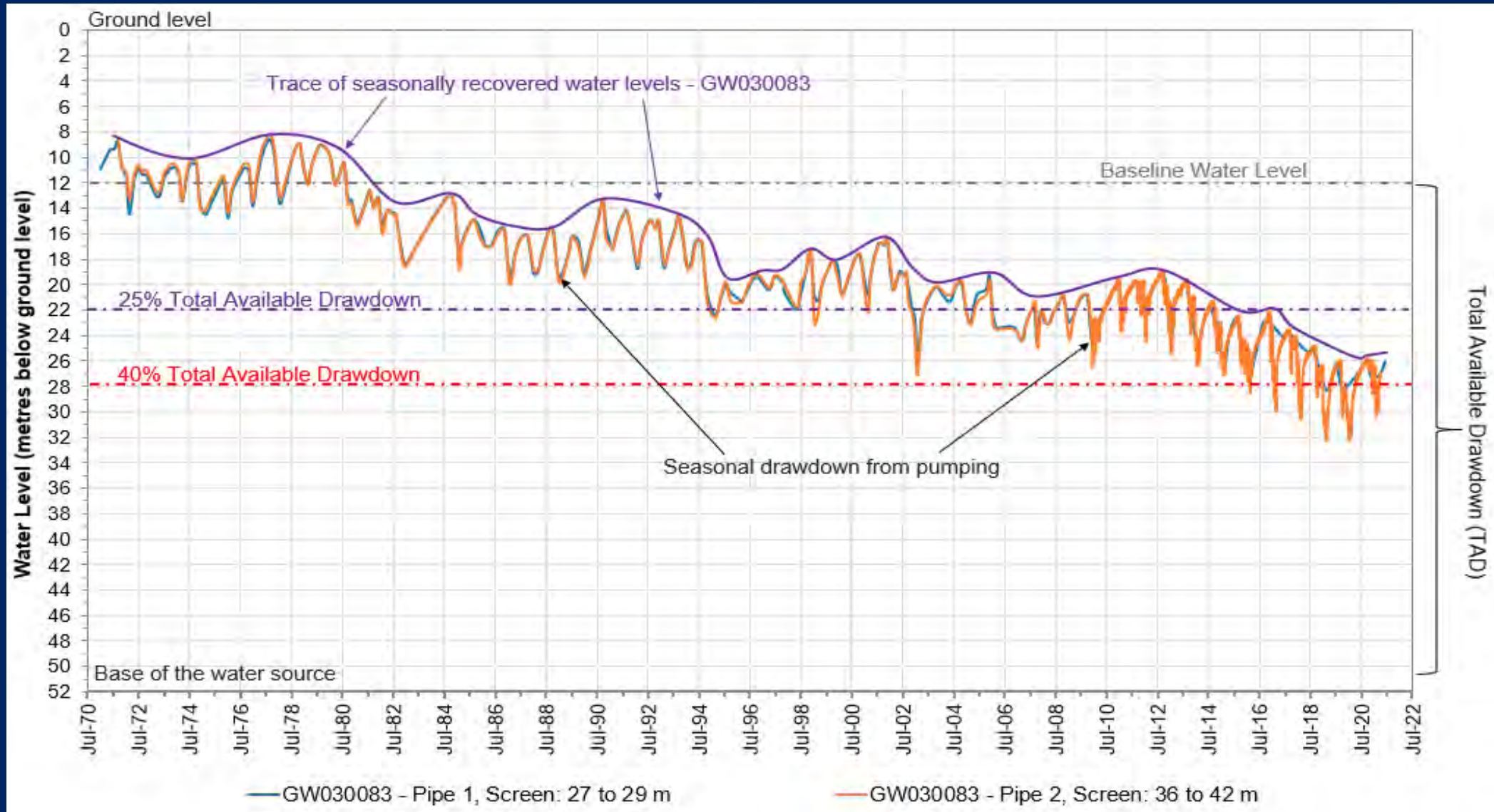
- History of declining groundwater levels
- In 2008, three trade management areas were created to manage cumulative impacts from groundwater extraction on the aquifer
 - Trade areas limit the direction of trade to reduce the density of extraction in a local area
- Water level analysis was conducted to determine how groundwater levels are responding to current water use and management frameworks

Rainfall trends

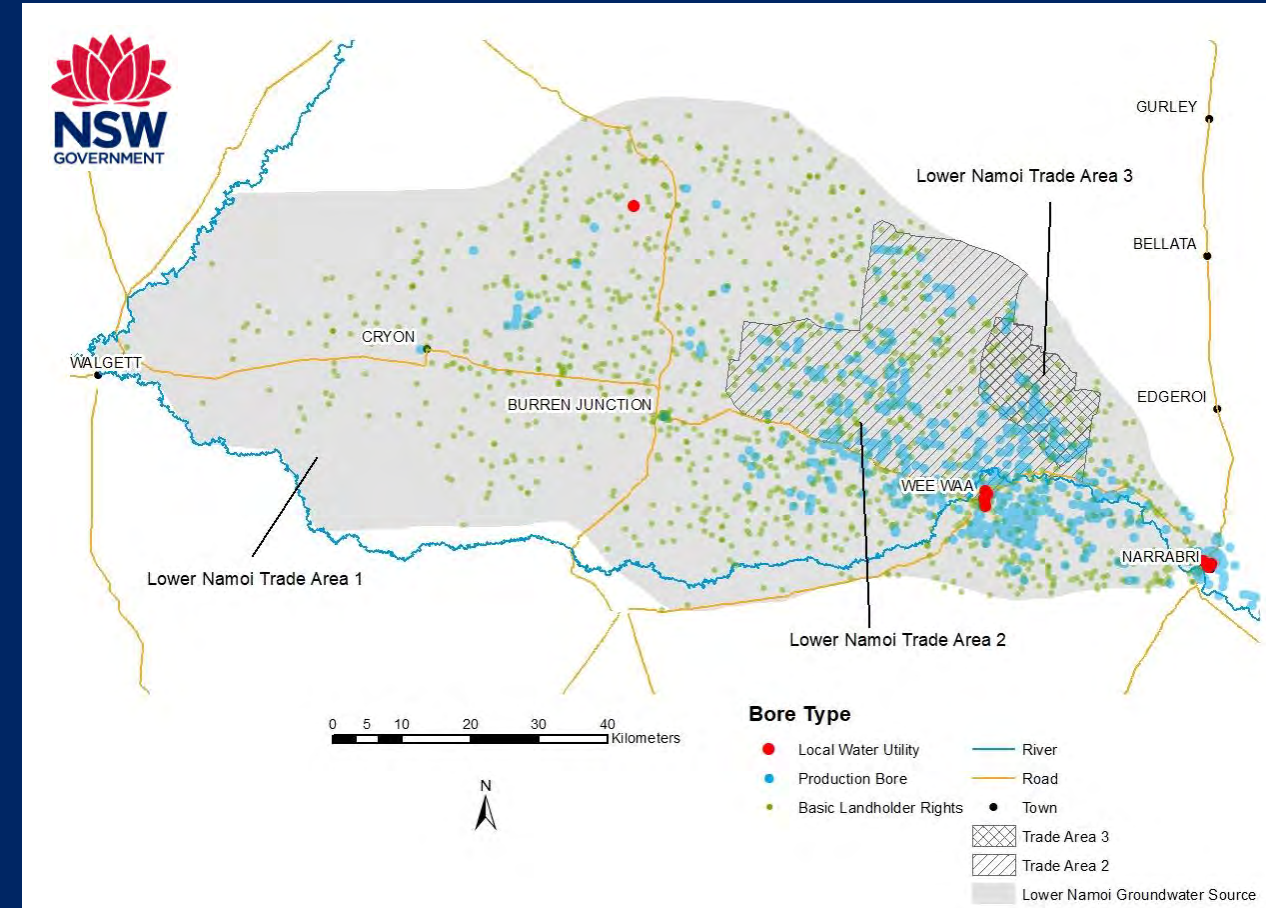
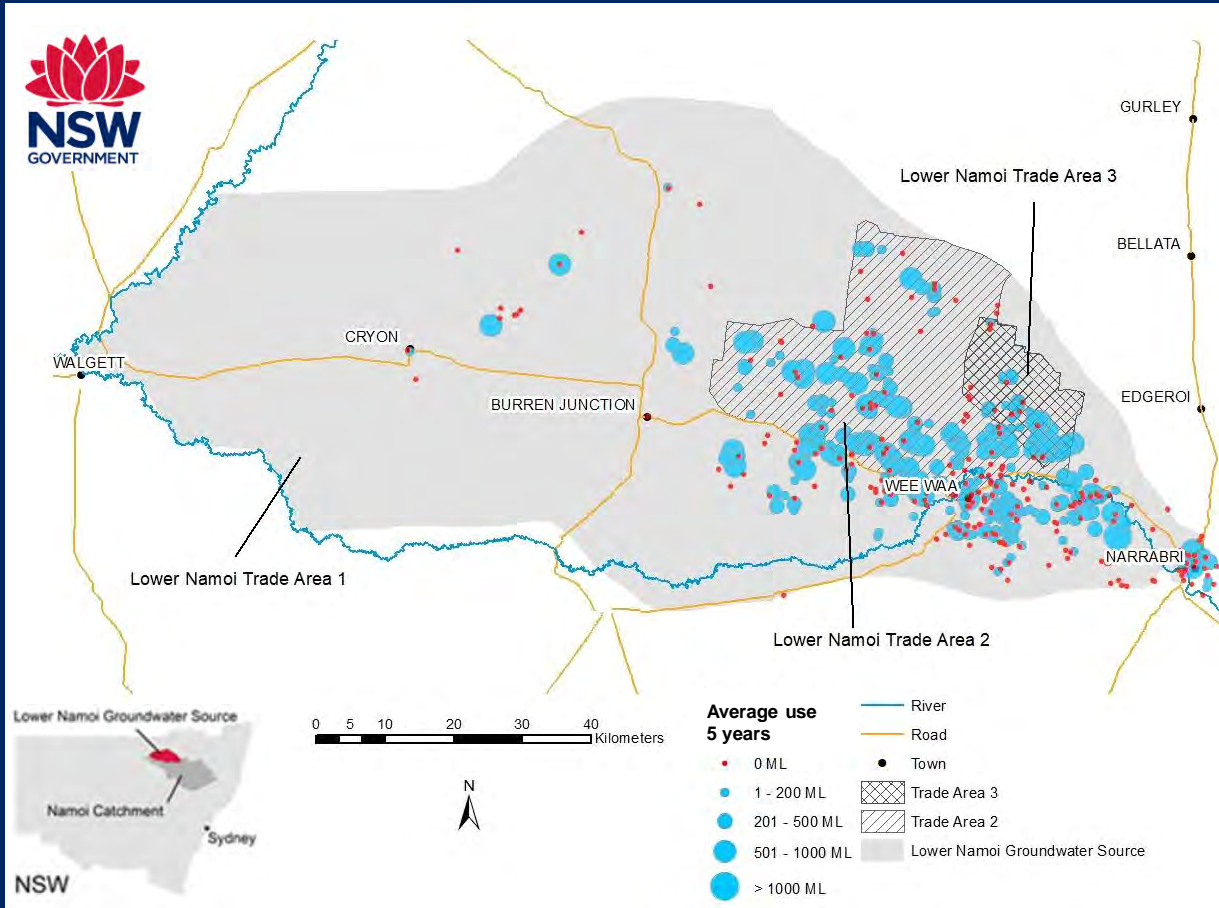
Wee Waa rainfall cumulative deviation (daily)

