Groundwater management and the impact of drought—major inland alluvial water sources
Groundwater management

- Aquifers store large volumes of water
- Long-term extraction = Long-term recharge
- High use due to a long-term dry period can lead to restrictions on use
Water sharing plan rules

• Extraction and distance restrictions to manage local impacts
• Require new basic landholder rights bores to be drilled to sufficient depth to maintain long-term access
• Specify accounting rules—set maximum carryover, annual account limits
• Set trading rules—where and how much water can be traded between connected aquifers
Dry conditions since 2017 are affecting water resources
Groundwater sources—extreme event stages

- No groundwater sources in NSW have reached drought stage 2
- We continue to use normal rules

<table>
<thead>
<tr>
<th>Stage</th>
<th>Water quantity</th>
<th>Water quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Normal management</td>
<td>Continue to deliver water as normal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Raw water can be treated with usual methods</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Emerging drought/ water shortage</td>
<td>Restrictions on water for general security licences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minor adjustments to treat raw water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potential or actual impacts on groundwater users and groundwater dependent ecosystems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potential for aquifer subsidence</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Severe drought/ water shortage</td>
<td>Restrictions on water for:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High priority licences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General security licences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Major adjustments are needed to treat raw water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unacceptable groundwater impacts</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Critical drought/ water shortage</td>
<td>Water only available for critical human needs. Restrictions on:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Town water, stock and domestic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High priority licences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General security licences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk to long term availability of the groundwater resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not possible to treat raw water with standard processes to meet health values and drinking guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Raw water is likely to remain untreated over the longer term</td>
</tr>
</tbody>
</table>
How does drought affect groundwater resources?

• Groundwater is more drought-resilient than surface water
• Larger groundwater systems have higher buffer due to storage
• Stress comes from substituting from surface water supply, plus reduced recharge
• In drought-affected areas, the water levels in most monitoring bores are at below-average levels, corresponding with increased extraction and reduced recharge
Increasing bore applications and groundwater trades

Substantial increase in applications for basic landholder right bores and for trade of groundwater allocations and aquifer access licences.

All applications are assessed:

- extraction impact assessments—based on risk management approach
- hydrogeological assessment considers:
  - impact on aquifer
  - impact on other users—licensed & basic landholder rights
  - impact on environment—groundwater dependent ecosystems and river
Possible management options in response to declines in groundwater

• **Reduced allocations** in those systems that have exceeded the long term extraction limit for more than three years (or 5 years in some water sources)

• **Section 324 (2) orders:**
  If it is necessary:
  (a) to maintain or protect water levels in an aquifer,
  (b) to maintain, protect or improve the quality of water in an aquifer,
  (c) to prevent land subsidence or compaction in an aquifer,
  (d) to protect groundwater-dependent ecosystems,
  (e) to maintain pressure, or to ensure pressure recovery, in an aquifer,
Possible management options in response to declines in groundwater, continued

within a specified area and for a specified period, the taking of water from that aquifer, or from any other aquifer that is above, below or adjacent to that aquifer, can be prohibited, or is subject to restrictions.
Monitoring bores in NSW
Groundwater levels—schematic hydrograph

- Rising water level trend
- Recharge event e.g., flood
- Declining water level trend
- Seasonal fluctuations
- Reversal of hydraulic gradient: change in direction of vertical hydraulic flow from up to down
- Seasonal drawdown

GWexample - Pipe 1: 20m - 23m
GWexample - Pipe 2: 60m - 63m
Major inland alluvial groundwater sources

Rainfall, usage, hydrographs

1. Border Rivers
2. Lower Gwydir
3. Peel
4. Upper Namoi
5. Lower Namoi
6. Upper Macquarie
7. Lower Macquarie
8. Belubula
9. Upper Lachlan
10. Lower Lachlan
11. Lower Murrumbidgee
12. Upper Murray
13. Lower Murray
1. Border Rivers alluvium
Rainfall deviation from average

![Rainfall deviation from average graph](image)

