City of Wagga Wagga

# 2010-2011

# Wagga Wagga Urban Salinity Status Report

Prepared by the Directorate of
Environmental and Community Services
WAGGA WAGGA CITY COUNCIL

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# 1. INTRODUCTION

Urban salinity is recognised as one of Wagga Wagga's most significant land degradation concerns. Following the identification of urban salinity in 1993, Wagga Wagga City Council has adopted management practices to alleviate urban salinity.

Annually, Wagga Wagga City Council works with the community to manage the ground water tables and salinity in the Wagga Wagga Local Government Area. Wagga Wagga City Council endeavours to manage salinity to minimise the detrimental impact on the natural environment, economic condition or lifestyle of residents living in the City of Wagga Wagga.

Urbanisation and agricultural factors are recognised as the major causes of urban salinity in Wagga Wagga. The factors known to contribute to urban salinity include:

- Replacing native perennial vegetation with urban development and shallow rooted species;
- Over irrigation of gardens, parks and recreation areas;
- Leaking water, stormwater and sewer pipes;
- Leaking septic tanks;
- Disruption of natural surface and subsurface drainage lines;
- Stormwater disposal via backyard rubble pits;
- Development on discharge areas; and
- Rainfall overly exceeding evaporation rates.

In recent years, the prolonged drought may have temporarily relieved Wagga Wagga of the high water tables associated with urban salinity. Recent rainfall associated with the continuation of a La Niña effect has resulted in higher than average rainfall.

The 2010/11 reporting period in Wagga Wagga recorded an 84% increase on historical average rainfall. Widespread high summer rainfall events resulted in major flooding throughout the district caused by runoff inundation and high river levels. These events are considered a contributing factor to a rising water table.

The procedures and management strategies undertaken by Council in 2010/11 to facilitate the remediation of urban salinity in attempt to manage groundwater tables are discussed in the following urban salinity status report document.

## 1.1 The impact of salinity

Salinity within the urban environment impacts on all members of the community quickly damaging infrastructure and impacting on the surrounding natural environment. The accumulation of salts and water logging resulting from urban salinity has a detrimental impact on the longevity of households, business and infrastructure.

The impact of salinity in urban areas can comprise of:

- Salt damage to pavements, roads and highways includes the breakdown of concrete, bitumen and asphalt associated with pot-holing, cracking and crumbling of the road base;
- Damage to houses, buildings and other structures caused by the weakening of brick (Figure 1), mortar and concrete due to saline water crystallising in the brickwork;
- Shifting or sinking of foundations may result in structural cracking, damage or collapse.
- Damage to heritage buildings and reduction of land values may be of major concern;
- Damage to underground services such as gas, water, stormwater and sewage pipes due to the breakdown of unprotected metal and concrete in high saline water tables;
- Septic tank failures due to high water tables can lead to other environmental and health concerns;
- Loss of amenity in recreational areas such as parks, gardens and sporting fields due to salt and waterlogging causing salt scalds and bare patches where vegetation fails to grow (Figure 1); and
- Adverse effects on the surrounding natural environment affecting water quality, and reduction of native flora and fauna.

**Figure 1:** Salt damage to footings (left) and salt scalding (right), Turvey Park, Wagga Wagga.

In 1998, the Department of Land and Water Conservation (DLWC) conducted a study with data provided by Wagga Wagga City Council putting an economic cost to urban salinity in Wagga Wagga. The estimated cost of salinity damage to infrastructure in Wagga Wagga over the next 30 years is approximately $183 million if no preventative work is carried out. This value is expected to top $20 million even if preventative measures are put in place.

Preventative measures have been in place since 1998 and each year Council expands monitoring and management strategies in an attempt to lessen the effects of urban salinity. Following in excess of 10 years of management, the current economic impact of management and recent data on the cost of urban salinity to Wagga Wagga is yet to be determined.

# 2. EDUCATION

Educational activities raise awareness of the issues associated with urban salinity in our community. Behavioural change within the community is required to combat urban salinity. An informed community will support and undertake actions to address Urban Salinity.

Wagga Wagga City Council's urban salinity education program aims to:

- Increase community awareness of the causes, impacts and management strategies of urban salinity (Figure 2);
- Promote education programs in the community, schools and tertiary institutes including the Riverina Institute of TAFE and Charles Sturt University;
- Liaise with community, business and industry groups on ways to remediate urban salinity;
- Liaise with other authorities, such as the Office if Environment and Heritage and Riverina Water County Council, to ensure that urban salinity practices are kept up to date and that information is shared across agencies;
- Encourage attitude and behavioural changes to ensure Council works programs are supported by the community; and
- Encourage community involvement in practical projects that will aid the management of urban salinity.

**Figure 2:** Information sign adjacent to a piezometer in Humula village.

## 2.1 Sustainability Education Officer

The Sustainability Education Officer focuses on sustainability and education of all environmental issues affecting the Wagga Wagga Local Government Area.

The Sustainability Education Officer performs a wide range of duties including:

- Handling enquiries and directing customers to additional specialist information;
- Facilitating education and consultation in the community in regards to urban salinity and other sustainability issues;
- Preparing information for the website, displays and other educational materials;
- Coordinating working bees and revegetation projects to assist in the management of urban salinity;
- Attending regular meetings with groups such as Landcare and ErinEarth who work to enhance our local environment;
- Conducting tours and providing information to visiting groups from other centres;
- Organising community meetings and workshops to discuss urban salinity and other sustainability issues.

## 2.2 School programs and contact

Through the Sustainability Education Officer, Council aims to promote an understanding of urban salinity and related environmental problems. In 20010/11, Wagga Wagga City Council contributed more than $10,000 to the 11 schools participating in the annual Schools Sustainability Challenge.

The challenge invites local school students to develop practical projects that will enhance their school environment and promote sustainable practices in our community.

The promotion of education for sustainability is receiving increasing recognition within the community of Wagga Wagga. One such example is Erin Earth - a solar passive demonstration house and its surrounding gardens developed using water wise and permaculture principles. The centre has the potential to be an important site for education for sustainability and Council's Sustainability Education Officer is a member of the ErinEarth Management Committee. Open Days are held monthly with workshops focusing on a variety of sustainability issues including urban salinity.

## 2.3 Urban salinity tours

The Urban Salinity Tour Booklet (Figure 3) allows self guided tours of locations indicating the effects of urban salinity, preventative measures and management strategies in the city of Wagga Wagga. Alternatively, salinity tours can be conducted by Council's Sustainability Education Officer on request. The tour deals with an extensive range of issues and provides a considerable quantity of information. The tour identifies sources of groundwater recharge in Wagga Wagga and measures implemented by Council to reduce its impact. The tour also identifies areas of groundwater discharge, the consequences associated with a high and saline water table and remedial options available.

During the past year, tours have been conducted for more than two hundred students from three different high schools. A selection of urban salinity publications were given to each of the groups that participated in the tours.

The Urban Salinity Tour and the Urban Salinity Tour Booklet was evaluated and updated in 2009/10 to ensure its application to the school curriculum and relevance to current conditions.

## 2.4 Wagga Wagga City Council website

The Wagga Wagga City Council website contains information relating to urban salinity. An upgrade to the site was carried out in 2010 to ensure the relevancy of the information to the community. To access this information, navigate to www.wagga.nsw.gov.au and click on the "Environment" and "Land" tabs to navigate to information on salinity. This webpage gives information on how residents can reduce rising water tables in their community, a glossary of terms and links to urban salinity reports and publications that can be downloaded.

## 2.5 Publications

Wagga Wagga City Council has commissioned a number of publications to provide information on urban salinity and related issues (Figure 3). A selection of these includes:

- *Wagga Wagga Urban Salinity Guide.* Wagga Wagga City Council, 2010.
- *Urban Salinity Management Plan 2008*-2013. Wagga Wagga City Council, 2008.
- *Wagga Wagga Urban Salinity – Water Level and Quality Study (1999-2006)*. Golder & Associates, 2007.
- *Annual Urban Salinity Status Report*. Wagga Wagga City Council.
- *Salinity in the Wagga Wagga Local Government Area*. Wagga Wagga City Council, 2006.
- *Water Wise and Salt Tolerant Plants: Wagga Wagga Region*. Wagga Wagga City Council, 2002.
- *Building in a Saline Environment*. Wagga Wagga City Council, 1999.

These publications are available directly from Council and a selection can also be downloaded from the Wagga Wagga City Council website, www.wagga.nsw.gov.au.

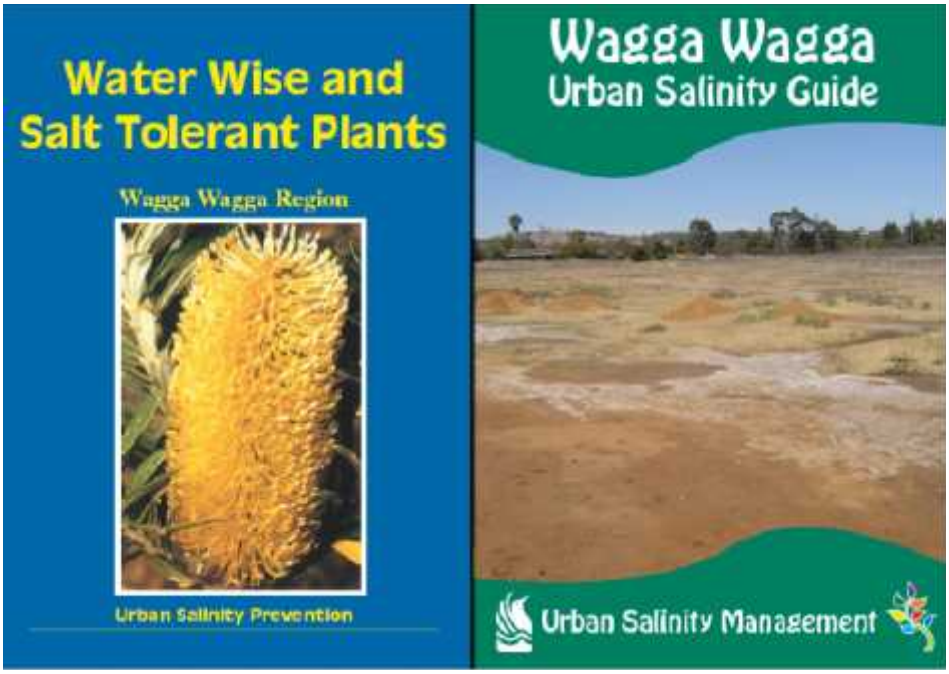



**Figure 3:** Available Information booklets related to urban salinity.

# 3. REVEGETATION

The revegetation of recharge or discharge areas with native plants is directly responsible for slowing groundwater recharge and lowering the water table. The Urban Salinity Management Plan 2008 - 2013 proposes that Council aims the regenerate 20ha of land annually. Alternatively, as suitable large areas of vacant land within the urban environment become scarce, Council will ensure existing stands of vegetation remain healthy.

Outcomes of the revegetation program as listed in the Urban Salinity Management Plan 2008 - 2013 include:

- Decreased outbreaks of surface salinity
- Decreased effects on the environment, buildings and infrastructure
- Lowered water tables
- Decreased water usage by encouraging “water wise” practices in the garden
- Lower infrastructure costs
- Increased biodiversity

These outcomes have led to the implementation of the following programs.

## 3.1 Tree planting on public land

Mitigation and prevention of salinity through replanting areas with native trees, shrubs and grasses requires the help of groups such as Landcare, the Murrumbidgee Catchment Management Authority and private landholders.

Local schools, businesses, Council staff, community members and Landcare groups have planted in excess of half a million trees and shrubs in the local area since 1998. During this time, major plantings of approximately 100,000 trees have occurred near Lake Albert, Wagga Wagga and at various Kyeamba Valley Farm sites. Funding for these tree plantings have come from a variety of sources. The former Department of Environment and Conservation, Greenfleet, the Natural Heritage Trust and Wagga Wagga City Council have all contributed funds.

In 2010/11, volunteers from GE Money planted 280 seedlings along Boorooma Street, Estella to replace plants that had not survived the drier years.

### 3.1.1 National Tree Day

National Tree Day is Australia's biggest community tree planting event. National Tree Day 2010 was held on Sunday August 1. National Tree Day 2010 was a very wet, windy and cold day and as a result fewer seedlings than anticipated were planted with 52 National Tree Day volunteers planting approximately 800 locally native grasses, shrubs and trees at a site in the suburb of Hilltop in Wagga Wagga.

Wagga Wagga City Council has coordinated National Tree Day locally for many years.