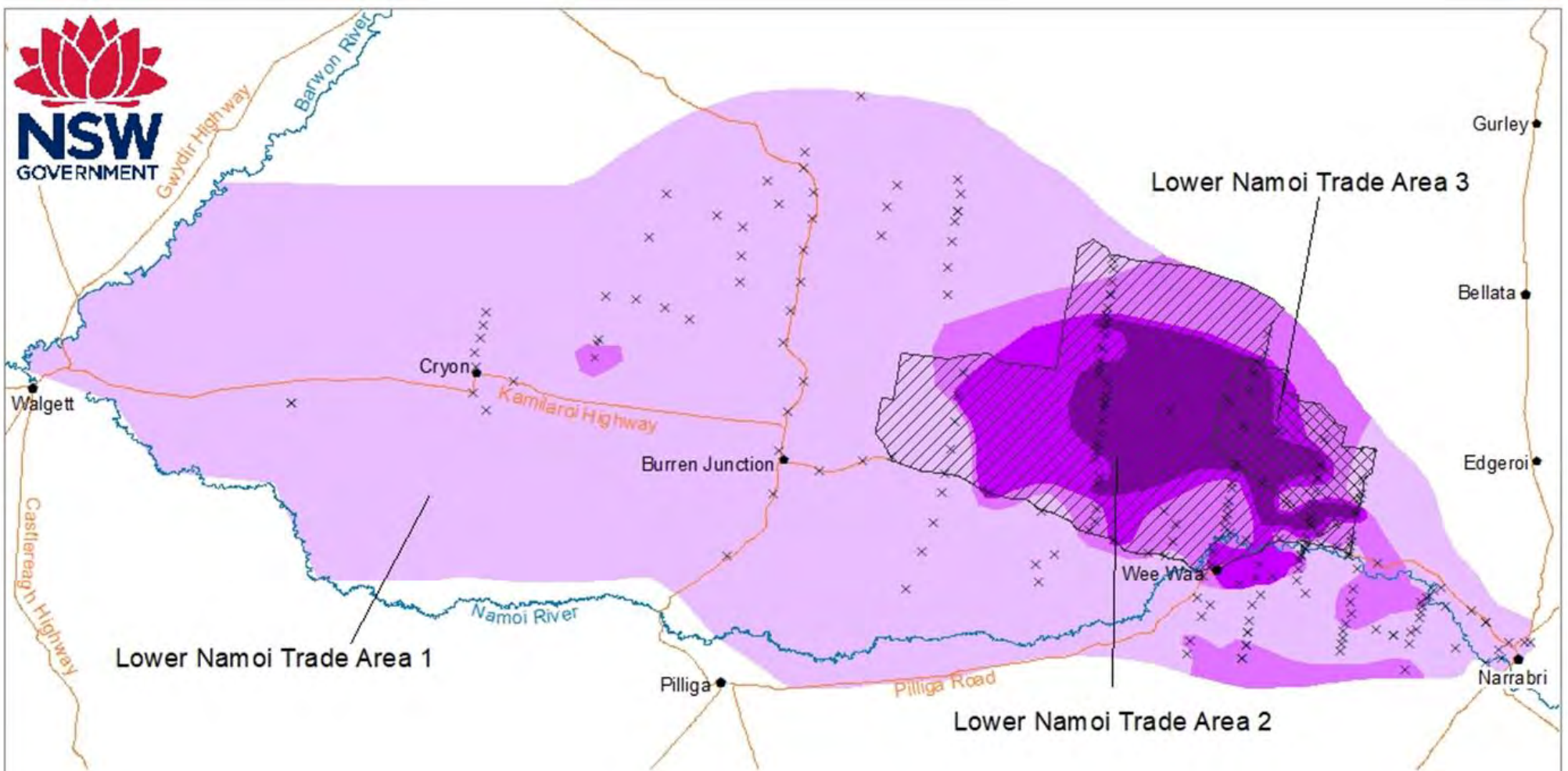


Groundwater level management



Lower Namoi bore types and average usage

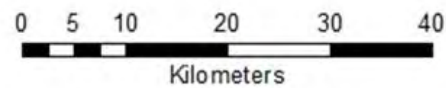




Lower Namoi Groundwater Source

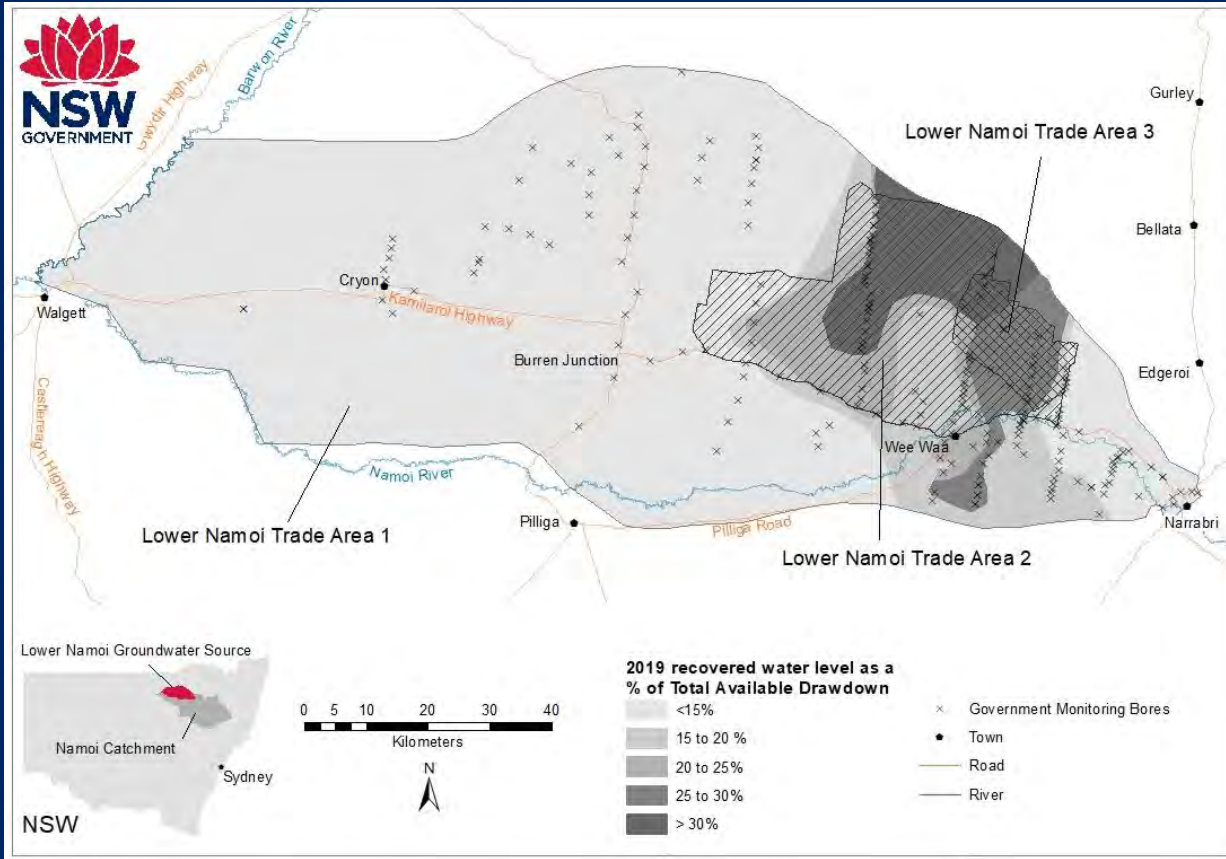


Maximum pumping drawdown (2016 to 2021)