The graph shows the rainfall deviation from average for Texas Post Office and Goondiwindi Post Office and Airport from 1987 to 2020. The y-axis represents the Rainfall Residual Mass, and the x-axis represents the Year.
Yearly groundwater take

**NSW Border Rivers Alluvium**

- **Usage Volume (ML)**
  - Annual Extraction Pre WSP
  - Yearly Extraction Limit

<table>
<thead>
<tr>
<th>Year</th>
<th>Usage Volume (ML)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992-91</td>
<td></td>
</tr>
<tr>
<td>1992-93</td>
<td></td>
</tr>
<tr>
<td>1993-94</td>
<td></td>
</tr>
<tr>
<td>1994-95</td>
<td></td>
</tr>
<tr>
<td>1995-96</td>
<td></td>
</tr>
<tr>
<td>1996-97</td>
<td></td>
</tr>
<tr>
<td>1997-98</td>
<td></td>
</tr>
<tr>
<td>1998-99</td>
<td></td>
</tr>
<tr>
<td>1999-00</td>
<td></td>
</tr>
<tr>
<td>2000-01</td>
<td></td>
</tr>
<tr>
<td>2001-02</td>
<td></td>
</tr>
<tr>
<td>2002-03</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td></td>
</tr>
<tr>
<td>2004-05</td>
<td></td>
</tr>
<tr>
<td>2005-06</td>
<td></td>
</tr>
<tr>
<td>2006-07</td>
<td></td>
</tr>
<tr>
<td>2007-08</td>
<td></td>
</tr>
<tr>
<td>2008-09</td>
<td></td>
</tr>
<tr>
<td>2009-10</td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td></td>
</tr>
<tr>
<td>2011-12</td>
<td></td>
</tr>
<tr>
<td>2012-13</td>
<td></td>
</tr>
<tr>
<td>2013-14</td>
<td></td>
</tr>
<tr>
<td>2014-15</td>
<td></td>
</tr>
<tr>
<td>2015-16</td>
<td></td>
</tr>
<tr>
<td>2016-17</td>
<td></td>
</tr>
<tr>
<td>2017-18</td>
<td></td>
</tr>
</tbody>
</table>
Yearly groundwater take

NSW Border Rivers Tributary Alluvium

Usage Volume (ML)

1992-91
1993-94
1994-95
1995-96
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18

Annual Extraction Pre WSP
Annual Extraction Pre WSP
Yearly Extraction Limit
Hydrograph—upstream of Texas—Upstream of Texas

Water Level (m below GL)

GW0040644 - Pipe 1: 9.9m deep, open ended
GW040641 - Pipe 1: 31.4m - 48.1m
Hydrograph—downstream of Texas

---

Water Level (m below GL)

- GW040829 - Pipe 1: 8m - 11m
- GW040829 - Pipe 2: 18m - 24m
- GW040831 - Pipe 1: 36m - 41m
- GW040831 - Pipe 2: 72m - 78m
Hydrograph—downstream of Keetah Bridge
Hydrograph—Macintyre alluvium
Hydrograph—Ottleys alluvium

Water Level (m below GL)

GW036692 - Pipe 1: 11m - 13m
GW036692 - Pipe 2: 32m - 34m
2. Lower Gwydir alluvium
Rainfall deviation from average—Moree
Yearly groundwater take—Gwydir alluvium

![Graph showing yearly groundwater extraction](image)

- **Yearly Extraction Limit**: Orange line
- **Annual Extraction Pre WSP**: Dark grey bars
- **Annual Extraction Post WSP**: Light blue bars