Schools National Tree Day was also a great success with Wagga Wagga and district schools in 2010. A total of 25 schools and childcare centres/preschools planted a total of 1940 native seedlings on their grounds.

## 3.2 Emblen Park demonstration garden

Planting native trees and shrubs and watering wisely will help to prevent the water table from rising and bringing salts to the soil surface. Through the promotion and establishment of water wise gardens especially in recharge areas, local residents become responsible for helping to create a better environment.

The Hardy Avenue Emblen Street roundabout, Emblen Park, has been established as a water wise garden for many years. In 2008/09, the garden was overhauled with new technologies and innovations being incorporated into the demonstrate site.

Emblen Park is incorporated as a stop in the urban salinity tour

# 4. REAR OF BLOCK DRAINAGE

The rear of block drainage scheme commenced in 1998 when the Urban Salinity Working Group identified that a significant amount of water from house roofs was seeping directly into the water table via backyard rubble pits.

Rubble pits are rubble filled holes in the ground used to dispose of rain water from roofs in areas where stormwater connections do not exist. Over time the rubble pit empties as the water soaks into the ground, contributing to a rise in the water table. Rubble pits are usually located in the backyards of houses in older parts of the residential area.

This program aims to supply alternate roof stormwater disposal by providing new stormwater pipes at the rear of residential blocks that slope to the back. House stormwater is then connected to the new drainage system at the rear of the block. Wagga Wagga City Council now prohibits the installation of new rubble pits.

The initial rear of block drainage program was undertaken in Chaston Street, Central Wagga Wagga. This was followed by the Turvey Park area bounded by Coleman Street to the north, Macleay Street to the east, Fernleigh Road to the south and Bourke Street to the west (Figure 4). Between January 2000 and April 2006, all blocks within the original trial area of Turvey Park and three additional blocks north of Coleman Street were added to the rear of block drainage system. The Federal Government through its Natural Heritage Trust Fund contributed funding towards this section of the program.

Construction works in Alexander, Birdwood and Vasey Streets in Ashmont and Wilks Avenue in Kooringal were completed in 2006/07. In 2007/08 the rear of block drainage program completed works in Ashmont Avenue, Montgomery Street and Alexander Street in Ashmont as well as Dalkeith Avenue in Lake Albert.

The first phase of the Mount Austin rear of block drainage project was completed in 2009/10. The three year project incorporated the investigation, design and construction of rubble pit in sections A1 to A10 (Figure 4), Mount Austin. Using CCTV inspection, water flushing and smoke testing the presence of rubble pits was determined, a total of 279 individual house lots were investigated. Sixty rubble pits were exposed and infrastructure was installed to divert the stormwater from the roofs into the stormwater system. The total cost of project was $666,240, or $2388 per house lot.

Sections B1 to B4 (Figure 4), Mount Austin constitute phase 2 of the Mount Austin rear block drainage project. The investigation of sections B1 to B4 will occur in 2010/11 with completion of construction expected within 2 years dependant on available funding.

The investigation of sections B1 to B4 was completed in 2010/11. A total of 116 properties were inspected where it was found that rubble pits existed in 39 blocks (B1-nil, B2-14, B3-18 and B4-7) and would be included in the scheme.

No construction work on rear of block drainage was undertaken in the 2010/11. Work is due to commence on section B2 in September 2011 with commencement of work on the remaining blocks expected in 2012/13, as funding permits.

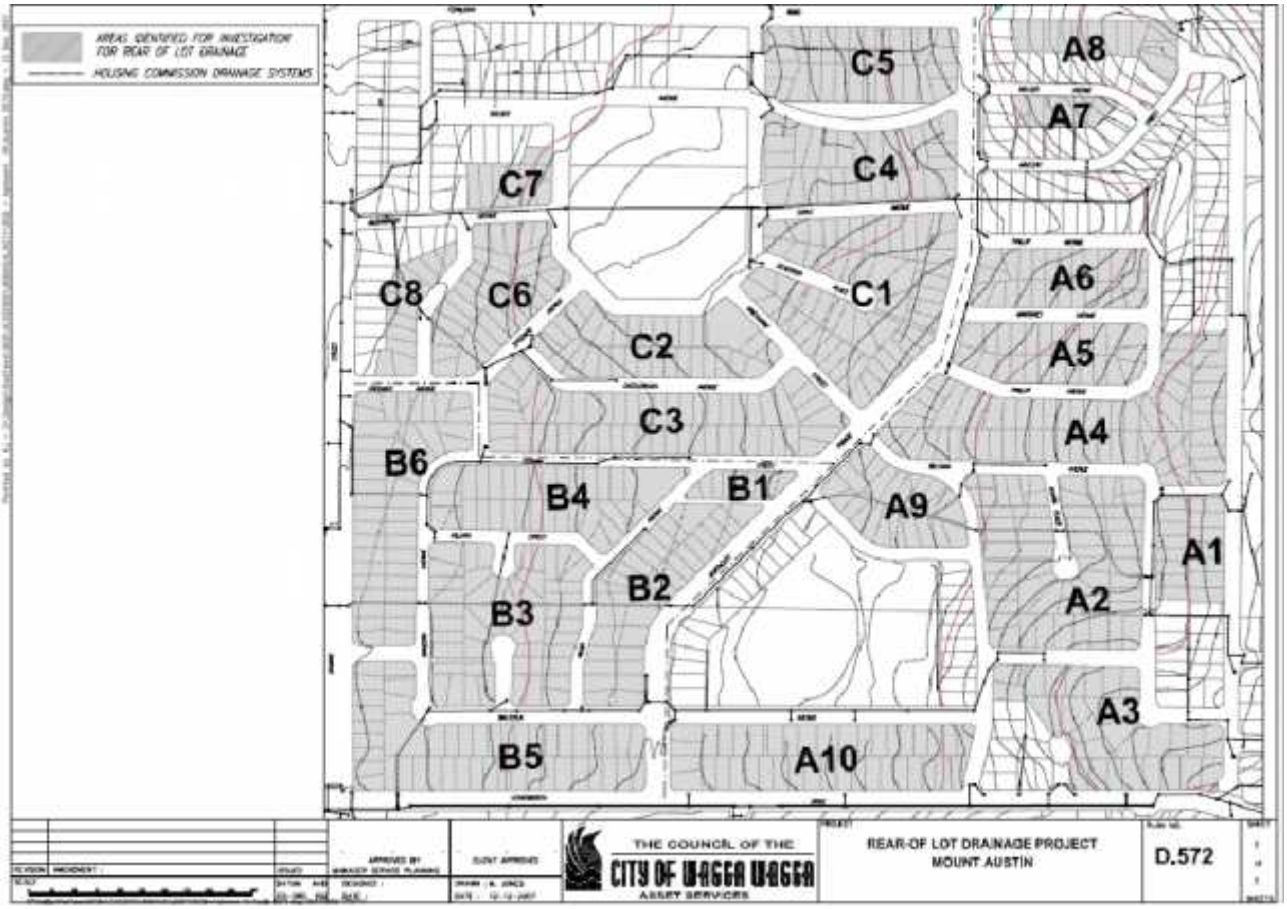



**Figure 4:** Map of Mount Austin showing the locations of works to be completed during the Rear of Block Drainage Scheme.

# 5. LEAKAGE REDUCTION

Riverina Water County Council supplies Wagga Wagga and surrounds with reticulated water. Water from various groundwater bores and the Murrumbidgee River services the industrial, residential, commercial and recreational needs of the city. A distribution system consisting of over 500 km of pipe work of varying ages moves water through the city.

Most pipe networks leak to some extent and this can result in excess water reaching the water table. Prior to undertaking major leakage detection works a domestic meter replacement program was required to better determine an accurate water balance. In January 2006 Riverina Water began a domestic meter replacement programme to reduce unaccounted for water and increase the accuracy of water balance calculations.

To minimise unaccounted for water, to date Riverina Water has systematically replaced most Wagga water meters, with, for example, 4760 water meters replaced in 2009/10. To detect

leaks Riverina Water utilises a leak sounding unit. Riverina Water also completed the NSW Water Loss Program in 2009 to 2011.

A mains replacement program is conducted annually in Wagga Wagga by Riverina Water. This rolling program includes the replacement of individual services.

In 2010/11, and again in 2011/12, Riverina Water has funding for a $1m demand management program aimed at reducing lawn irrigation in Wagga. A stepped tariff pricing structure is in place to provide appropriate signals to customers to reduce water usage.

# 6. SUBSURFACE DRAINAGE & EVAPORATION BASIN

Since 1998, the herringbone drainage system below the ground surface of the main arena at the Wagga Showground has been draining groundwater to the evaporation basin adjacent to the Urana Street and Glenfield Road roundabout. The aim of the basin is to drain excess water from the shallow water table at the Showground during the wetter winter months and evaporate it over the summer months. The level of rainfall and evaporation throughout the year also impacts the water level to a great extent. As the water in the basin evaporates during the summer months, the concentration of salts increases but during the winter months when rainfall and inflows are higher, a dilution occurs and the salt concentration is decreased.

In June 2010 piezometer no. 196 was installed between the Showground trotting and dog tracks, revealing groundwater levels increasing during 2010/11. Whilst, no groundwater has drained into the evaporation basin, this will be monitored closely. If groundwater levels increase to a depth where the herringbone drainage system will drain groundwater, monitoring of the evaporation basin will commence.

# 7. DEWATERING BORES

One method to reduce rising water tables is to pump and remove the source of the groundwater, therefore lowering the water level in the discharge areas. The groundwater causing many of the urban salinity issues in Wagga Wagga generally has a low salt content until it rises through the water table and collects salts that naturally occur in the soil structure. When groundwater rises through the soil profile it dissolves the salts held in the soil. Evaporation from the soil and uptake of water by vegetation results in the salts being left

behind once groundwater comes within 2.0 – 3.0 metres of the soil surface. Over time, the concentrations of salts in the upper soil profile increases. By maintaining the groundwater level 2.5 – 3.0 metres below the ground surface, it is generally expected to prevent accumulation of salts in the top sections of the soil profile and stop water logging.

The Calvary Hospital precinct bounded by the Sturt Highway (Edward St) to the north, Docker Street to the east, Chaston Street to the south and Cullen Road to the west was selected as the location to install the dewatering bore scheme. This area is also known as the Intensive Borefield. Appendix A displays the dewatering bore and piezometer locations of the Intensive Borefield.

Ten bores were drilled in June and July of 1998, with nine of these being fitted with full pumping equipment to allow pumping of moderately saline water from the Calvary Hospital precinct to the Murrumbidgee River. Bore 9, on Gormly Avenue, was decommissioned as a dewatering bore due to a low yield of groundwater which prevented the implementation of full pumping equipment. This bore has since been kept as a deep piezometer for groundwater monitoring.

The bores are spaced approximately 250m apart to allow for even groundwater pumping throughout the entire area. Two of the nine bores were drilled to 40m with the remaining seven drilled to 70m. The Department of Land and Water Conservation publication of 1998 entitled: *Wagga Wagga Urban Salinity Pilot Bore Dewatering Project – Drilling Results and Pumping Test Outcomes of Installation of Spearpoints*, contains further information about the drilling of the dewatering bores.

Forty one piezometers accurately monitor the effect that the dewatering bores were having on the water table of the Intensive Borefield. These piezometers are used to monitor the effect that the deep groundwater pumping is having on the shallower water table. It is expected that pumping will lower the water level in the piezometers to at least 2.5 metres below the ground surface all year round, which is a reality for the vast majority of piezometers in the Intensive Borefield.

The nine dewatering bores are monitored on a monthly basis by Wagga Wagga City Council's Environmental Monitoring Officer for electrical conductivity (EC), temperature, flow meter volumes and pumping hours. The volume and EC data from the dewatering bores allows for calculation of a salt load for the Intensive Bore Field groundwater entering the Murrumbidgee River. Water bearing piezometers within the intensive borefield are monitored

fortnightly and all piezometers are monitored monthly for standing water level (SWL), electrical conductivity (EC).

Groundwater extracted through the dewatering bores is discharged to the Murrumbidgee River via the Moorong Pump Station. The extraction of groundwater though the dewatering bores is licensed with the NSW Office of Water under The Water Act, 1912. In August 2010 council was successful in gaining a bore licence renewal certificate for the nine dewatering bores for a further 5 years dated from March 2009. The Licence regulates the rate of extraction of groundwater; extraction shall not exceed 236 ML in any 12 month period or 10 litres per second.

## 7.1 Dewatering bore trial

To identify and record the groundwater response following the switching off of the de-watering bores, a dewatering bore trial was implemented. Positive outcomes of the trial include decreasing the amount of saline groundwater discharged into the Murrumbidgee River. Additionally, the trial will identified if the bores can be switched off regularly to reduce electricity costs without negatively impacting on the SWL in the borefield.