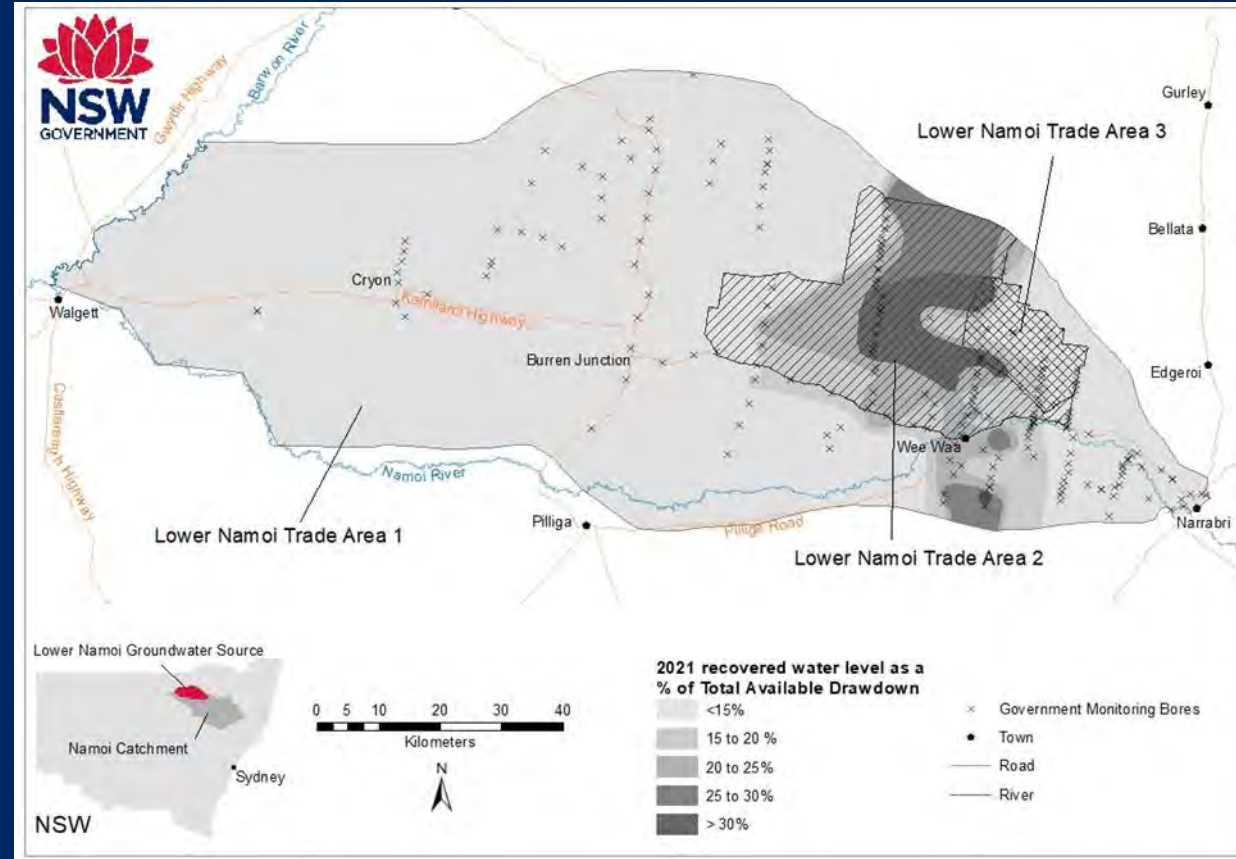


Maximum Drawdown as a % of Total Available Drawdown

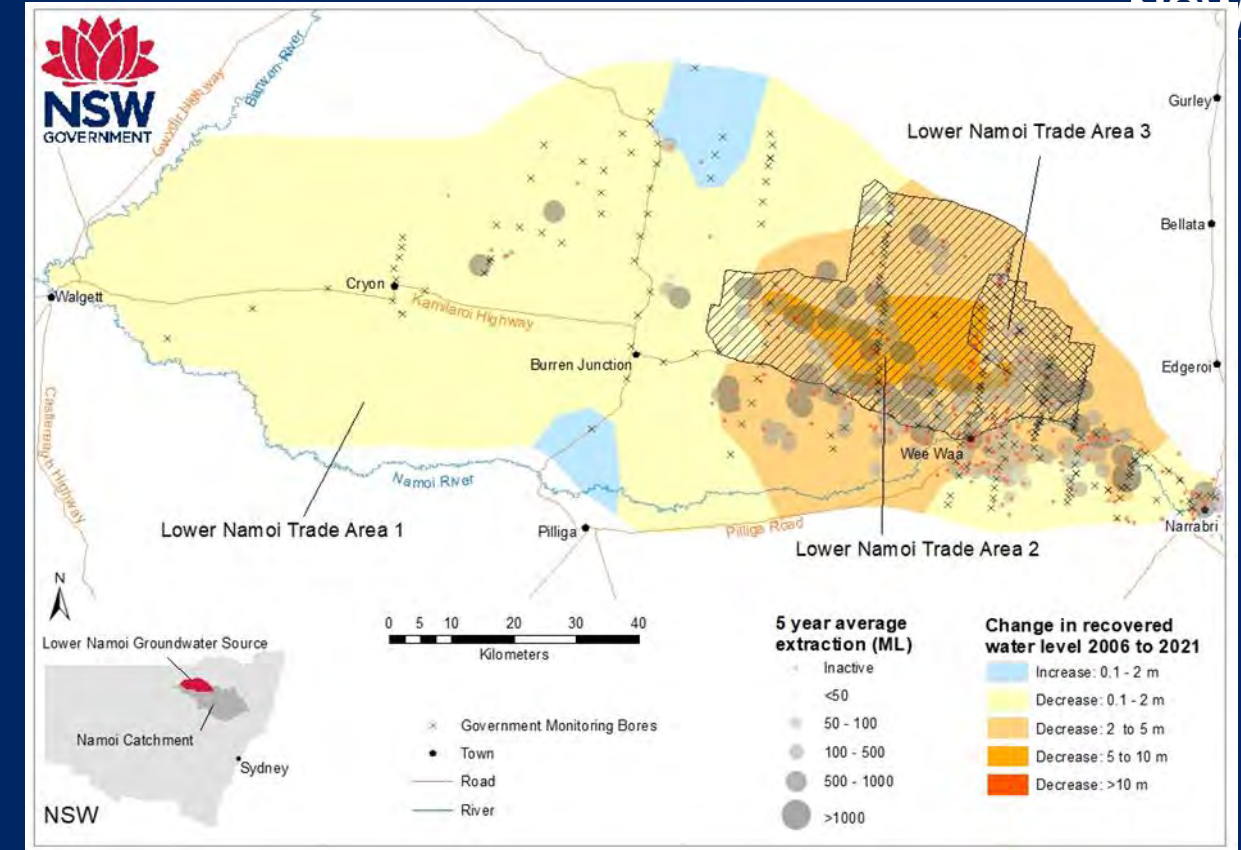
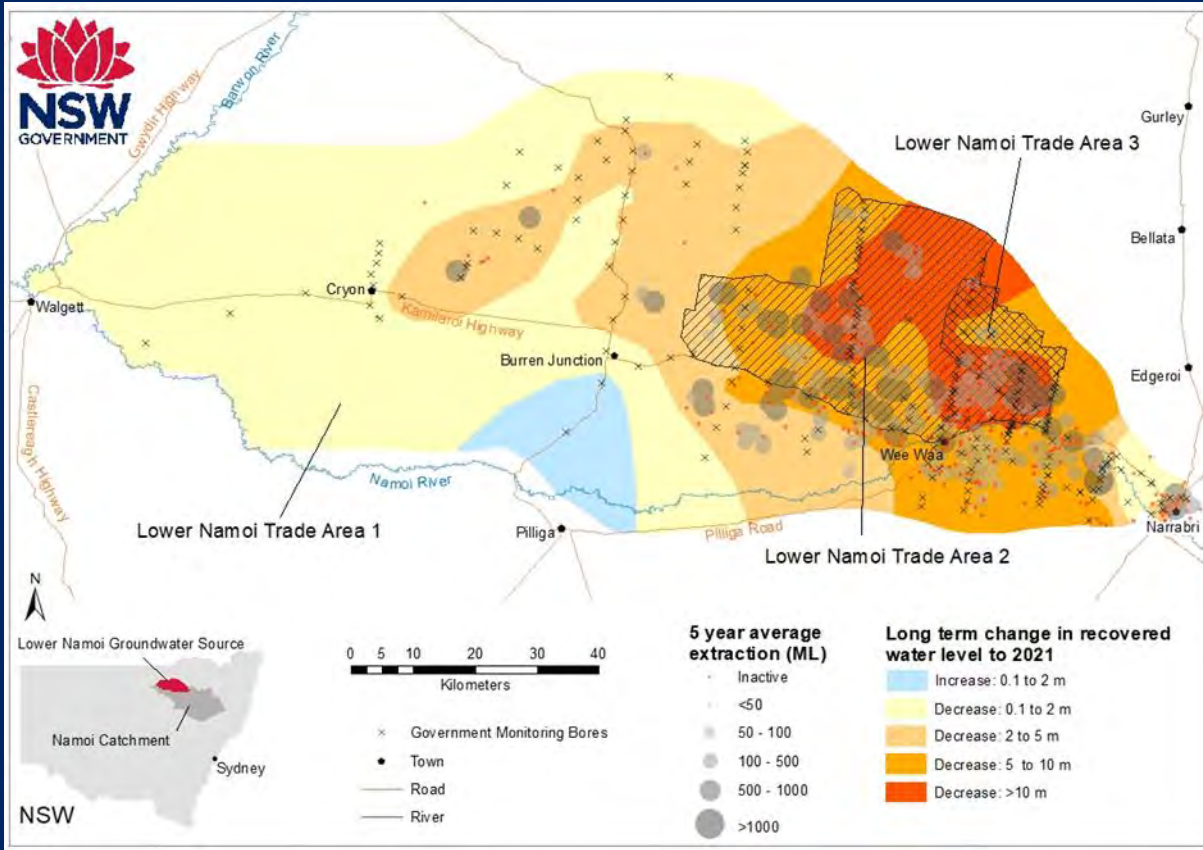