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Extraction (ML)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td></td>
</tr>
<tr>
<td>1994-95</td>
<td></td>
</tr>
<tr>
<td>1995-96</td>
<td></td>
</tr>
<tr>
<td>1996-97</td>
<td></td>
</tr>
<tr>
<td>1997-98</td>
<td></td>
</tr>
<tr>
<td>1998-99</td>
<td></td>
</tr>
<tr>
<td>1999-00</td>
<td></td>
</tr>
<tr>
<td>2000-01</td>
<td></td>
</tr>
<tr>
<td>2001-02</td>
<td></td>
</tr>
<tr>
<td>2002-03</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td></td>
</tr>
<tr>
<td>2004-05</td>
<td></td>
</tr>
<tr>
<td>2005-06</td>
<td></td>
</tr>
<tr>
<td>2006-07</td>
<td></td>
</tr>
<tr>
<td>2007-08</td>
<td></td>
</tr>
<tr>
<td>2008-09</td>
<td></td>
</tr>
<tr>
<td>2009-10</td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td></td>
</tr>
<tr>
<td>2011-12</td>
<td></td>
</tr>
<tr>
<td>2012-13</td>
<td></td>
</tr>
<tr>
<td>2013-14</td>
<td></td>
</tr>
<tr>
<td>2014-15</td>
<td></td>
</tr>
<tr>
<td>2015-16</td>
<td></td>
</tr>
<tr>
<td>2016-17</td>
<td></td>
</tr>
<tr>
<td>2017-18</td>
<td></td>
</tr>
<tr>
<td>2018-19</td>
<td></td>
</tr>
</tbody>
</table>
Hydrograph – GW030390

GW030390 - Hole 1, Pipe 1; Screen: 17.7 - 20.7 m
GW030390 - Hole 1, Pipe 2; Screen: 50.6 - 53.6 m
Hydrograph—GW030159

GW030159 - Hole 1, Pipe 1; Screen: 9.9 - 11.3 m
GW030159 - Hole 1, Pipe 2; Screen: 36.0 - 40.0 m
Hydrograph—GW030458

GW030458 - Hole 1, Pipe 1; Screen: 10.7 - 16.8 m
GW030458 - Hole 1, Pipe 2; Screen: 49.2 - 50.5 m
GW030458 - Hole 1, Pipe 3; Screen: 65.4 - 68.9 m
Hydrograph—GW036115
Hydrograph—GW036161
3. Peel Valley alluvium
Rainfall deviation from average

Rainfall Residual Mass

Year

Tamworth
### Yearly groundwater take—Peel Valley

<table>
<thead>
<tr>
<th>Year</th>
<th>Pre WSP</th>
<th>Post WSP</th>
<th>Extraction Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992-93</td>
<td>5000</td>
<td>6000</td>
<td>7000</td>
</tr>
<tr>
<td>1993-94</td>
<td>6000</td>
<td>7000</td>
<td>8000</td>
</tr>
<tr>
<td>1994-95</td>
<td>7000</td>
<td>8000</td>
<td>9000</td>
</tr>
<tr>
<td>1995-96</td>
<td>8000</td>
<td>9000</td>
<td>10000</td>
</tr>
<tr>
<td>1996-97</td>
<td>9000</td>
<td>10000</td>
<td>11000</td>
</tr>
<tr>
<td>1997-98</td>
<td>10000</td>
<td>11000</td>
<td>12000</td>
</tr>
<tr>
<td>1998-99</td>
<td>11000</td>
<td>12000</td>
<td>13000</td>
</tr>
<tr>
<td>1999-00</td>
<td>12000</td>
<td>13000</td>
<td>14000</td>
</tr>
<tr>
<td>2000-01</td>
<td>13000</td>
<td>14000</td>
<td>15000</td>
</tr>
<tr>
<td>2001-02</td>
<td>14000</td>
<td>15000</td>
<td>16000</td>
</tr>
<tr>
<td>2002-03</td>
<td>15000</td>
<td>16000</td>
<td>17000</td>
</tr>
<tr>
<td>2003-04</td>
<td>16000</td>
<td>17000</td>
<td>18000</td>
</tr>
<tr>
<td>2004-05</td>
<td>17000</td>
<td>18000</td>
<td>19000</td>
</tr>
<tr>
<td>2005-06</td>
<td>18000</td>
<td>19000</td>
<td>20000</td>
</tr>
<tr>
<td>2006-07</td>
<td>19000</td>
<td>20000</td>
<td>21000</td>
</tr>
<tr>
<td>2007-08</td>
<td>20000</td>
<td>21000</td>
<td>22000</td>
</tr>
<tr>
<td>2008-09</td>
<td>21000</td>
<td>22000</td>
<td>23000</td>
</tr>
<tr>
<td>2009-10</td>
<td>22000</td>
<td>23000</td>
<td>24000</td>
</tr>
<tr>
<td>2010-11</td>
<td>23000</td>
<td>24000</td>
<td>25000</td>
</tr>
<tr>
<td>2011-12</td>
<td>24000</td>
<td>25000</td>
<td>26000</td>
</tr>
<tr>
<td>2012-13</td>
<td>25000</td>
<td>26000</td>
<td>27000</td>
</tr>
<tr>
<td>2013-14</td>
<td>26000</td>
<td>27000</td>
<td>28000</td>
</tr>
<tr>
<td>2014-15</td>
<td>27000</td>
<td>28000</td>
<td>29000</td>
</tr>
<tr>
<td>2015-16</td>
<td>28000</td>
<td>29000</td>
<td>30000</td>
</tr>
<tr>
<td>2016-17</td>
<td>29000</td>
<td>30000</td>
<td>31000</td>
</tr>
<tr>
<td>2017-18</td>
<td>30000</td>
<td>31000</td>
<td>32000</td>
</tr>
</tbody>
</table>
Hydrograph—GW030136