Continuing into 2010/11, the dewatering bore trial aimed to identify if increased garden watering during the summer months has a detectable impact on SWL's. The trial will be indicative of the duration the dewatering bores can remain "off" before a negative impact on the borefield is detected.

On June 11th 2008, the dewatering bores were switched off. All piezometers were monitored for SWL prior to the dewatering bores being switched off. All piezometers were then measured every week for the next month to identify any early response before changing to a fortnightly monitoring regime including the normal monthly monitoring. Piezometers not yielding groundwater were monitored on a monthly basis as part of the normal regime. As groundwater levels rose and became detectable, fortnightly monitoring was implemented.

The dewatering bores remained off during 2008/09, 2009/10 and the majority of 2010/11 with the exception of Bore 4 which was turned on briefly in November 2008.

In June 2011, nine dewatering pumps were serviced, repaired if necessary and turned on. The effect of switching on the dewatering bores on surrounding groundwater conditions will be documented in the 2011/12 reporting period after sufficient data is collected.

### 7.1.1 Dewatering trial results

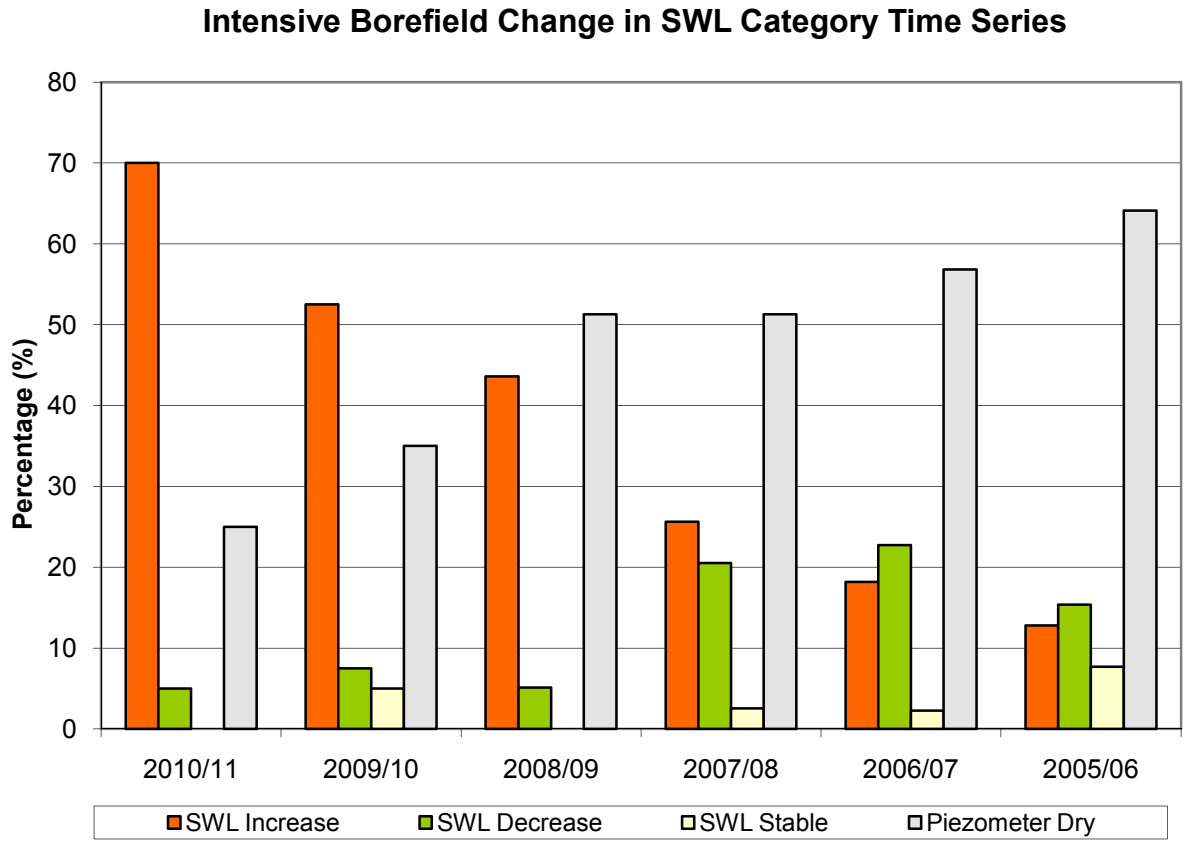



**Figure 5:** A comparison between changes in SWL category in the Intensive Borefield from 2005/06 to 2010/11.

The change in SWL over the last six reporting periods is presented in Figure 5. The figure shows an almost lineal upward trend in the number of increasing SWL piezometers since 2005/06. The number of increasing piezometers has risen significantly since the turning off of the dewatering bores in June 2008. It must be noted that the dewatering bores were previously switched off between February 23 to March 30, 2007.

A significant drop in decreasing piezometers was recorded in the dewatering bore trial (2008/09, 09/10, 10/11) compared to the previous three reporting periods (2005/06, 06/07, 07/08). A decline in the number of dry piezometers has also been recorded.

A graph depicting the response from water bearing piezometers in the intensive borefield to the dewatering trial are shown in Figure 6. Two groups can be distinguished from the figure. The first group incorporates shallow piezometers and the graph shows no distinct change in groundwater levels caused by the switching off of the dewatering bores. The three piezometers (no. 57, no.58 and no.66) unaffected by the switching off of the dewatering

bores are all located in Chaston Street or Mortimer Place. This suggested that the radius if influence of the dewatering bores is limited. Piezometer no. 90 located on the corner of Chaston Street and Cullen Road has experienced a slight but gradual increase in SWL over the trial period.

The second group includes deeper watering bearing piezometers and shows an initial steep increase in SWL, over time the SWL has continued to gradually rise at a steady rate. The deeper piezometers are affected instantaneously and severely by the dewatering bores. Increases in SWL for individual water bearing piezometers in the intensive borefield are described in

**Table 1**. Increases in SWL of 20m and more were recorded for some deep piezometers.

Nine dewatering bores were switched on in June 2011. Figure 6 shows the hydrographs of the affected piezometers declining sharply as SWL responds to the pumping. Not surprisingly, these piezometers are the same deeper drilled group that exhibited an instantaneous increase in SWL when the dewatering pumps were turned off.

A number of piezometers - no. 65, 67, 84, 85 and 87 - increased from a dry state to a water bearing piezometer during the 2010/11 reporting period. All these piezometers contain shallow drill depths of between 3.0 - 5.2m.

Piezometric response from the dewatering bores will continue to be monitored during 2011/12, with data used to determine if switching the dewatering bores on and off is a viable option for maintaining low groundwater levels in the Calvary precinct, while reducing the amount of water released into the Murrumbidgee River and operational costs such as electricity for the pumps.

**Table 1:** Trial change in SWL for Water bearing piezometers in the Intensive Borefield.

*INCREASE = from dry to water bearing*

| Piezometer Number | Piezometer Location | Urban sub-catchment | Piezometer Depth | SWL (m) 11-Jun-08 | SWL (m) 31-May-11 | Change in SWL (m) |
|---|---|---|---|---|---|---|
| 16 | Emblen Park | 4 | 15.10 | DRY | -5.62 | INCREASE |
| 57 | 7 Mortimer Pl | 3 | 3.00 | -1.29 | -0.60 | 0.69 |
| 58 | 62 Chaston St | 4 | 3.00 | -1.45 | -0.89 | 0.56 |
| 59 | 53-55 Meurant Ave | 4 | 3.00 | DRY | -2.75 | INCREASE |
| 60 | Opp 16 Cullen Rd | 4 | 3.00 | DRY | -2.18 | INCREASE |
| 64 | 11 Sullivan St | 4 | 3.00 | DRY | -2.68 | INCREASE |
| 65 | 40 Meurant Ave | 4 | 3.00 | DRY | -1.63 | INCREASE |
| 66 | 18 Chaston St | 4 | 3.00 | -1.68 | -1.04 | 0.64 |
| 67 | Meurant Ave | 4 | 6.00 | DRY | -3.97 | INCREASE |
| 80 | Gormly-Harrison St roundabout | 4 | 6.00 | -2.03 | -3.41 | -1.38 |
| 81 | 48 Docker St | MA | 6.80 | -6.52 | -4.47 | 2.05 |
| 83 | 57 Hardy Ave | 4 | 5.20 | DRY | -5.07 | INCREASE |
| 84 | 2 Sullivan Ave | 4 | 3.40 | DRY | -3.31 | INCREASE |
| 85 | 27 Meurant Ave | 4 | 4.20 | DRY | -4.21 | INCREASE |
| 86 | 2 Lewisham Ave | 4 | 7.50 | DRY | -2.29 | INCREASE |
| 87 | 12 Meurant Ave | 4 | 5.20 | DRY | -3.63 | INCREASE |
| 88 | 2 Chaston St | 4 | 10.00 | DRY | -3.29 | INCREASE |
| 89 | 31 Chaston St | 4 | 5.50 | DRY | -1.81 | INCREASE |
| 90 | 51 Chaston St | 4 | 6.60 | -3.96 | -1.58 | 2.38 |
| 99 | 29 Hardy Ave | 4 | 15.00 | DRY | -6.91 | INCREASE |
| 100 | 29 Hardy Ave | 4 | 31.00 | DRY | -6.87 | INCREASE |
| 101 | 29 Hardy Ave | 4 | 60.00 | -28.72 | -6.48 | 22.24 |
| 102 | Cnr Meurant St - Lewisham Ave | 4 | 15.00 | DRY | -3.52 | INCREASE |
| 103 | Cnr Meurant St - Lewisham Ave | 4 | 31.50 | -27.71 | -4.82 | 22.89 |
| 104 | Cnr Meurant St - Lewisham Ave | 4 | 61.00 | -27.80 | -4.69 | 23.11 |
| 176 | 39 Meurant Avenue | 4 | 9.00 | DRY | -3.12 | INCREASE |
| 1/1 | Emblen Park | 4 | 15.00 | DRY | -3.55 | INCREASE |
| 1/2 | Emblen Park | 4 | 30.00 | -15.93 | -3.55 | 12.38 |
| 1/3 | Emblen Park | 4 | 60.00 | -16.08 | -3.31 | 12.77 |
| Bore 9 | 63 Gormly Ave | MA | 120.00 | -13.24 | -17.42 | -4.18 |