Recovered water level 2019

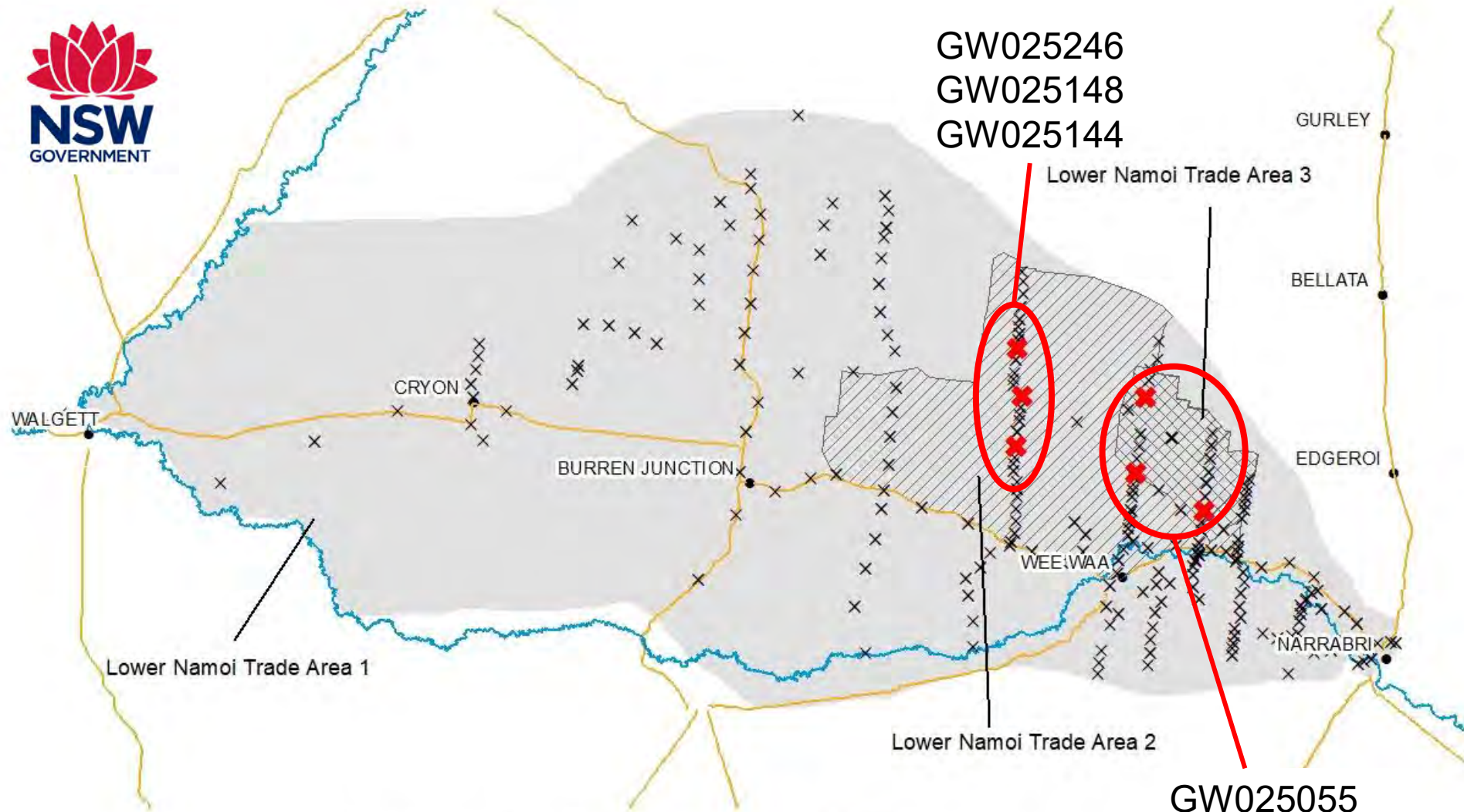


Recovered water level 2021

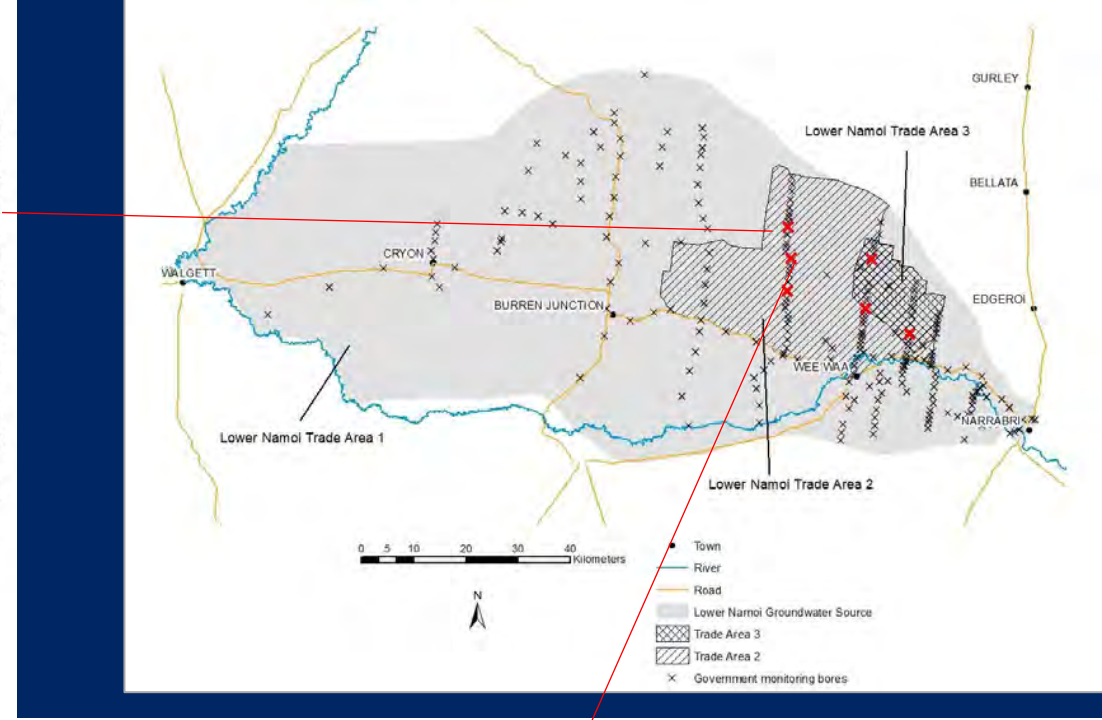
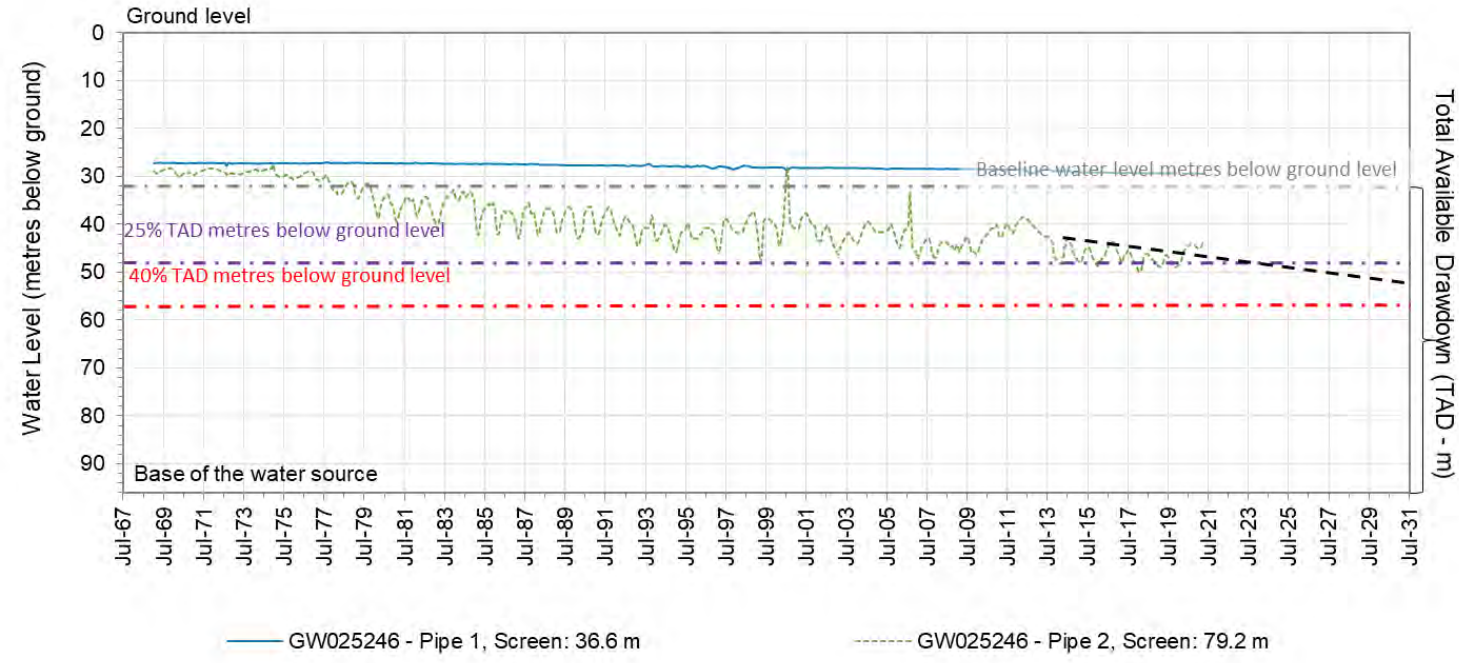


Change in recovered water level pre-1990 to 2021

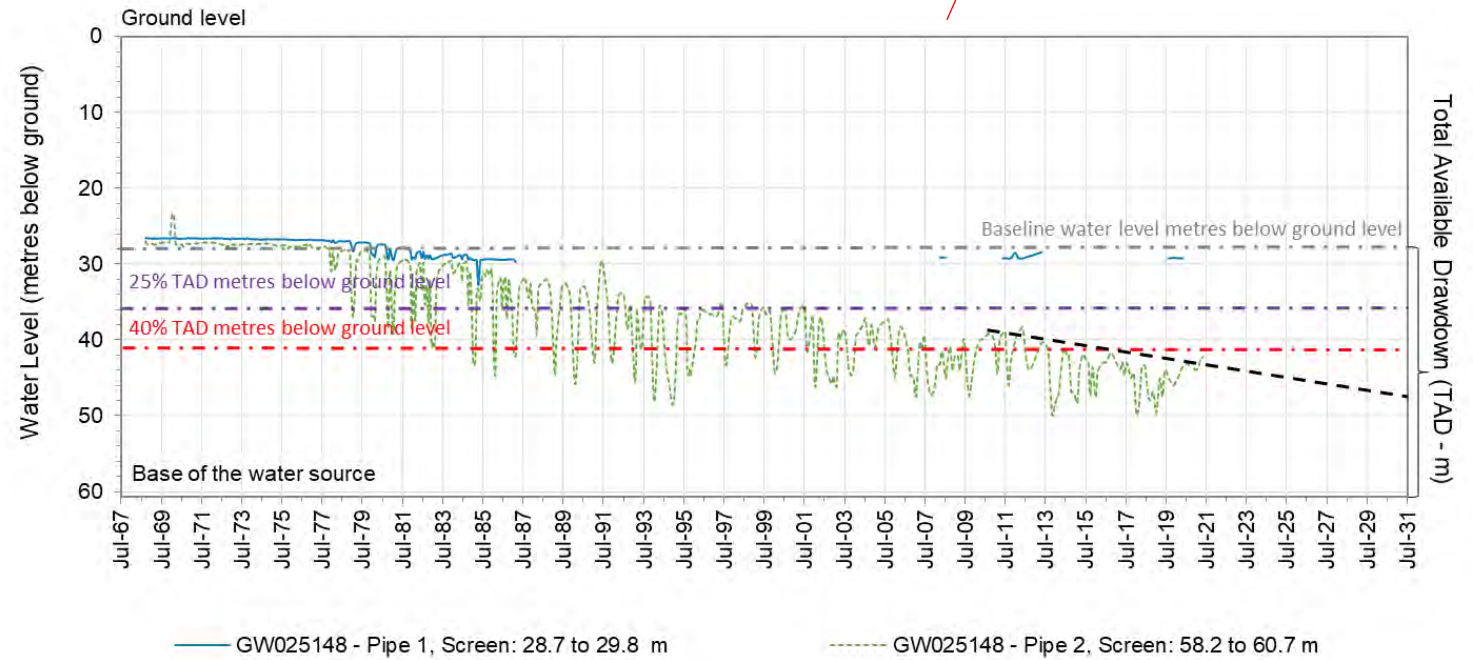
Change in recovered water level 2006 to 2021