GW030136 - Hole 1, Pipe 1: Screen: 8.23 - 9.61 m
Hydrograph—GW093039

GW093039 - Hole 1, Pipe 1: Screen: 12.5 - 15.5 m
4. Upper Namoi alluvium
Cumulative difference from average rainfall
Yearly groundwater take—Upper Namoi

The chart shows the annual groundwater extraction data for Upper Namoi, with two categories: Annual Extraction Pre WSP and Annual Extraction Post WSP.

- **Annual Extraction Pre WSP**
- **Annual Extraction Post WSP**

The chart indicates a significant decrease in annual extraction post WSP, with the Yearly Extraction Limit marked by an orange line.

X-axis: Years (1991-92 to 2017-18)
Y-axis: Usage Volume (ML)

Note: The diagram suggests a decline in groundwater extraction post the Water Saver Package (WSP) implementation.
Compliance with the extraction limits
Sites GW030029 and GW030083
Sites GW036976 and GW030344
Sites GW036600 and GW036005
5. Lower Namoi alluvium
Cumulative difference from average rainfall
Compliance with the extraction limits

<table>
<thead>
<tr>
<th>Year</th>
<th>USAGE incl. BLR</th>
<th>LTAAEL incl. BLR</th>
<th>3 Yr Av LTAAEL incl BLR + 5%</th>
<th>3 Yr Av Usage incl BLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006/07</td>
<td>120000</td>
<td>100000</td>
<td>99000</td>
<td>100000</td>
</tr>
<tr>
<td>2007/08</td>
<td>120000</td>
<td>99000</td>
<td>98000</td>
<td>100000</td>
</tr>
<tr>
<td>2008/09</td>
<td>119000</td>
<td>97000</td>
<td>96000</td>
<td>100000</td>
</tr>
<tr>
<td>2009/10</td>
<td>118000</td>
<td>95000</td>
<td>94000</td>
<td>100000</td>
</tr>
<tr>
<td>2010/11</td>
<td>117000</td>
<td>93000</td>
<td>92000</td>
<td>100000</td>
</tr>
<tr>
<td>2011/12</td>
<td>116000</td>
<td>91000</td>
<td>91000</td>
<td>100000</td>
</tr>
<tr>
<td>2012/13</td>
<td>115000</td>
<td>90000</td>
<td>90000</td>
<td>100000</td>
</tr>
<tr>
<td>2013/14</td>
<td>114000</td>
<td>89000</td>
<td>89000</td>
<td>100000</td>
</tr>
<tr>
<td>2014/15</td>
<td>113000</td>
<td>88000</td>
<td>88000</td>
<td>100000</td>
</tr>
<tr>
<td>2015/16</td>
<td>112000</td>
<td>87000</td>
<td>87000</td>
<td>100000</td>
</tr>
<tr>
<td>2016/17</td>
<td>111000</td>
<td>86000</td>
<td>86000</td>
<td>100000</td>
</tr>
<tr>
<td>2017/18</td>
<td>110000</td>
<td>85000</td>
<td>85000</td>
<td>100000</td>
</tr>
<tr>
<td>2018/19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Yearly groundwater take—Lower Namoi