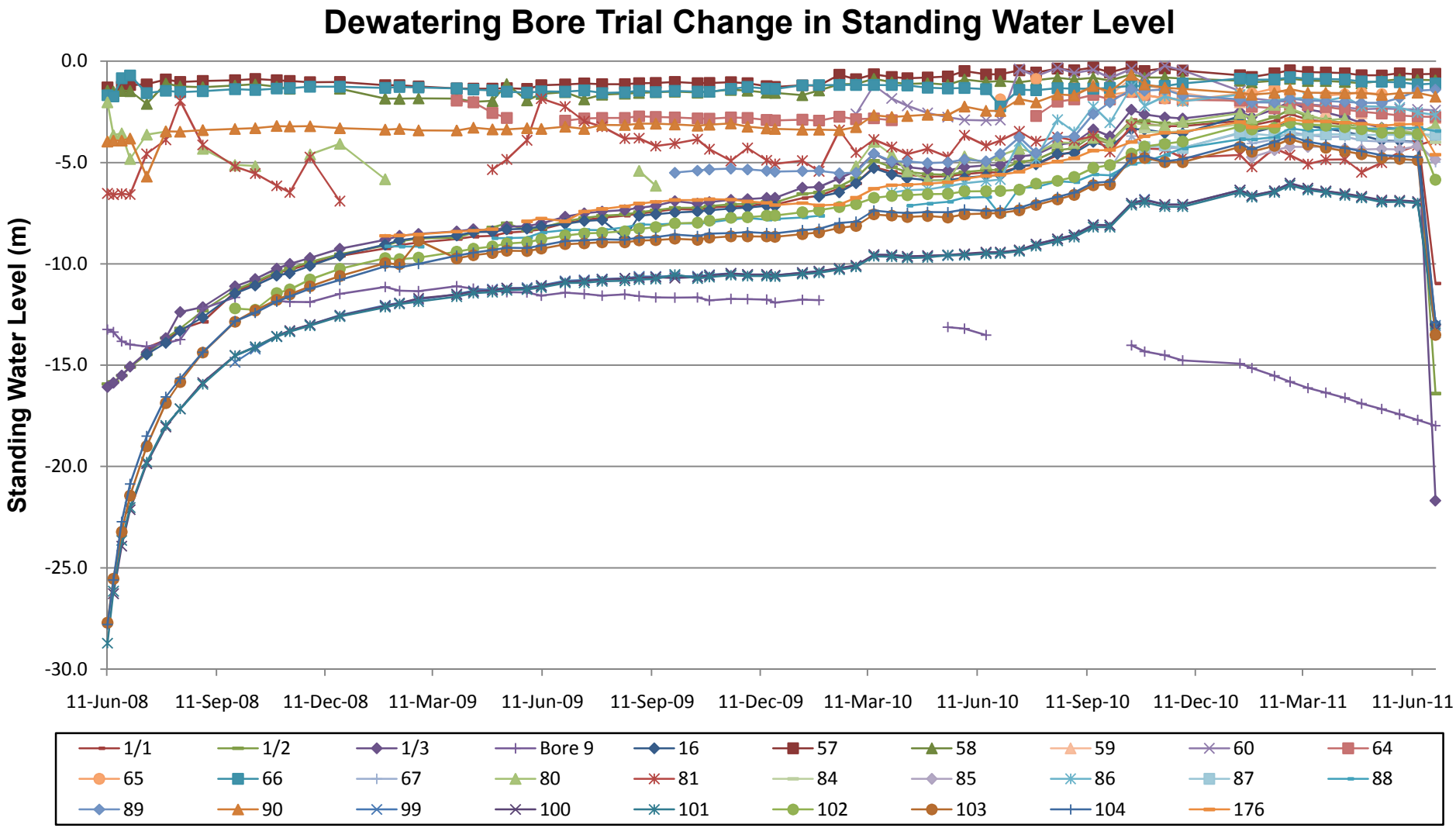



**Figure 6:** The change in SWL for water bearing piezometers in the intensive borefield during the dewatering trial.

# 8. DEVELOPMENT CONTROL

To conserve existing native vegetation and establish new native vegetation on rural residential or small holding developments Council introduced, in October 2000, the "Wagga Wagga Development Control Plan No. 11 - Native Vegetation Cover for Rural Residential Land" (DCP 11). These conditions are now included under Section 5.3 of the Development Control Plan 2010. It is intended that these minimum native vegetation requirements will reduce the potential for salinity by controlling the conservation of existing native vegetation and promoting the establishment of new native vegetation.

Under Section 5.3, the designated rural land capability class is utilised to determine a minimum native vegetation cover level for the lot. The developer and landowner are responsible for maintaining existing stands of native vegetation or establishing new native vegetation to achieve the minimum native vegetation cover level for the individual lot.

Rural Land Capability Classes, which were determined by the NSW Department of Land and Water Conservation as part of the *Wagga Wagga Draft Natural Resource Management Plan*, form the basis of native tree requirements under DCP 2010, Section 5.3.

Following the completion of the new dwelling and establishment of the required native vegetation, final building certificates are issued by Council. In 2010/2011, six lots in the Stringybark Creek catchment planted 3,683 trees and shrubs, establishing a total of 3.7ha of new native vegetation. Seedling numbers within these six Lots ranged from 95 to 2,365 seedlings with a median of about 260 seedlings planted. Final building certificates were issued to these six lots.

## 8.1 Initial Groundwater Monitoring - Lloyd Subdivision

To minimise and observe any impacts of the development on salinity, and to ensure that the development occurs in accordance with Wagga Wagga DCP Lloyd Urban Release Area 2010, a groundwater monitoring program will be implemented during the course of the development of this new subdivision. This program will include the installation and quarterly monitoring of piezometers by a suitably qualified person, starting from within three months of the development consent. Data collected will be forwarded to Council for review annually.

Such installations and monitoring program will begin in 2011/12.

In addition, to assess the impact of urbanisation on groundwater levels, eleven groundwater monitoring piezometers were constructed within selected areas and boundaries of the new subdivision of Lloyd West in June 2011. All piezometers were constructed to a depth of 24.0 - 25.0m. At the time of drilling, four piezometers were found to contain water, with the remainder in a dry state. It is envisaged that these piezometers will eventually become a part of Council's groundwater monitoring network.

# 9. RAINFALL & EVAPORATION

Groundwater recharge is significantly affected by the amount of rainfall relative to evaporation. Low rainfall combined with high evaporation rates are expected to result in a fall in the water table. This occurs as insufficient water is available to saturate the upper soil profile and infiltration into the groundwater system is prevented. Alternatively, high rainfall will saturate the soil profile allowing for infiltration to groundwater. This infiltration is increased in areas where clearing of deep rooted vegetation has occurred.

The Bureau of Meteorology field station at Forest Hill, Wagga Wagga recorded rainfall and evaporation data during the period from July 2010 to June 2011. Historical data was gathered from either the 'Forest Hill' or the 'Wagga Wagga Agricultural Institute' field station dependant on the commenced date. Rainfall data from the 'Wagga Wagga Agricultural Institute' field station was used to determine the historical mean rainfall as data collection commenced in 1898.

The 2010/11 reporting period in Wagga Wagga recorded 963mm of rainfall. This represents an 84% increase on historical average rainfall (524mm). In December 2010, Wagga Wagga recorded its wettest calendar year on record, exceeding 1000mm for the first time ever.

Long term monthly rainfall averages were exceeded on eight occasions during 2010/11 (Figure 7), with October 2010, December 2010 and February 2011 recording 118mm, 110mm and 150mm respectively. These widespread high summer rainfall events resulted in major flooding throughout the district caused by runoff inundation and high river levels.

The 2010/11 reporting period in Wagga Wagga recorded 1398mm of evaporation. This figure represents a 24% decrease on historical average evaporation (1845mm). Monthly evaporation readings for 2010/11 were below historical monthly averages on all twelve occasions. The warmer months of November 2010 to March 2011 saw evaporation figures of between 30-40% lower than historical monthly averages.

Monthly rainfall exceeded evaporation on four occasions including the months of October 2010 and February 2011.

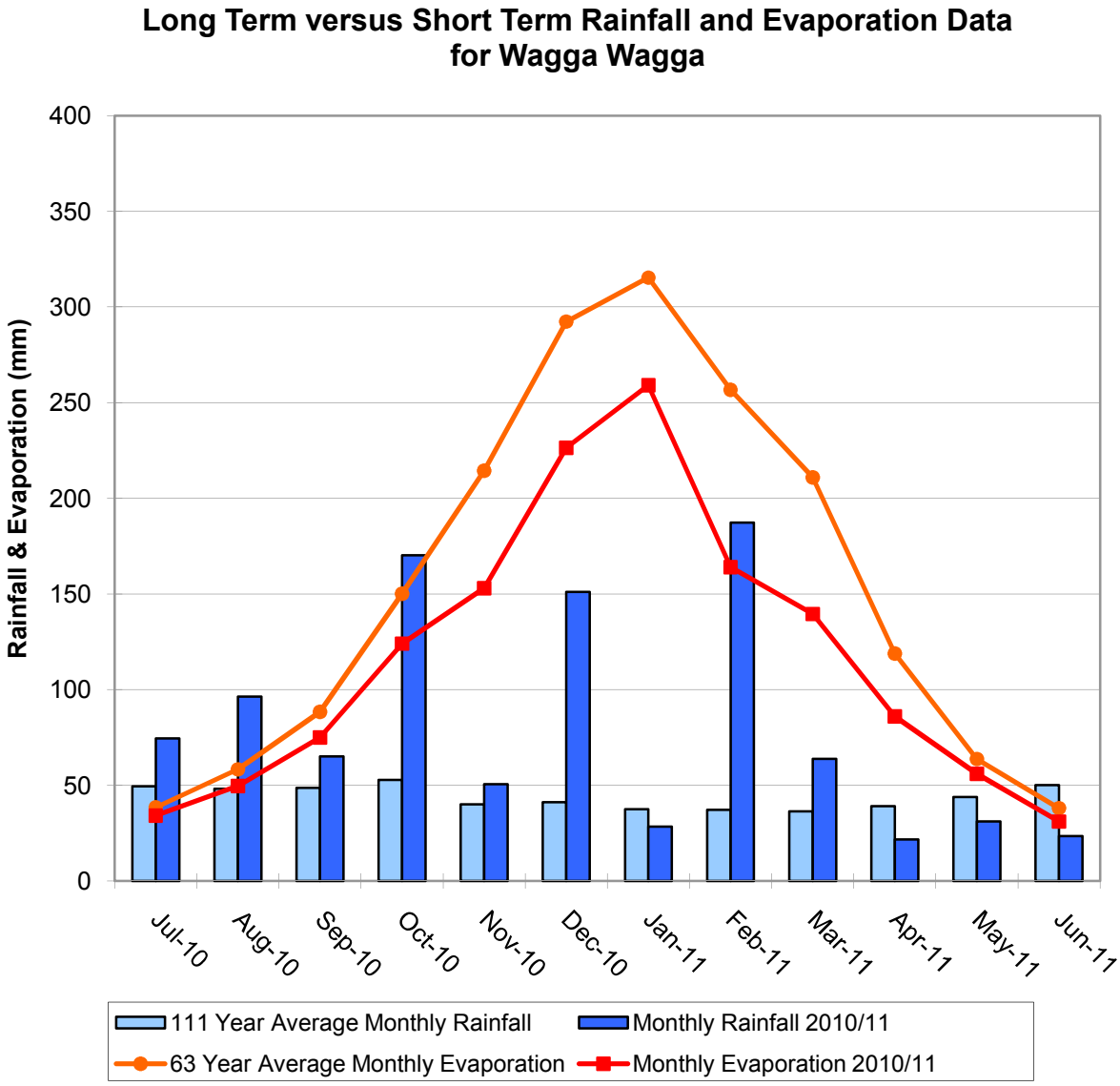



**Figure 7:** Monthly rainfall and evaporation graph for Wagga Wagga 2010/11.

# 10. MONITORING PROGRAM

Piezometers located throughout the Wagga Wagga Local Government Area are maintained by Wagga Wagga City Council to monitor urban salinity. Established in 1998, the current monitoring network consists of 197 piezometers. Nineteen new piezometers were added to the monitoring schedule in 2010/11. One piezometer was not recorded during 2010/11 due to destruction during earthworks. The piezometers were monitored on a monthly, bi-monthly or quarterly basis to examine trends, identify causes of the problem and potential risks areas.

Standing water level (SWL) and electrical conductivity (EC) readings are collected and used to monitor urban salinity. The SWL is measured in metres below the ground surface to the nearest centimetre using a water level meter (Figure 8). Measurements are taken from the height of the piezometer casing and the height of the extension subtracted from the reading. Piezometers at ground level do not require a subtraction. Water is extracted from the piezometer using a bailer to measure for EC. The EC is measured in decisiemens per metre (dS/m) to two decimal places using a handheld conductivity meter (Figure 8).


**Figure 8:** Measuring standing water level (left) and electrical conductivity (right) of groundwater.

Data is collected monthly, bi-monthly or quarterly from the network of piezometers depending on water bearing status and location. The 2010/11 monitoring regime consists of 118 piezometers being monitored monthly, 46 bi-monthly and 33 quarterly. As part of the dewatering bore trial, 41 piezometers located in the Calvary hospital precinct are monitored either fortnightly or monthly. Piezometers yielding water were monitored fortnightly; alternately piezometers not yielding water were monitored monthly.

Results of groundwater monitoring identify areas susceptible to saline discharge and monitor the effectiveness of Council's preventative and remedial measures.

Several piezometers were found to require maintenance during 2010/11, mainly due to vandalism (Table 2).

**Table 2:** Piezometers requiring maintenance in 2010/11

| Piezometer Number | Location | Maintenance Required |
|---|---|---|
| 14 | Mount Austin High School | New cover |
| 36 | South of Boat club, Lake Albert | Monument bent, bore pipe broken. |
| 172 | Rear of 5-6 Kenny Place, Tolland | Cannot find, covered by earthworks |
| 188 | Audervale Cl, Bourkelands | Bore pipe broken off at ground level |
| 194 | Cnr Kooringal Rd and Copeland St. SW Corner | Monument bent, bore pipe broken. |

# 11. RESULTS

## 11.1 Standing Water Level Results

The results discussed in this report relate to the change in the depth to the water table (standing water level) for all piezometers in the Wagga Wagga Local Government Area from July 2010 to June 2011 in relation to the results from the previous reporting period (July 2009 – June 2010).

To allow for meaningful interpretation of the data piezometers are grouped into eleven categories. Nine categories are based on the major sub-catchments identified by Golder (2007). Two additional groups (Undefined and Tarcutta/Humula) have been added to accommodate for piezometers outside the area recognised in the Golder (2007) study.