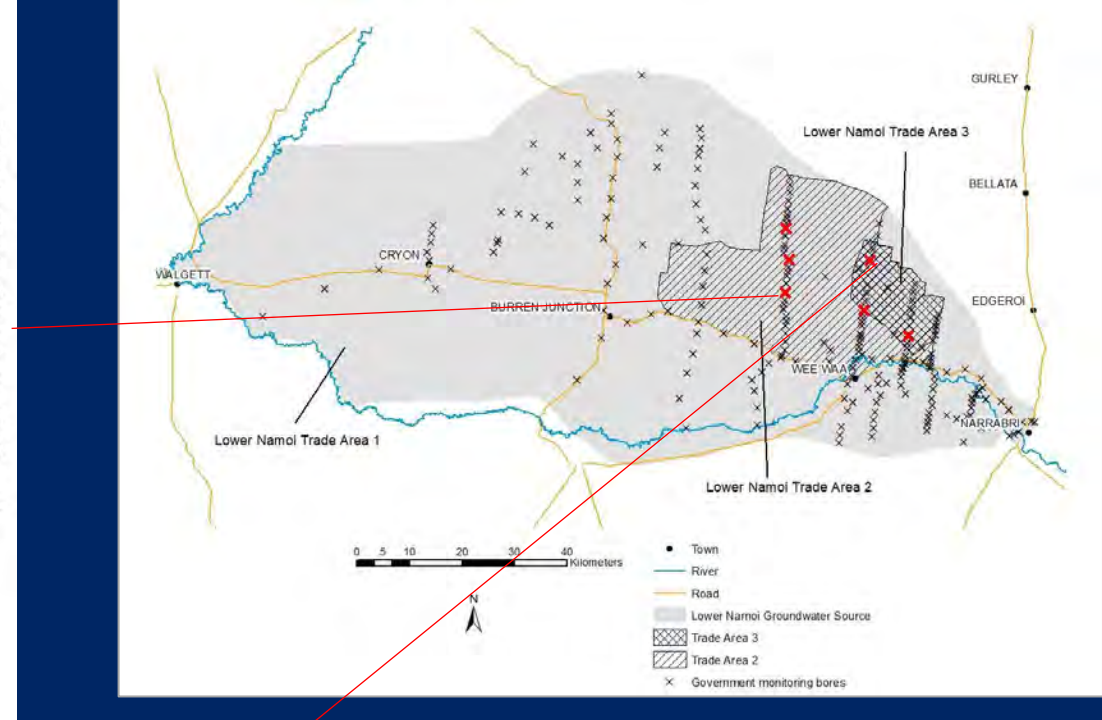
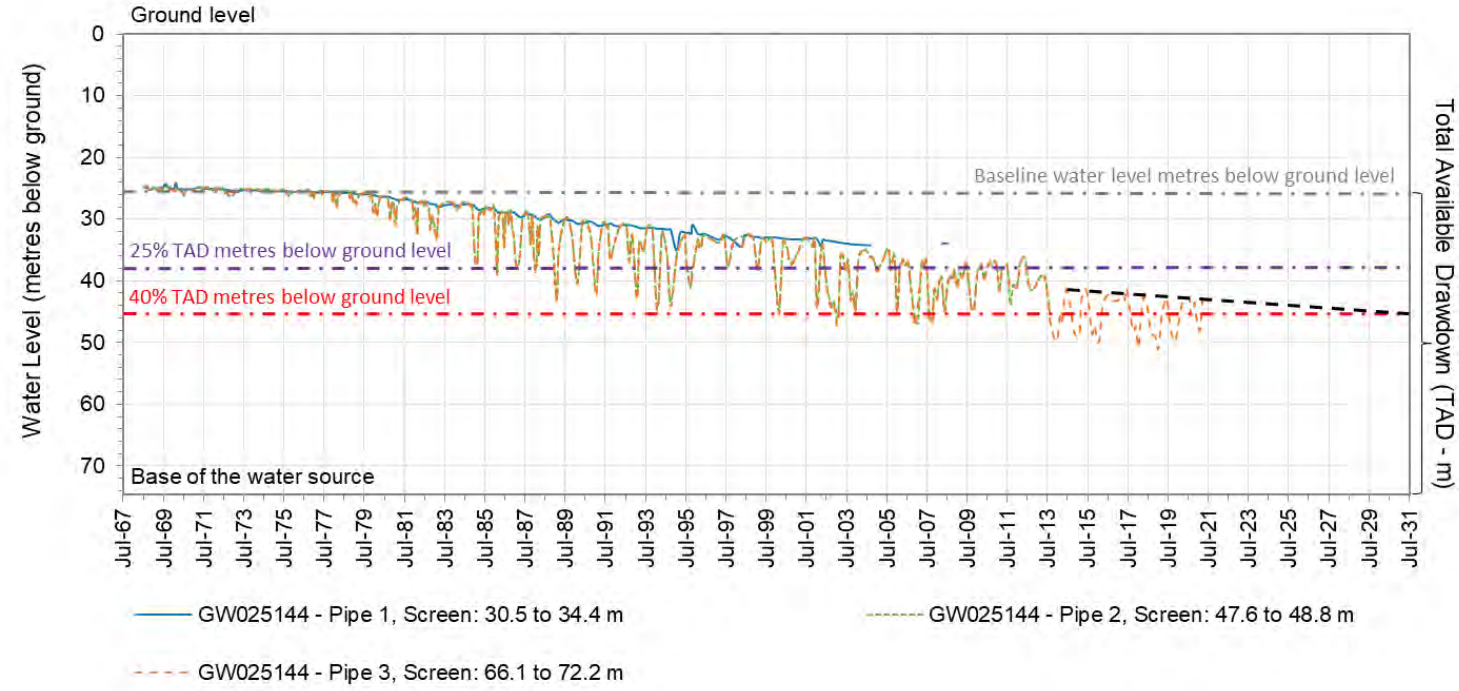


- Town
- River
- Road
- Lower Namoi Groundwater Source
- Trade Area 3
- Trade Area 2
- × Government monitoring bores