![Graph showing yearly groundwater take](image)

- **Upper Namoi**
- **Lower Namoi**

**Annual Extraction Pre WSP**

**Annual Extraction Post WSP**

**Yearly Extraction Limit**
Sites GW025045 and GW036249
6. Upper Macquarie
Rainfall deviation from average—south of Dubbo
Yearly groundwater take—Upper Macquarie
Hydrograph—GW021498

GW021498 - Hole 1, Pipe 1; Screen: 39.6 - 51.8 m
GW021498 - Hole 2, Pipe 2; Screen: 59.4 - 71.6 m
Hydrograph—GW036517

Water Level (m below GL)

Water Elevation (m AHD)

GW036517 - Hole 1, Pipe 1; Screen: 21 - 28 m

GW036517 - Hole 1, Pipe 2; Screen: 20 - 43.5 m
7. Lower Macquarie alluvium
Rainfall deviation from average—Trangie
Yearly groundwater take, Lower Macquarie combined, Zones 1–6
Hydrograph—GW039068

40% = 56 mbgl

GW039068 - Hole 1, Pipe 1; Screen: 46.9 - 52.4 m
Hydrograph—GW096144

40% = 86 mbgl

Water Level (m below GL)

Water Elevation (m AHD)

GW096144 - Hole 1, Pipe 1; Screen: 66 - 72 m
GW096144 - Hole 2, Pipe 2; Screen: 133 - 139 m
8. Belubula alluvium
Rainfall deviation from average
Yearly groundwater take—Belubula alluvium

[Bar chart showing annual groundwater take pre and post WSP from 2000-01 to 2017-18.]
Hydrograph—Belubula—GW090014

40% of Total Available Drawdown

- GW090014 - Pipe 1: 17m - 20m
- GW090014 - Pipe 1 (Telemetered): 17m - 20m
- Belubula River Level (Lyndon)
9. Upper Lachlan alluvium
Rainfall deviation from average

![Graph showing rainfall deviation from average for Hillston and Forbes Airports from 1972 to 2020. The graph displays a general decrease in rainfall deviation over time, with a significant drop after 2016.](image-url)
Yearly groundwater take—Upper Lachlan alluvium
Hydrograph—Upper Lachlan GW030367

40% of Total Available Drawdown

GW030367 - Pipe 1: 35m - 38.4m
GW030367 - Pipe 2: 50.3m - 56.4m
Hydrograph—Upper Lachlan GW036526

40% of Total Available Drawdown

GW036526 - Pipe 1: 72m - 82m
GW036526 - Pipe 2: 131m - 136m
Hydrograph—Upper Lachlan GW036553

40% of Total Available Drawdown

GW036553 - Pipe 1: 118m - 126m
GW036553 - Pipe 1 (Telemetered): 118m - 126m
Rainfall deviation from average

Rainfall Residual Mass

- Hillston Airport
- Forbes Airport
Yearly groundwater take—Lower Lachlan alluvium
Hydrograph—Lower Lachlan GW025401

40% of Total Available Drawdown

GW025401 - Pipe 1: 32m - 38m
Hydrograph—Lower Lachlan GW030174

40% of Total Available Drawdown

GW030174 - Pipe 1: 33.5m - 39.6m
GW030174 - Pipe 2: 55.5m - 88.4m
GW030174 - Pipe 3: 97.5m - 103.6m
Hydrograph—Lower Lachlan GW030405

40% of Total Available Drawdown

Water Level (m below GL)

- GW030405 - Pipe 1: 36.5m - 41.4m
- GW030405 - Pipe 2: 80m - 85m
- GW030405 - Pipe 1 (Telemetered): 36.5m - 41.4m
- GW030405 - Pipe 2 (Telemetered): 80m - 85m
11. Lower Murrumbidgee
Rainfall deviation from average