A final sub-catchment (North Western) identified in the Golder (2007) study has been added in this report after new piezometers were drilled in June 2010 in the newly developed rural residential estate known as Riverview

The eleven piezometer categories are:

1. **Mid Murrumbidgee Alluvium (MA).** Forty piezometers are located in the Mid Murrumbidgee Alluvium piezometers 1, 62, 72-76, 79-81, 105-116,118, 120-127, 144-146, 164-166, 171, 177 and Bore 9. These piezometers are associated with the Narrung Street Sewage Treatment Plant, the disused Wiradjuri Landfill and the northern section of the Calvary hospital precinct.
2. **North Western Sub-catchment (1).** Three piezometers 189-191 are located in the newly developed rural residential estate known as Riverview.
3. **Far Western Sub-catchment (2).** Seven piezometers are located in the Far Western Sub-catchment piezometers 18, 41, 54-55, 143, 174-175. The Far Western Sub-catchment piezometers incorporate areas of the suburbs of Ashmont and Glenfield.

4. **Western Sub-catchment (3).** Thirty three piezometers are located in the Western Sub-catchment piezometers 2-3, 6-7, 9-15, 17, 34, 37-38, 40, 42-44, 47, 56-57, 128, 142, 147, 152, 172-173, 178-179 and 185-188. These piezometers are located is the suburbs of Ashmont, Turvey Park, Mt Austin, Lloyd, Glenfield, Tolland, central Wagga Wagga and Bourkelands.
5. **CBD Sub-catchment (4).** Forty one piezometers are located in the CDB Sub-catchment piezometers 5, 16, 19-21, 39, 58-61, 63-69, 70-71, 78, 80, 82-90, 99-104, 176, 196, 1/1, 1/2 and 1/3. These piezometers are located in the Calvary hospital precinct and central Wagga Wagga.
6. **Eastern CBD Sub-catchment (5).** Four piezometers are located in the Eastern CBD Sub-catchment piezometers 91-92 and 194-195 are situated in the suburb of Kooringal.
7. **Far Eastern CBD Sub-catchment (6).** Three piezometers are located in the Far eastern CBD Sub-catchment piezometer 50 and 192-193. These piezometers are found in east Wagga.
8. **Eastern Sub-catchment (7).** Forty eight piezometers are located in the Eastern Sub-catchment piezometers 23-31, 36, 45, 48-49, 51, 53, 93-98, 129-140, 153-163, 170 and 180-184. The Eastern Sub-catchment is the largest catchment and incorporates the suburbs of Kooringal, Lake Albert, Glenoak and Springvale.
9. **Far Eastern Sub-catchment (8).** Three piezometers are located in the Far eastern Sub-catchment piezometers 167-169 situated in the suburb of Lake Albert.
10. **Undefined (O).** Seven piezometers are grouped within the undefined category as they fall outside the major Sub-catchments defined by Golder (2007). Piezometers 22, 32, 33, 148-151 are located at San Isidore, Forest Hill, Boorooma and Bomen.
11. **Tarcutta/Humula (T/H)** contains the 8 piezometers installed in the villages of Tarcutta and Humula (piezometers T1-T6, H1-H2).

Names given to the major sub-catchments by Golder (2007) Mid Murrumbidgee Alluvium, CBD sub-catchment, Western sub-catchment and Eastern sub-catchment formed the basis of names for the piezometers categories.

The change in standing water level for all piezometers is presented in Table 3. The Table illustrates the number of individual piezometers recorded in each piezometer category per group during 2010/11. During 2010/11 nineteen piezometers were added to the dataset and subsequently have no reference point to compare from the previous year. A discussion of each group can be found in subsequent sections of this report.

**Table 3:** Changes in standing water levels across piezometer groupings.

| Change In SWL Category | MA | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | O | T/H | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWL Increase | 24 | 0 | 4 | 18 | 30 | 2 | 1 | 28 | 2 | 4 | 6 | **119** |
| SWL Decrease | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 3 | 0 | 2 | 2 | **12** |
| SWL Stable | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **1** |
| Piezometer Dry | 14 | 0 | 3 | 7 | 8 | 0 | 0 | 12 | 1 | 1 | 0 | **46** |
| New piezometers | 0 | 3 | 0 | 6 | 1 | 2 | 2 | 5 | 0 | 0 | 0 | **19** |
| **Total** | **40** | **3** | **7** | **33** | **41** | **4** | **3** | **48** | **3** | **7** | **8** | **197** |

The change in SWL for each piezometer category during 2010/11 is presented in Figure 9.

The dataset shows that the greatest number of piezometers, one hundred and nineteen (67%), have increased in standing water level (SWL) when comparing SWL change between 2010/11 and 2009/10. Forty six piezometers (26%) remained dry, with twelve (7%) recording a decrease in SWL during the reporting period. One piezometer remained stable (those with an increase/decrease of 5cm or less). Nineteen newly drilled piezometers were not included in the categories as they did not have a reference value for 2009/10 period. These results are discussed further in the following sections.

Piezometers that contained water in the previous year that are now dry have been included in the 'SWL decreased' category, whereas piezometers that started as dry but now contain groundwater have been included in the 'SWL increased' category. These results were omitted from average increase/decrease calculations. Graphs of individual piezometers containing groundwater are found in Appendix D.

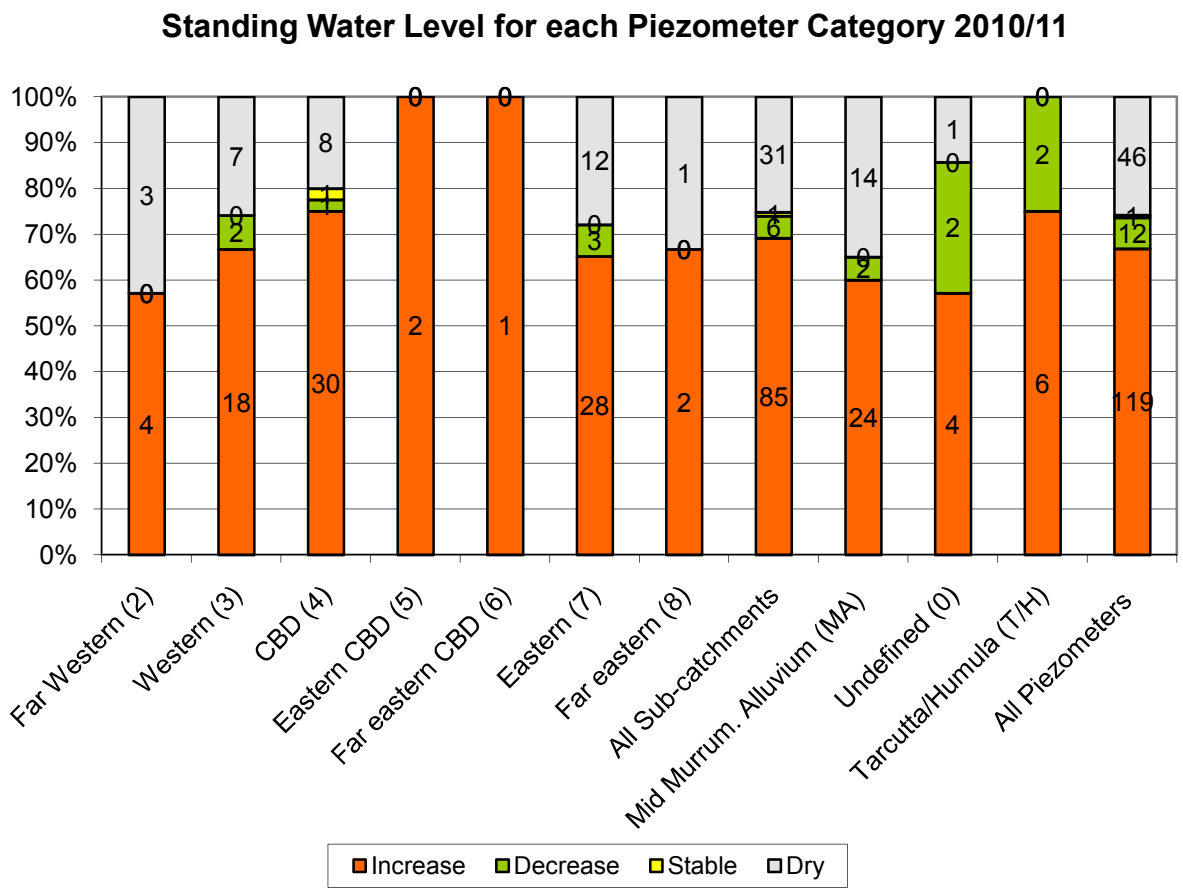



**Figure 9:** Chart depicting change in Standing Water Levels for each piezometer category

### Mid Murrumbidgee Alluvium

The Mid Murrumbidgee Alluvium is the third largest piezometer category and contains 40 individual piezometers. More than half (24) of the piezometers located in the Mid Murrumbidgee Alluvium increased in SWL for the complete reporting period. Fourteen piezometers remained dry, with two experiencing a decrease in SWL.

| Mid Murrumbidgee Alluvium (MA) | | | |
|---|---|---|---|
| Increased | 24 | 2 | Decreased |
| Average | 2.95 | -2.13 | Average |
| Maximum | 4.76 | -4.08 | Maximum |
| Minimum | 0.95 | -0.17 | Minimum |

Piezometers increasing in SWL recorded an average increase of 2.95m. The piezometer with the greatest increase in SWL is located in Wiradjuri Crescent. Decreasing piezometers decreased by an average of -2.13m. The greatest decrease in SWL was recorded at Bore 9 located in Gormly Ave, Central Wagga Wagga. The average depth to groundwater in the Mid Murrumbidgee Alluvium

is 8.76m. This increase may be a result of higher river levels affecting aquifers with river connection during 2010/11.

**Far Western Sub-catchment**

Seven piezometers are located in the Far Western Sub-catchment. Of these piezometers, four increased in SWL with three piezometers remaining dry throughout the reporting period.

| Far Western Sub catchment (2) | | | |
|---|---|---|---|
| Increased | 4 | 0 | Decreased |
| Average | 1.05 | - | Average |
| Maximum | 2.09 | - | Maximum |
| Minimum | 0.17 | - | Minimum |

Increases in SWL ranged between 0.17m and 2.09m for piezometers in the Far Western Sub-catchment.

**Western Sub-catchment**

Of the twenty seven piezometers measured within the Western Sub-catchment, eighteen (67%) increased in SWL, with two decreasing and seven remaining dry for the 2010/11 reporting period.

| Western Sub-Catchment (3) | | | |
|---|---|---|---|
| Increased | 18 | 2 | Decreased |
| Average | 1.65 | -0.24 | Average |
| Maximum | 3.87 | -0.36 | Maximum |
| Minimum | 0.42 | -0.12 | Minimum |

Average SWL for increasing piezometers within the Western Sub-catchment were 1.65m, ranging from 0.42m to 3.87m. Highest increases were found to be in deeper piezometers located in the Glenfield and Mount Austin areas, with piezometer no.34 (drilled depth 24m) displaying an increase in SWL of 3.87m to an average SWL of 9.41m below the surface.

The average SWL in Western Sub-catchment water bearing piezometers is 5.16m. This figure represents an increase in SWL of 2.24m when compared to the 2009/10 reporting period.

All water bearing piezometers located at Charles Sturt University South Campus and Showground area showed increases in SWL, continuing the trend of extremely high water tables.

**CBD Sub-catchment**

The CBD Sub-catchment is greatly influenced by the management of the dewatering bore scheme in the Intensive Borefield. Dewatering bores remained turned off during the majority of the 2010/11 reporting period, with bore pumps being switched on in June 2011. High average increases and decreases in SWL of piezometers within close proximity of the Intensive Borefield can be correlated to the dewatering bore trial operations.

Of the forty CBD Sub-catchment piezometers, thirty (75%) showed increasing SWL, one revealed decreasing SWL, one remained stable and eight remained dry over the 2010/11 reporting period.

| CBD Sub Catchment (4) | | | |
|---|---|---|---|
| Increased | 30 | 1 | Decreased |
| Average | 2.08 | -0.02 | Average |
| Maximum | 3.77 | -0.02 | Maximum |
| Minimum | 0.18 | -0.02 | Minimum |

Almost all (minus one) water bearing piezometers within the CBD Sub-catchment saw increases in SWL of between 3.77m to 0.18m at an average of 2.08m over the 2010/11 reporting period. Six piezometers 'increased' from a dry state to containing measurable water levels.