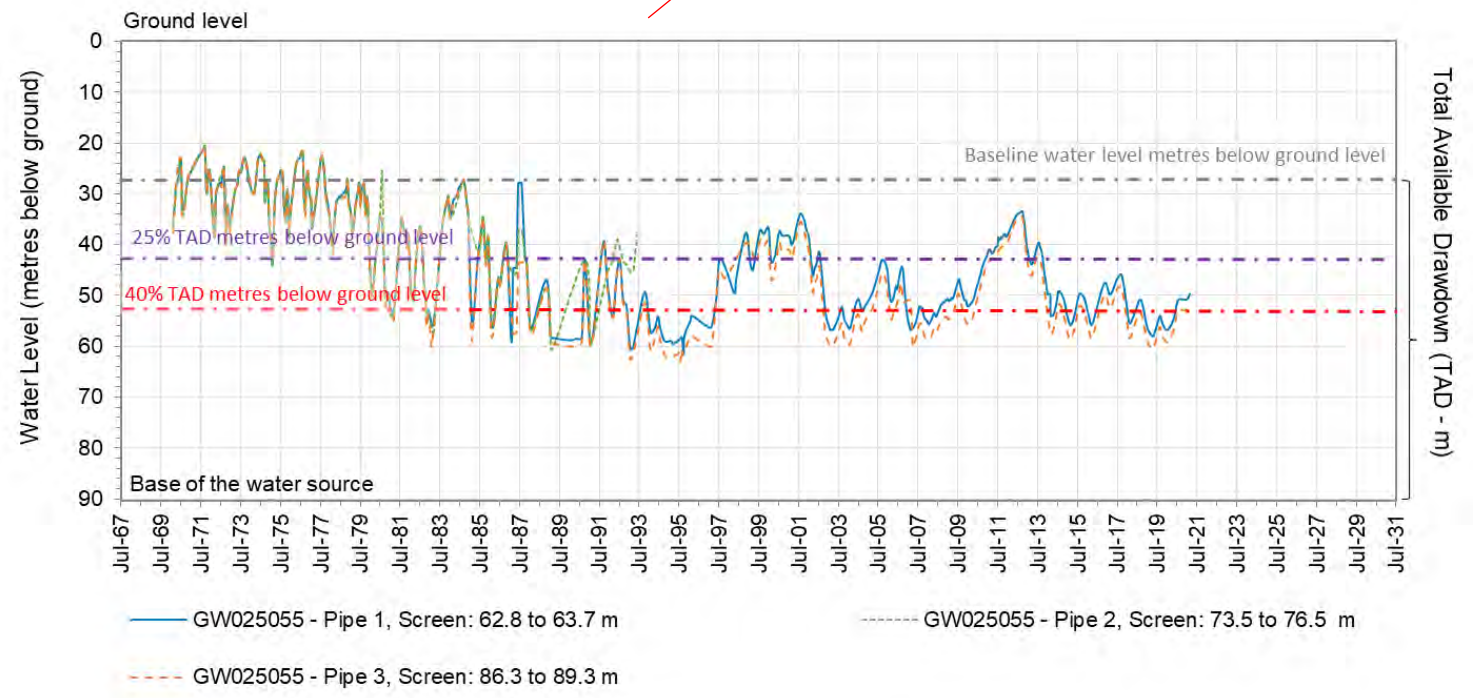


Trade Area 2

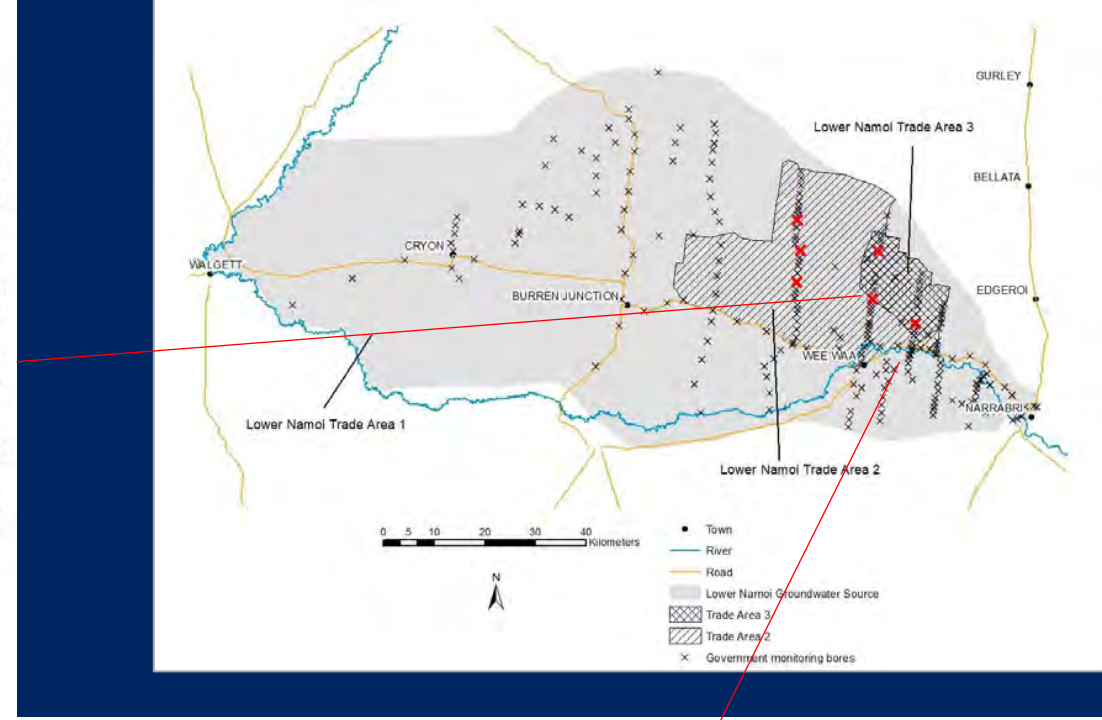
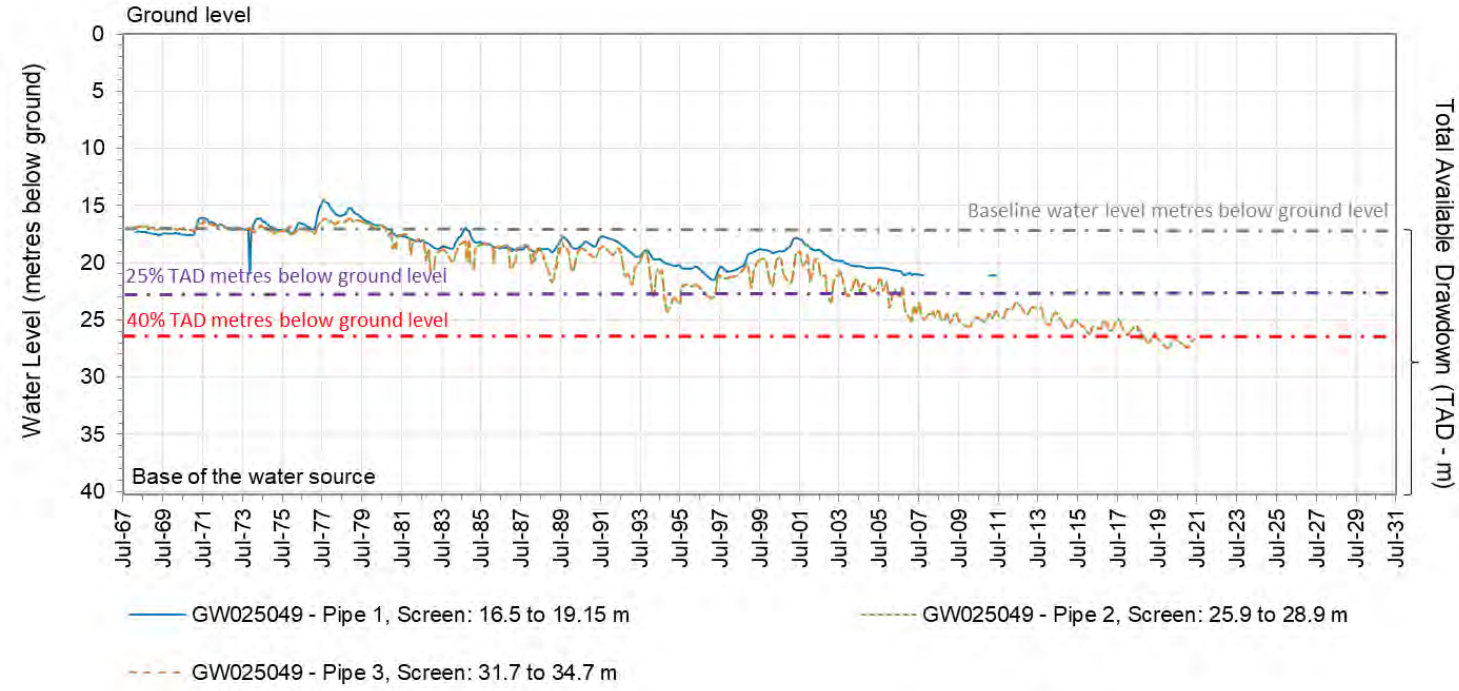