Rainfall Residual Mass

Yanco
Hay
Yearly groundwater take—Lower Murrumbidgee

Yearly Extraction Limit & 5% additional (dotted line)
Yearly groundwater take—Lower Murrumbidgee (shallow)

- **Annual Extraction Pre WSP**
- **Annual Extraction Post WSP**

**Yearly Extraction Limit & 5% additional (dotted line)**

**Usage Volume (ML)**

- **Not Metered**

- **Graph Data**
  - 2000-01: 0
  - 2001-02: 0
  - 2002-03: 0
  - 2003-04: 0
  - 2004-05: 0
  - 2005-06: 0
  - 2006-07: 0
  - 2007-08: 0
  - 2008-09: 0
  - 2009-10: 0
  - 2010-11: 0
  - 2011-12: 0
  - 2012-13: 0
  - 2013-14: 0
  - 2014-15: 0
  - 2015-16: 0
  - 2016-17: 0
  - 2017-18: 0

**Legend**
- Brown bars: Annual Extraction Pre WSP
- Blue bars: Annual Extraction Post WSP

**Page 76**
Hydrograph—GW040862

70% of total available drawdown (above top of productive aquifer)

GW030284 - Slots (36.2m - 39.5m)  GW030282 - Slots (100m - 117m)  GW040862 - Slots (119m - 125m)
Hydrograph—GW040863

70% of total available drawdown (above top of productive aquifer)

GW030341 - Slots (122m - 127 m)  
GW040863 - Pipe 2 (125m - 130m)
Hydrograph—GW036025

70% of total available drawdown (above top of productive aquifer)

GW036025 - Pipe 1 (Slots 30m - 33m)
GW036025 - Pipe 2 (Slots 108m to 114m)
Hydrograph—GW036799

70% of total available drawdown (above top of productive aquifer)

Water Level (m below ground)

GW036799 - Pipe 1 (Slots 59-71 m)  GW036799 - Pipe 2 (Slots 225-231 m)
GW036799 - Pipe 3 (Slots 322-334 m)
Location of local management zones for Lower Murrumbidgee
12. Upper Murray alluvium
Rainfall deviation from average

[Graph showing rainfall deviations from average for three locations: Culcairn(74188), Corowa(74034), and Deniliquin (74128). The graph spans from January 1975 to January 2018, with deviations ranging from -800 to 1200.]
Yearly groundwater take—Upper Murray alluvium
Yearly groundwater take—Upper Murray
Hydrograph—GW036306 (Hopefield)
Hydrograph—GW036281 (Howlong)
13. Lower Murray alluvium
Rainfall deviation from average
Yearly groundwater take—Lower Murray alluvium

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Extraction</th>
<th>3-Year Average Annual Extraction</th>
<th>LTAAEL</th>
<th>LTAAEL +5% trigger</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-07</td>
<td>100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007-08</td>
<td>200,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008-09</td>
<td>150,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009-10</td>
<td>120,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>60,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011-12</td>
<td>80,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012-13</td>
<td>120,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-14</td>
<td>140,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-15</td>
<td>140,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015-16</td>
<td>120,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016-17</td>
<td>80,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017-18</td>
<td>100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hydrograph—GW036823 Swan Hill
Hydrograph—GW036742 (Deniliquin)
Hydrograph—GW036586 Blighty

- Pipe 1 Slots 48 - 50 m
- Pipe 4 Slots 237 - 243 m
- Pipe 2 Slots 110 - 112 m
- Pipe 3 Slots 168 - 174 m

Groundwater Level (m below ground level)

- Jan-87
- Jan-91
- Jan-95
- Jan-99
- Jan-03
- Jan-07
- Jan-11
- Jan-15
- Jan-19
Hydrograph—GW036638 Urana

Groundwater Level (m below ground level)

- Pipe 1 Slots 34 - 36 m
- Pipe 3 Slots 146 - 152 m
- Pipe 2 Slots 79 - 82 m
- Pipe 4 Slots 175 - 177 m

[Graph showing groundwater level trends from January 1987 to January 2019]
Hydrograph—GW036352 Lowesdale