The average SWL for 2010/11 in CBD Sub-catchment water bearing piezometers is 5.06m. This figure represents an increase in SWL of 2.27m when compared to the 2009/10 reporting period. Three piezometers (no.52, 20, 39), all outside the Intensive Borefield area, revealed SWL's of greater than 10.0m. Piezometer no.39, located in an elevated area of the CBD Sub-catchment, showed an average 2010/11 SWL of 28.6m.

A large number of piezometers in the CBD sub-catchment remained dry. This trend for dry piezometers is attributed to the large number of shallow (3m) piezometers in the Intensive Borefield

**Eastern CBD Sub-catchment**

Limited piezometers are situated in the Eastern CBD sub-catchment. Both piezometers showed increases in SWL.

| Eastern CBD Sub-Catchment (5) | | | |
|---|---|---|---|
| Increased | 2 | 0 | Decreased |
| Average | 1.17 | - | Average |
| Maximum | 1.27 | - | Maximum |
| Minimum | 1.07 | - | Minimum |

In the eastern CBD sub-catchment two nested piezometers (shallow and deep) in Mount St, Kooringal showed SWL increases of 1.07m and 1.27m for the 2010/11 reporting period. This represents an average SWL increase of 1.17m compared to 2009/10.

**Far eastern CBD Sub-catchment**

As a small sub-catchment minimal data on the SWL is available for the far eastern CBD piezometer category. Piezometer no. 50 showed an increase in SWL for the reporting period.

| Far Eastern CBD Sub-Catchment (6) | | | |
|---|---|---|---|
| Increased | 1 | 0 | Decreased |
| Average | 0.43 | - | Average |
| Maximum | 0.43 | - | Maximum |
| Minimum | 0.43 | - | Minimum |

**Eastern Sub-catchment**

The Eastern sub-catchment is the largest sub-catchment and contains 43 piezometers, the largest number of piezometers within a sub-catchment. Twenty eight (65%) of Eastern Sub-catchment piezometers showed an increase in SWL, with three revealing a decrease in SWL and twelve (28%) remaining dry over the 2010/11 reporting period. Three piezometers 'increased' from a dry state to containing measurable water levels, with one piezometer 'decreasing' from containing measurable water levels to a dry state.

| Eastern Sub-Catchment (7) | | | |
|---|---|---|---|
| Increased | 28 | 3 | Decreased |
| Average | 1.66 | -5.11 | Average |
| Maximum | 9.03 | -9.92 | Maximum |
| Minimum | 0.12 | -0.30 | Minimum |

Increasing SWL piezometers within the Eastern sub-catchment ranged from 9.03m to 0.12m with an average increase of 1.66m across twenty eight piezometers. The highest SWL increase of 9.03m was found at piezometer no.23 located at Sacred Heart Public School in Lake Albert Rd,

Lake Albert. Large variations in SWL have historically been recorded at this piezometer, possibly caused by groundwater pump operations in the immediate area.

Higher than average 2010/11 SWL increases of between 2-4m have occurred in piezometers no.159, 154, 130 and 157, located in the Springvale/Lake Albert rural residential area.

Average decreasing SWL's of 5.11m in the Eastern sub-catchment are heavily influenced by piezometer no.53 which recorded the maximum SWL decrease of 9.92m over the reporting period. Located at the Lawn Cemetery, Lake Albert, historical high variation in SWL suggests unnatural influences on groundwater conditions.

The average SWL in the Eastern Sub-catchment water bearing piezometers is 10.42m. This figure represents an increase in SWL of 1.73m when compared to the 2009/10 reporting period.

**Far eastern Sub-catchment**

The far eastern sub-catchment covers the second largest area of all the sub-catchments, containing mainly larger rural residential landholdings. Coverage of piezometers in this sub-catchment is poor and may not be a true indication of the sub-catchment as a whole. Of the three piezometers located in the sub-catchment, two piezometers increased in SWL, reversing the trend for the 2009/10 reporting period. The remaining piezometer stayed dry during the reporting period.

| Far Eastern Sub-Catchment (8) | | | |
|---|---|---|---|
| Increased | 2 | 0 | Decreased |
| Average | 0.33 | - | Average |
| Maximum | 0.54 | - | Maximum |
| Minimum | 0.10 | - | Minimum |

Two piezometers (no.168 and 169) on Bakers Lane, Lake Albert showed increases in SWL of 0.1m and 0.54m respectively.

**Undefined**

Piezometers within this category are located outside the sub-catchments defined by Golder (2007) and are therefore widespread. Four of the seven piezometers experienced an increase in SWL, with two revealing a decrease in SWL and one piezometer remaining dry.

| Undefined (0) | | | |
|---|---|---|---|
| Increased | 4 | 2 | Decreased |
| Average | 0.98 | -1.89 | Average |
| Maximum | 1.38 | -3.60 | Maximum |
| Minimum | 0.56 | -0.17 | Minimum |

All four piezometers located at the Bomen Industrial Sewage Treatment Facility showed an increase in SWL, with piezometer no.150 and 148 revealing the maximum increase of 1.38m and 1.26m respectively. San Isidore piezometer no.22 decreased in SWL by 3.60m to an average SWL depth of 17.35m. Piezometer no.32 (drill depth 16.0m) located at Forest Hill has remained dry since drilling in 1995.

**Tarcutta/Humula**

Eight piezometers are located in the rural villages of Tarcutta and Humula. Six piezometers showed an increase in SWL over the 2010/11 reporting period, including three piezometers 'increasing' from a dry state to containing measurable water levels. Two piezometers revealed a decrease in SWL, with one piezometer 'decreasing' from containing measurable water levels to a dry state.

| Tarcutta-Humula (T/H) | | | |
|---|---|---|---|
| Increased | 6 | 2 | Decreased |
| Average | 2.54 | -0.08 | Average |
| Maximum | 2.68 | -0.08 | Maximum |
| Minimum | 2.40 | -0.08 | Minimum |

Three Tarcutta piezometers (no.T6, T2 and T1) revealed an average SWL increase of 2.54m ranging from SWL increases between 2.40m (T2) and 2.68m (T6). Marginal decreases in SWL were recorded at T3 (0.08m).

## 11.2 Piezometers with a High Standing Water Level

Rising groundwater has the potential to damage infrastructure and the environment. As groundwater levels rise to within 5m of the ground surface the potential for damage increases.

In the 2010/11 reporting period, 54 piezometers experienced an average SWL of less than 5m and were highlighted as piezometers with potential to cause damage. Piezometers exhibiting a standing water level of less than 5 metres are presented in

Table 4. The number of high standing water level piezometers in the 2010/11 reporting period increased two-fold when compared to 2009/10 figures. Not included in the 2010/11 comparisons are the newly drilled piezometers with SWL of less than 5m.

Twelve piezometers experienced an increase from a dry state to a measurable SWL of less than 5m during the 2010/11 reporting period.

The CBD Sub-catchment contained the greatest number of high SWL piezometers, increasing to twenty one (from a total of thirty three), compared to eight high SWL piezometers in 2009/10. All new additions of high SWL piezometers within the CBD Sub-catchment are located within the Intensive Borefield.

Twenty five piezometers with a high SWL recorded in 2009/10 experienced a further increase in SWL in the 2010/11 reporting period. Of the sixteen 2010/11 high SWL piezometers which recorded an increase of greater than 2m, eight were located in the Intensive Borefield (CBD Sub-catchment) and may have been influenced by the switching off of the dewatering bore pumps for the majority of 2010/11. The high SWL piezometer no.23 (Sacred Heart Public School, Kooringal) experienced the highest SWL increase of 9.03m. Hydrographs suggest watertable in the immediate area of piezometer no.23 are affected by un-natural influences such as groundwater pumping.

Only two 2009/10 high SWL piezometers decreased in 2010/11. Piezometers no.61 and 68, located in the Intensive Borefield (CBD Sub-catchment), ‘decreased’ from SWL of 2.93m and 2.90m respectively to a dry state. However as these piezometers are only shallow drilled to 3m, it is reasonable to assume both would still be recording SWL of less than 5m had they been drilled to a deeper depth.

**Table 4:** Piezometers exhibiting a Standing Water Level of less than 5 metres. **Increase from dry to water bearing. **New piezometer drilled during 2010/11 reporting period.*

| Piezometer | Location | Urban Sub catchment | Average SWL 10/11 (m) | Change In SWL (m) |
|---|---|---|---|---|
| **151** | BISTF, Bomen | 0 | -0.98 | 0.72 |
| **148** | BISTF, Bomen | 0 | -4.27 | 1.26 |
| **150** | BISTF, Bomen | 0 | -3.30 | 1.38 |
| **189** | 46 Riverview Dr, Riverview | 1 | -3.65 | **New |
| **191** | 110 Riverview Dr, Riverview | 1 | -3.32 | **New |
| **54** | Derna Pl, Ashmont | 2 | -1.55 | 0.53 |
| **18** | Nathan Park, Ashmont | 2 | -1.17 | 2.09 |
| **57** | 7 Mortimer Pl, Central Wagga | 3 | -0.53 | 0.42 |
| **147** | South Campus, Turvey Park | 3 | -0.50 | 0.51 |
| **9** | South Campus, Turvey Park | 3 | -0.04 | 0.59 |
| **42** | Karoom Dr Reserve, Glenfield | 3 | -2.09 | 0.77 |
| **3** | Cheshire St, Central Wagga | 3 | -0.64 | 0.78 |
| **17** | Best Park Reserve Ashmont | 3 | -3.19 | 1.36 |
| **10** | South Campus, Turvey Park | 3 | -0.92 | 1.87 |
| **11** | Karoom Dr, Glenfield | 3 | -4.12 | 2.04 |
| **37** | 48-50 Kaldari Cres, Glenfield (deep) | 3 | -4.28 | 2.53 |
| **38** | 48-50 Kaldari Cres, Glenfield (shallow) | 3 | -4.82 | 2.56 |
| **186** | Wilgoma St, Bourklands | 3 | -2.59 | **New |
| **178** | Anderson Oval, Glenfield | 3 | -2.58 | **New |
| **188** | Illeura Rd, Bourkelands | 3 | -2.53 | **New |
| **187** | 70 Yarrawah Cres, Bourkelands | 3 | -2.05 | **New |
| **179** | Finch Place, Glenfield | 3 | -0.43 | **New |
| **85** | 27 Meurant Ave, Central Wagga | 4 | -4.38 | *Increase |
| **67** | 20 Meurant Ave, Central Wagga | 4 | -4.05 | *Increase |
| **87** | 12 Meurant Ave, Central Wagga | 4 | -3.75 | *Increase |
| **84** | 2 Sullivan Ave, Central Wagga | 4 | -3.33 | *Increase |
| **59** | 53 Meurant Ave, Central Wagga | 4 | -1.90 | *Increase |
| **65** | Emblen St, Central Wagga | 4 | -1.58 | *Increase |
| **66** | 18 Chaston St, Central Wagga | 4 | -1.11 | 0.28 |
| **58** | 62 Chaston St, Central Wagga | 4 | -0.92 | 0.43 |
| **64** | 11 Sullivan St, Central Wagga | 4 | -2.18 | 0.65 |
| **60** | Opp 16 Cullen Rd, Central Wagga | 4 | -1.40 | 1.03 |
| **90** | 51 Chaston St, Central Wagga | 4 | -1.52 | 1.49 |
| **71** | 1 Roma St, Central Wagga | 4 | -1.88 | 1.85 |
| **80** | Gormly Harrison Roundabout, Central Wagga | 4 | -3.27 | 1.90 |
| **1/3** | Emblen Park, Central Wagga | 4 | -3.96 | 2.26 |
| **1/2** | Emblen Park, Central Wagga | 4 | -4.01 | 2.46 |
| **16** | Emblen Park, Central Wagga | 4 | -4.20 | 2.55 |
| **1/1** | Emblen Park, Central Wagga | 4 | -3.88 | 2.71 |
| **176** | 39 Meurant Ave, Central Wagga | 4 | -3.74 | 2.92 |
| **89** | 31 Chaston st, Central Wagga | 4 | -2.22 | 2.96 |
| **102** | Cnr Meurant-Lewisham Ave, Central Wagga | 4 | -4.25 | 3.15 |
| **86** | 2 Lewisham Ave, Central Wagga | 4 | -2.39 | 3.77 |
| **196** | Showgrounds, Turvey Park | 4 | -3.36 | **New |
| **91** | Mount St, Kooringal (shallow) | 5 | -0.98 | 1.07 |
| **92** | Mount St, Kooringal (deep) | 5 | -0.87 | 1.27 |
| **139** | Redbank Rd, Lake Albert | 7 | -2.86 | *Increase |
| **135** | Cnr Main St-Gregadoo Rd, Lake Albert | 7 | -4.26 | 0.12 |
| **29** | Dalkeith Ave, Lake Albert | 7 | -2.65 | 0.95 |
| **161** | 1 Lloyd Rd, Springvale | 7 | -4.58 | 1.09 |
| **36** | Lake Albert Foreshore, Lake Albert | 7 | -0.88 | 1.35 |
| **162** | 39 Gregadoo Rd, Lake Albert | 7 | -4.58 | 1.72 |
| **154** | 19 Mirabella Dr, Glenoak | 7 | -4.69 | 2.85 |

| Piezometer | Location | Urban Sub catchment | Average SWL 10/11 (m) | Change In SWL (m) |
|---|---|---|---|---|
| **159** | 6 Yarren Pl, Springvale | 7 | -3.50 | 2.88 |
| **23** | Sacred Heart Primary School, Kooringal | 7 | -2.34 | 9.03 |
| **182** | 2 Stirling Blvd, Tatton | 7 | -2.30 | **New |
| **109** | Narrung STW, Central Wagga | MA | -2.62 | *Increase |
| **127** | Finemores/Toll Yard, Central Wagga | MA | -1.60 | *Increase |
| **81** | 48 Docker St, Central Wagga | MA | -4.38 | -0.17 |
| **T5** | Police Station, Tarcutta | T | -3.01 | *Increase |
| **T6** | Breaden Sportsground, Tarcutta | T | -1.23 | 2.68 |
| **H2** | Cnr Boundary-Mate St, Humula | T | -1.41 | *Increase |
| **H1** | Cnr Clark and Mate St, Humula | T | -1.05 | *Increase |