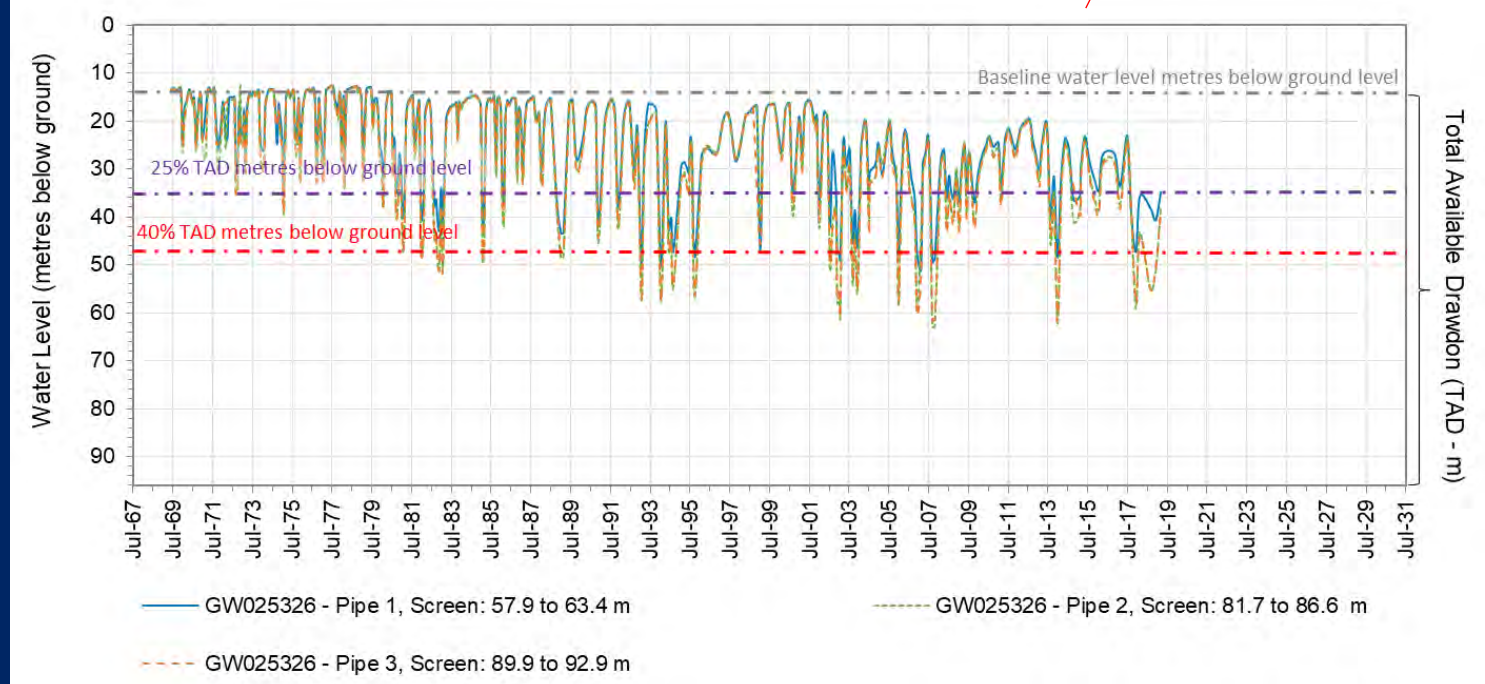
Trade Area 2



Trade Area 3



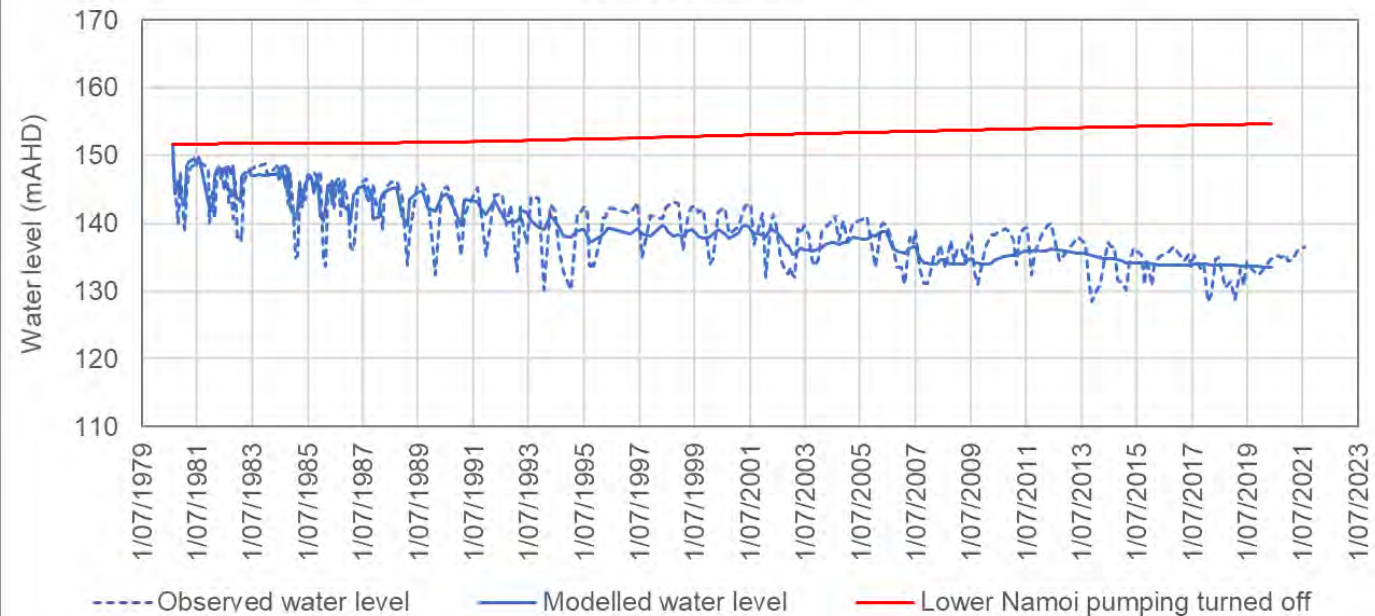
Trade Area 3



Model Scenarios

- Groundwater levels under historic extraction were compared to modelled predictions for the same period with no groundwater extraction

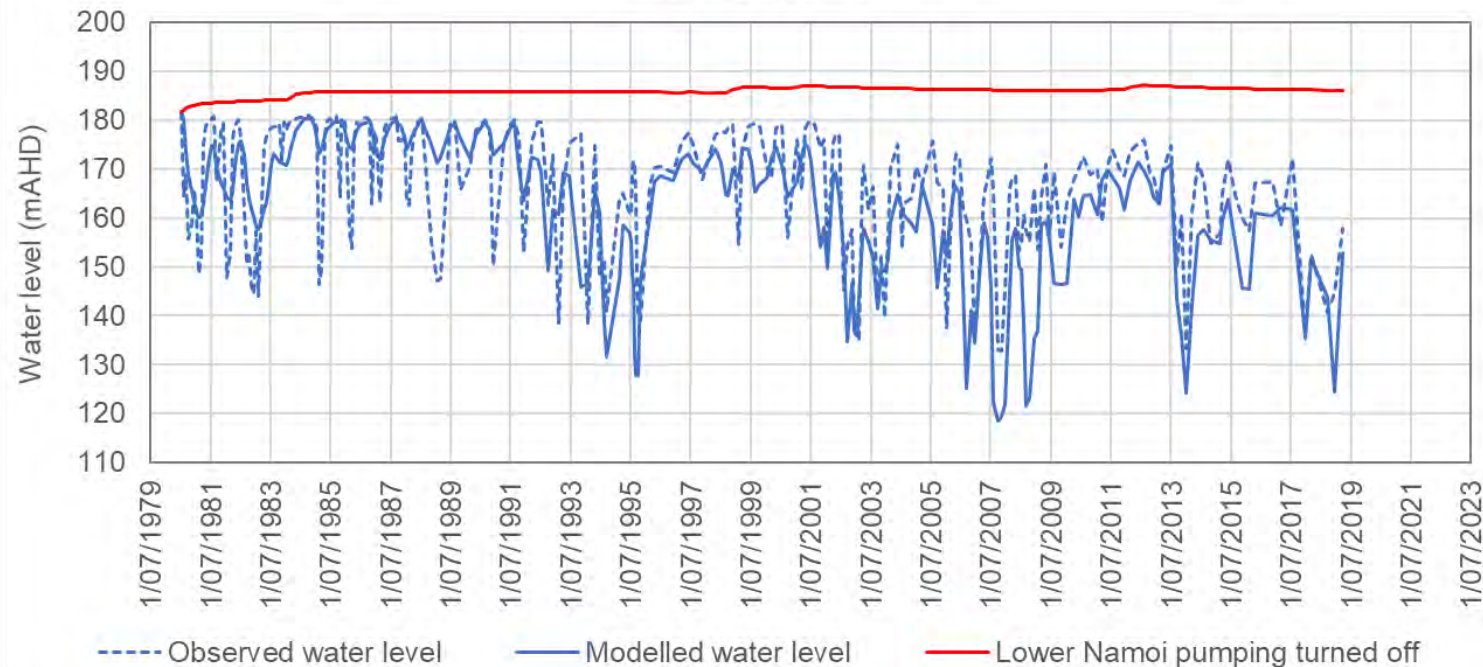
GW025148.2.2



- Modelling shows the main influence on water level trends in Trade Area 2 and Trade Area 3 is pumping

Trade Area 2

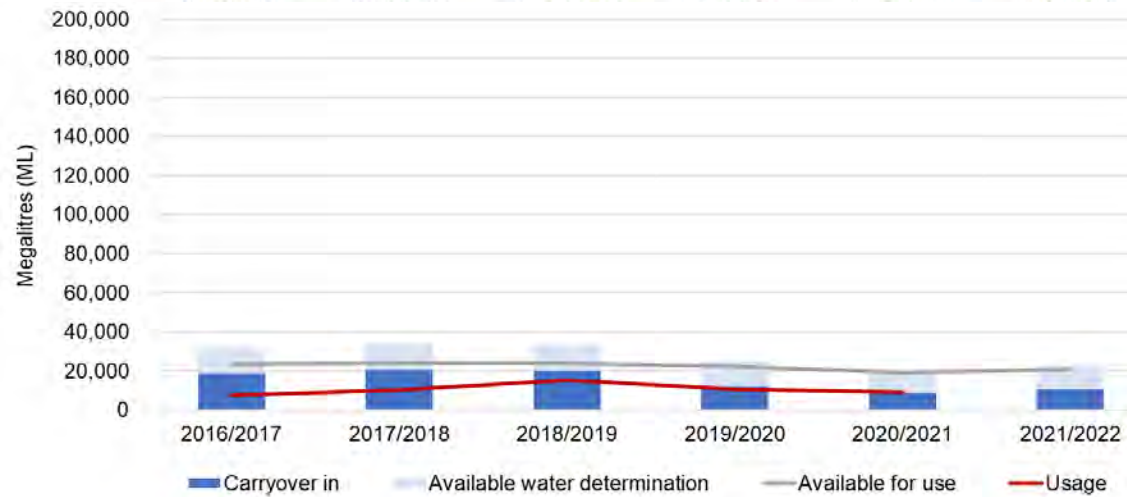
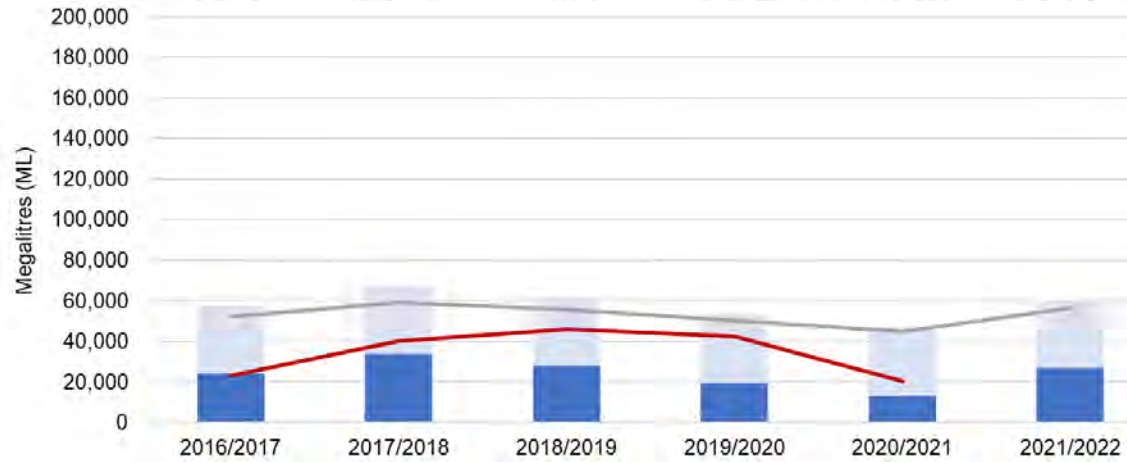
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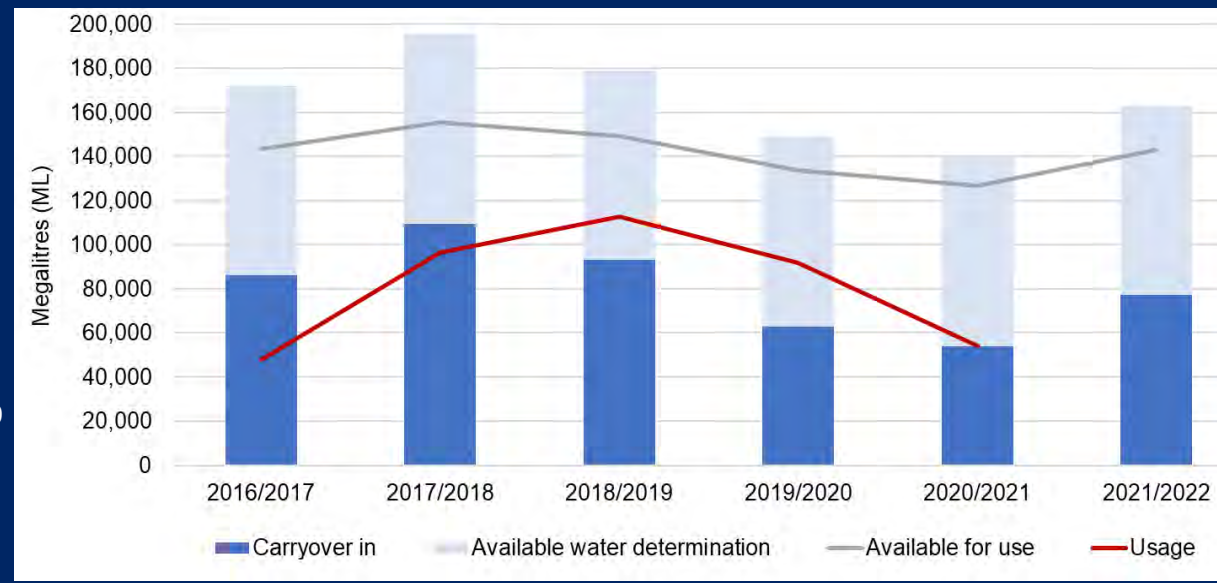
Trade Area 3

Summary - Water level review

- Long-term overall decline in recovered water levels
- The seasonal drawdown is consistently deeper than the 40% total available drawdown threshold across most of Trade Areas 2 and 3
- Recovered water level has dropped below the 25% total available drawdown threshold in Trade Area 2 and 3
- In some places recovered water level has dropped below the 40% total available drawdown threshold in Trade Area 2 and 3
- Modelling shows that the declining trend is mainly driven by groundwater extraction.

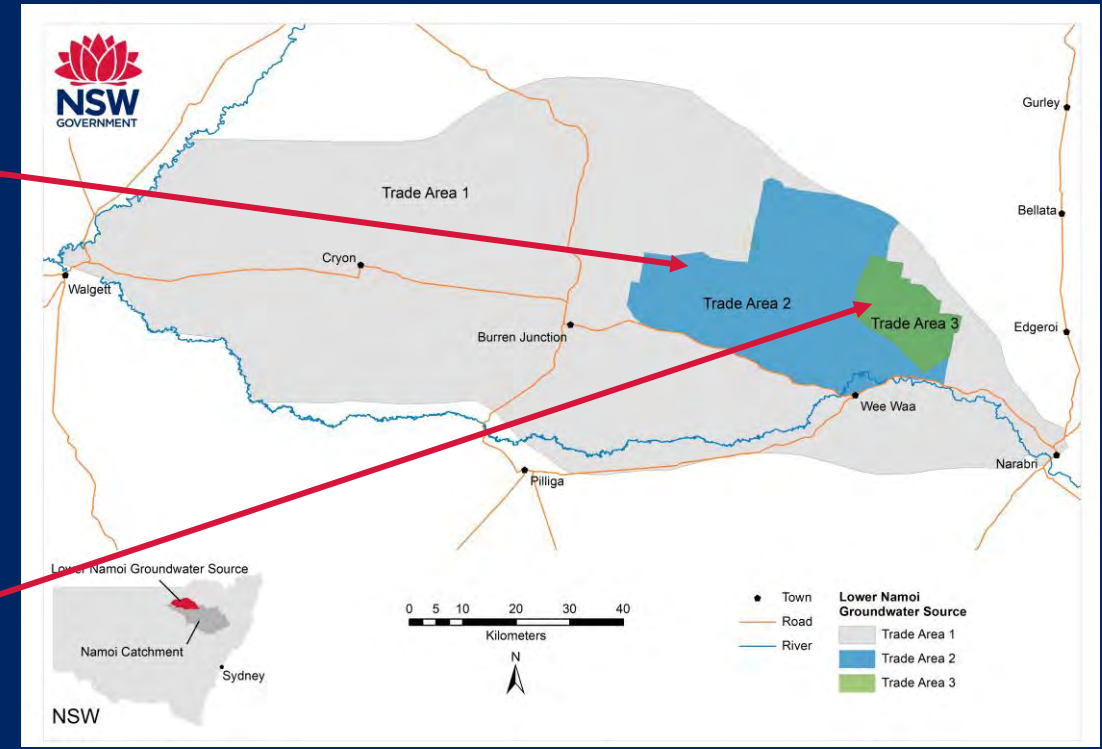


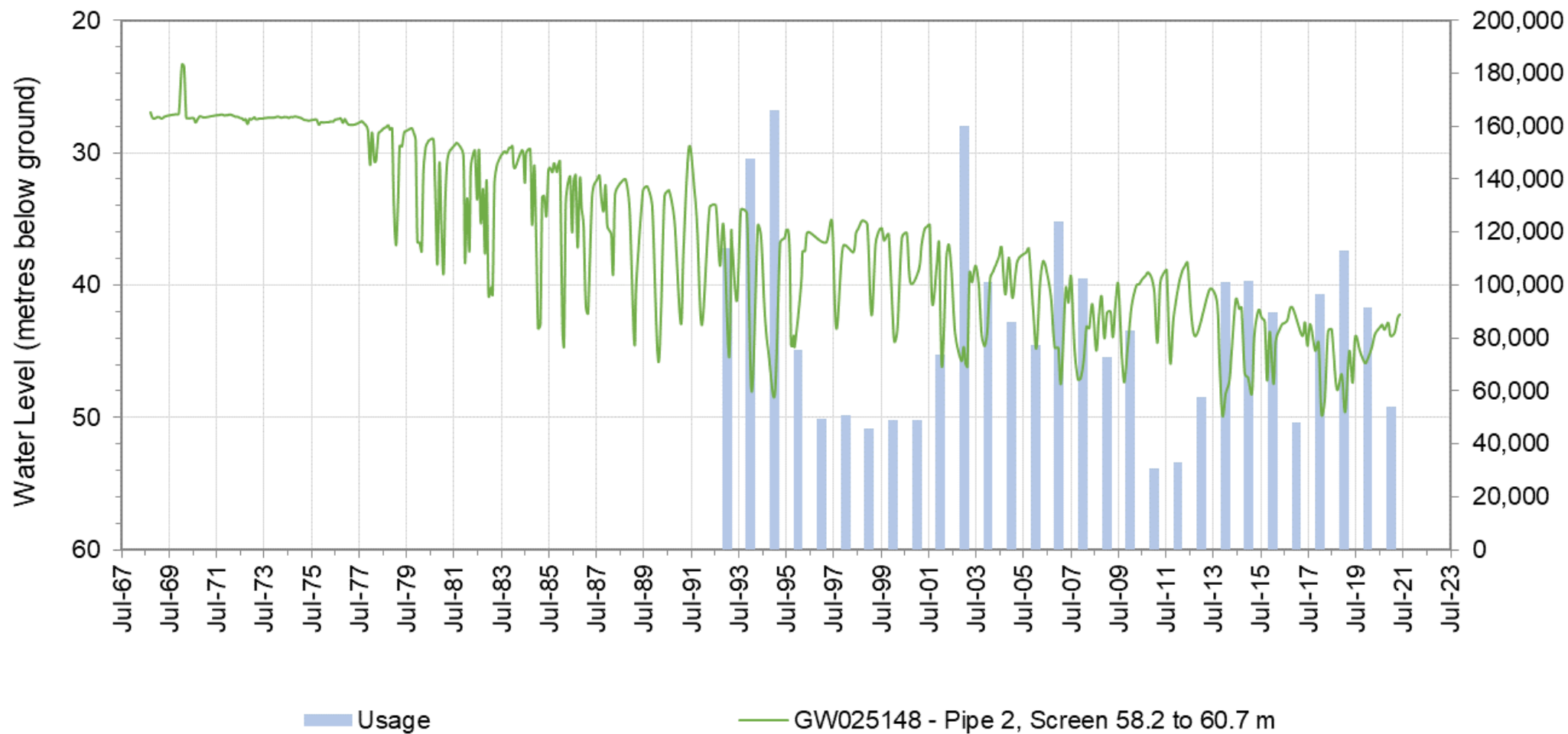
Trade Area 1
Whole of Lower Namoi
groundwater source



Trade Area 2

Trade Area 3





Account, trade, and usage statistics (annual average from 2016-17 to 2020-21)

	All Lower Namoi	Trade Area 1	Trade Area 2	Trade Area 3
Total licences	222	132	66	18
Total shares	85,993	36,993	34,518	12,886
Average Extraction (ML/year)	80,624	35,632	34,423	10,569
No. licences who temporary trade IN	39	18	19	1
Average Volume traded IN (71T) ML	16,478	7,691	8,481	206
Average volume pumped from accounts that traded IN (ML)	35,967	15,520	18,583	1,864

*There are 6 access licences totalling approximately 1600 shares that are not linked to an approval

Examples of local water level management tools applied in NSW

- Trade management areas:
 - Lower Murrumbidgee Deep Groundwater Source – local manage area under Section 71Z of the WMA 2000
 - Lower Namoi and Lower Gwydir groundwater sources – operational rules
- Cease to pump conditions set to trigger levels in monitoring bores
 - Lower Macquarie Zone 4
- Section 324 Order
 - Upper Lachlan Groundwater Source Management Zone 1 – order under Section 71Z and an order under Section 324 of the WMA 2000

Trade management rules

Current Lower Namoi rules	State-wide rules
<p>Temporary trade (71T Dealing) is allowed:</p> <ul style="list-style-type: none"> • Trade within or into Trade Area 1, and • Trade within Trade Area 2, can trade out to Trade Area 1, and • Trade within or out of Trade Area 3, 	<p>Temporary trade (71T Dealing)*</p> <p>Automatic approval where:</p> <ul style="list-style-type: none"> • There is an extraction limit condition on the linked approval that applies to all bores. <p>or</p> <ul style="list-style-type: none"> • The Access Licence is not linked to an Approval. <p>Where automatic approval does not apply:</p> <ul style="list-style-type: none"> • You can trade in (cumulatively) $\leq 50\%$ of buyers combined share component (capped at 1,000 ML). • Once this threshold is reached all trades require a simple impact assessment and may be approved, given a lesser volume or refused depending on the outcome of this assessment.
<p>All permanent type applications including new or additional bores and dealings (moving shares) require a full assessment.</p>	<p>*All permanent type applications including new or additional bores and dealings (moving shares) require a full assessment.</p>

* Local management areas apply in some groundwater source that restrict where water can be traded to and from.

Temporary Trade (71T Dealing) analysis

Annual volume temporary traded into licences (in ML /year) under current rules and if state-wide rules had of been applied:

Year	Trade Area 2		Trade Area 3	
	Current Rules	State-wide Rules	Current Rules	State-wide Rules
2016/2017	4,298	2,445	0	0
2017/2018	5,455	2,915	30	30
2018/2019	11,952	6,314	350	350
2019/2020	13,881	7,523	652	264
2020/2021	6,819	4,425	0	0



Questions/ Discussion

faye.williamson@dpie.nsw.gov.au

Department of Planning and Environment