## 11.3 Electrical Conductivity Results

Electrical conductivity (EC) is the electrical current conducted by water and soil measured in decisiemens per metre (dS/m). The greater the electrical conductivity of the water sample, the higher the concentration of salts present. The EC of groundwater is influenced strongly by soil texture or the rock it travels through. Clay soils can hold more salt than sands and gravels because they tend to be less porous and are able to retain the salts more easily. Table 5 gives some examples of EC tolerances for agricultural and domestic use.

**Table 5:** Salinity tolerances for various water usages.

| Water Usage | EC (dS/m) | Tolerances in Livestock | EC (dS/m) |
|---|---|---|---|
| Dead Sea | 550.0 | Beef cattle | 5.9-7.5 |
| Sea water | 50.0 | Sheep | 7.5-14.9 |
| Salt water swimming pool | 5.9-8.9 | Horses | 5.9-8.9 |
| Maximum for human consumption | 2.35 | Pigs | 5.9-8.9 |
| Desirable limit for humans | 0.8 | Poultry | 2.9-4.4 |

EC samples were taken from one hundred and ten piezometers in the 2010/11 reporting period (Figure 10). Forty samples increased in salt concentration, with fifty two decreasing, when compared to 2009/10 results. Eighteen samples remained stable (+/- 0.05dS/m), with forty six piezometers found to be dry.

Piezometers drilled in 2010/11 have not been included in this data but have been included in the water quality class (Figure 11) and critical piezometer (Table 7) databases.

When comparing 2010/10 EC change with previous reporting period, results show an overall migration from dry and stable EC change categories to an increase in EC, with no change in the number of piezometer samples revealing a decrease in EC.

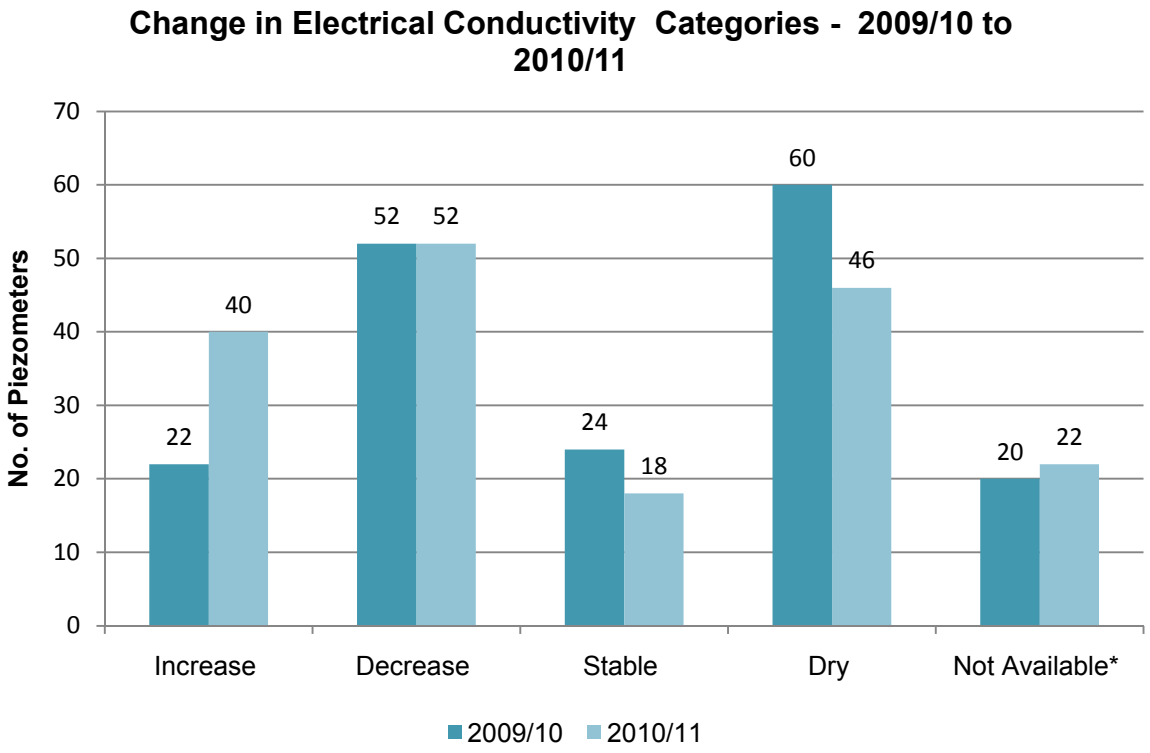



**Figure 10:** EC Categories 2009/10 to 2010/11. **Not available refers to a piezometer that did not contain enough water to sample (NETS) or a piezometer that is not able to be bailed.*

A decline (12%) in average EC readings from piezometers occurred when comparing 2010-11 (3.68dS/m) to the previous reporting period (4.17dS/m) as shown in Table 6. The maximum EC was again (as in previous reporting periods) found at piezometer no. 88 located at 2 Chaston St, Central Wagga. The minimum recorded EC was found at piezometer no. 164 located adjacent to the Murrumbidgee River, Narrung Street.

**Table 6:** Average groundwater EC comparisons 2010/11 versus 2009/10.

| | **Average Electrical Conductivity (dS/m)** | |
|---|---|---|
| | **2010-11** | **2009-10** |
| Maximum | 19.58 | 19.67 |
| Average | 3.68 | 4.17 |
| Minimum | 0.16 | 0.12 |

To measure the severity of electrical conductivity results within the Wagga Wagga Local Government Area, EC results were sorted into water quality classes. A comparison between the current and previous reporting periods of the number of piezometers in each water quality class is presented in Figure 11. Similar ratios of piezometers were defined within the saline, brackish and

marginal water quality classes between the two reporting periods, reflecting groundwater testing from the newly drilled piezometers in 2010/11.

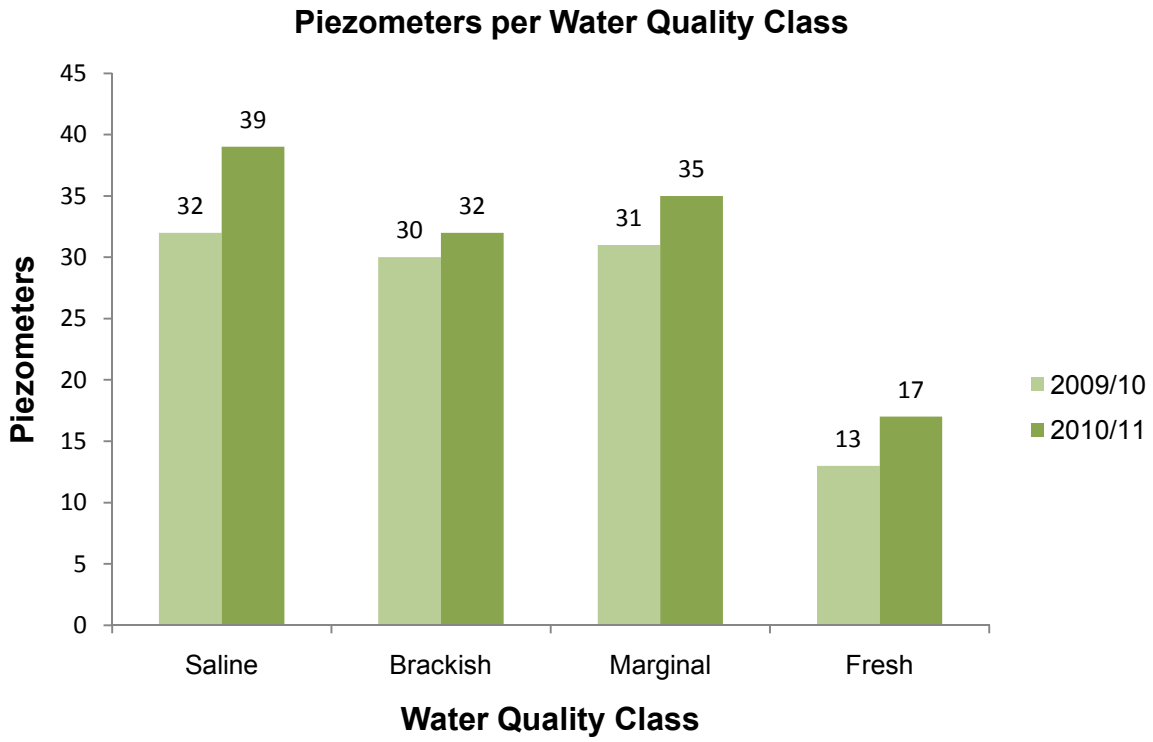



**Figure 11:** Average EC 2009/10 and 2010/11 water quality classes as defined by *Australian Water Resources Council (1976).* Saline = >4.8 dS/m; Brackish = 1.6-4.8; Marginal = 0.8-1.6; Fresh = <0.8.

## 11.4 Critical Piezometers

Piezometers with both EC concentrations (>5 dS/m) and a high SWL (<5m) can indicate urban salinity concerns. The criteria of EC greater than 5 dS/m and SWL of less than 5 metres has been taken from the previous reports to maintain consistency of which piezometers and surrounding areas are most susceptible to urban salinity problems (Table 7).

Sixteen piezometers (compared to eleven in 2009/11) recorded both an EC greater than 5 dS/m and SWL of less than 5 metres in the reporting period. Piezometers with these characteristics are critical and have the potential to cause extensive damage to the surrounding environment. The surrounds of piezometers in Table 7 are at risk from urban salinity due to their high standing water levels.

**Table 7:** Critical piezometers, piezometers displaying high Standing Water Levels and Electrical Conductivity. * Denotes new piezometers added to this list in 2010/11.

| Piezometer Number | Location | Urban Sub catchment | Average SWL 2010-11 (m) | Average EC 10/11 (dS/m) |
|---|---|---|---|---|
| 3 | Cheshire St, Central Wagga | 3 | -0.64 | 16.15 |
| 9 | South Campus, Turvey Park | 3 | -0.04 | 9.27 |
| 18 | Nathan Park, Ashmont | 2 | -1.17 | 9.66 |
| 29 | Dalkeith Ave, Lake Albert | 7 | -2.65 | 4.24 |
| 36 | Lake Albert Foreshore, Lake Albert | 7 | -0.88 | 6.15 |
| 54 | Derna Pl, Ashmont | 2 | -1.55 | 5.06 |
| 57 | 7 Mortimer Pl, Central Wagga | 3 | -0.53 | 15.02 |
| 58 | 62 Chaston St, Central Wagga | 4 | -0.92 | 5.23 |
| 60 | Opp 16 Cullen Rd, Central Wagga | 4 | -1.40 | 6.08 |
| 64* | 11 Sullivan St, Central Wagga | 4 | -2.18 | 6.51 |
| 89* | 31 Chaston St, Central Wagga | 4 | -2.22 | 9.96 |
| 90 | 51 Chaston St, Central Wagga | 4 | -1.52 | 5.27 |
| 102* | Cnr Meurant Ave & Lewisham Ave | 4 | -4.25 | 9.43 |
| 147 | South campus turvey Park | 3 | -0.50 | 16.67 |
| 176* | 39 Meurant Ave, Central Wagga | 4 | -3.74 | 11.99 |
| 179* | Anderson Oval, off Finch St | 3 | -0.43 | 5.77 |

Four of the five new additions to this critical piezometer list are located in the Intensive Borefield area of the Calvary Hospital area (CBD sub catchment 4). Piezometers no. 89, 102 and 176 increased in SWL by 2.96m, 3.15m and 2.92m respectively. Piezometer no. 64 increased to 6.51dS/m in 2010/11 after having not being able to be read in 2009/10 due to low water levels.

Piezometer no. 179 was drilled in June 2010. Located in Anderson Oval, this piezometer is located in an area of concern (Charles Sturt University, South Campus) for WWCC, exhibiting SWL's of 0.43m and EC readings of 5.77dS/m.

Critical piezometers provide valuable data on target areas for remediation action. The increasing severity within these critical areas especially in area noted for high salinity levels is concerning for urban salinity management in Wagga Wagga.

## 11.5 Dewatering Bores

The dewatering bores of the Intensive borefield are monitored monthly allowing for the volume of water and amount of salt discharged to the Murrumbidgee River to be calculated (Table 8). Groundwater from the Intensive Borefield is pumped to the Murrumbidgee River via a pump station adjacent to the intersection of the Sturt Highway and Moorong Street.

**Table 8:** Intensive Borefield salt load calculations for July 2010 – June 2011.

| Bore Number | Bore Location | Volume Pumped ($m^3$) | Pump Hours | Average EC (dS/m) | Salt Discharge (tonnes) |
|---|---|---|---|---|---|
| 1 | Emblen Park | 353.39 | 99.56 | 1.06 | 0.239 |
| 2 | Meurant-Emblen Roundabout | 3.77 | 11.15 | 2.58 | 0.006 |
| 3 | 19 Sullivan Ave | Ongoing repairs June 2011 | | | |
| 4 | 3 Cullen Rd | 15.92 | 2.01 | 1.41 | 0.014 |
| 5 | Calvary Hospital Carpark | 1147.40 | 171.88 | 2.04 | 1.497 |
| 6 | Docker St- Meurant Ave | 1184.25 | 240.40 | 2.86 | 2.169 |
| 7 | 9 Hardy Ave | 625.71 | 240.59 | 3.32 | 1.328 |
| 8 | 25 Gormly Ave | 665.85 | 240.64 | 1.67 | 0.710 |
| 10 | Chaston St- Foxborough Ave | 2258.34 | 171.91 | 3.99 | 5.767 |
| | **Total** | **6254.62** | **1178.14** | | **11.731** |
| | **Average (Per Bore)** | **781.83** | **147.27** | **2.36** | **1.466** |
| | **Average (Per Day)** | **17.14** | **3.23** | | **0.032** |

In June 2011, nine dewatering pumps were serviced and switched on, and as a result the majority of data from Table 8 is taken from pumping in this month. Bore 3 required additional repairs and as a result data is not available for 2010/11.

A daily average of 17.14 cubic metres (17,000 litres) of groundwater from eight dewatering bores was pumped into WWC's stormwater system during 2010/11. Based on EC readings, this volume represents average daily discharges of 0.032 tonnes (32kg) of salt from groundwater aquifers below the Calvary Hospital precinct.

At present, Wagga Wagga City discharges this saline water to the river. Investments in revegetation, rear of block drainage and education programs are considered by Council as sufficient offsets to permit the discharge of moderately saline water.

# 12. DISCUSSION & RECOMMENDATIONS

Standing water levels increased in 67% of measured piezometers in the reporting period 2010/11. Increases of between 58-75% occurred in all sub catchments including Tarcutta/Humula. This follows a 34% and 22% increase in SWL for piezometers measured in reporting periods 2009/10 and 2008/09 respectively. This upward trending of SWL within local piezometers readings is proportionately due to drought conditions continuing to dissipate and the continuance of a La Nina effect, causing higher than average rainfall across south eastern Australia.

In December 2010, Wagga Wagga recorded its wettest calendar year on record. Conditions continued over the next 6 months with rainfall over the 2010/11 reporting period totalling 963mm,

an increase of 84% on historical averages. Monthly rainfall exceeded evaporation on four occasions, with evaporation readings below monthly historical averages for all twelve months of 2010/11.

This widespread rainfall resulted in several major flooding events and high river levels after soil saturation exceeded capacity and runoff inundation across the district occurred. These events, coupled with cooler summer conditions have most likely contributed significantly to an increase in groundwater recharge through lower evaporation and high infiltration rates to aquifers across the Wagga Wagga LGA.

Higher river levels for most of the reporting period will have likely had an effect on aquifers with a lateral connection to the river. This may be evidenced by the behaviour of piezometers within the Mid Murrumbidgee Alluvium sub catchment. Piezometers in this sub catchment recorded an average increase of 2.95m, the highest average increase of all sub catchments. Lower electrical conductivity (EC) readings from piezometers within this sub catchment were also most likely influenced by lateral connection between a high flowing Murrumbidgee River with lower EC levels.

High infiltration rates from direct sources (high rainfall) and indirect sources (high rainfall in connecting recharge areas) caused piezometric pressures to rise in recognised discharge areas of the CBD sub catchment, Charles Sturt University South Campus and the Wagga Showground area, continuing the worrying trend of extremely high water tables. Water bearing piezometer readings for the CBD sub catchment recorded an average increase in SWL of 2.27m when compared to the 2009/10 reporting period. Together with the dewatering bores continuing to be turned off for the majority of 2010/11, groundwater inflow rates exceeded outflow rates for these areas.

After the completion of the dewatering bore trial, dewatering bores were turned on in June 2010 with results expected to have an effect on piezometric levels within the Calvary Borefield and surrounds in the upcoming reporting period.

The effects of residential development in Wagga Wagga LGA on groundwater recharge areas are not widely known. By allowing uncontrolled changes to vegetation clearing, surface runoff and infiltration rates in these areas, it is expected to have an impact on groundwater conditions, particularly in discharge areas and on shallow water tables.

As a component of the Wagga Wagga DCP Lloyd Urban Release Area 2010, Council will implement development conditions and a groundwater monitoring program designed to observe

impacts on groundwater by development in the Lloyd West subdivision. Such installations and monitoring program will begin in 2011/12.

Council will work on the following actions to improve urban salinity in Wagga Wagga in 2011/12:

| Actions | Description | Priority |
|---|---|---|
| Monitoring Program | Continue program to identify potential future problem regions while closely monitoring current problem areas, streamline spreadsheet database | High |
| Dewatering bore | Conduct maintenance on dewatering bores in preparation for their “switching on” | High |
| Dewatering bore trial | Follow and report on groundwater responses after the switching on of dewatering bores in June 2011. | High |
| Mapping | Work with Council IT staff to streamline groundwater database and mapping process for real time display | High |
| Lloyd West GW monitoring | Installation and monitoring program by developer to begin | High |
| Hydrological Study | Conduct a hydrological study of the Wagga Wagga LGA to allow for accurate interpretation of SWL and dewatering data | Moderate |
| Education | Continue to educate school children and the community on water wise gardening and the urban salinity issue. Develop new incentives and programs to encourage water wise gardening and the reduction of lawn areas | High |
| Soil moisture probe monitoring | Investigate irrigation requirements in council parks using soil moisture probe monitoring | Moderate |
| Revegetation | Continue revegetation programs, including maintenance of existing revegetation stands | High |
| Rear block drainage | Commencement of work on the B2 to B4, completion of construction expected within 2 years dependant on available funding. | High |

In undertaking measures to mitigate urban salinity, the programs implemented work to improve environmental sustainability as a whole. Council alone is unable to ease urban salinity and community involvement is required if long term reductions in groundwater are to be achieved.

# 13. DISCLAIMER

This report has been compiled by Wagga Wagga City Council's Department of Environmental & Community Services exercising all due care and attention. Council does not accept any responsibility for any inaccurate or incomplete information supplied by third parties. No representation is made as to the accuracy, completeness or suitability for any particular purpose of the source material included in this report.

# 14. REFERENCES

Carter, Antoinette (1998) *Wagga Wagga Urban Salinity Pilot Bore Dewatering Project: Drilling Results and Pumping Test Outcomes of Installation of Spearpoints*. Department of Land and Water Conservation.

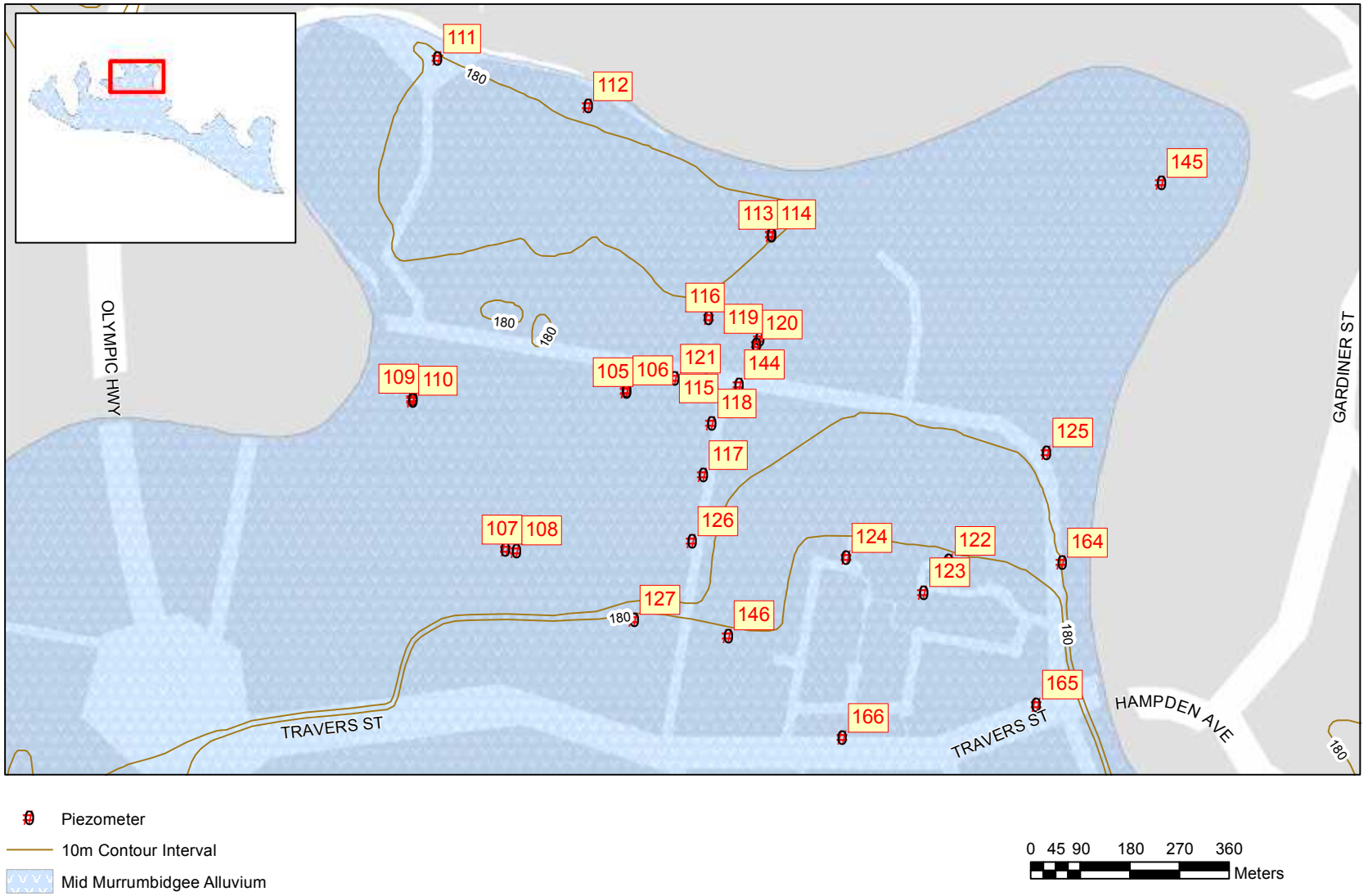
Department of Land and Water Conservation (2000), *The Wagga Wagga Urban Salinity Study – Economic Evaluation of Options (Final Draft),* Socio Economic Unit, DLWC.

Golder Associates Pty Ltd (2007). *Wagga Wagga Urban Salinity – Water level and Quality Study (1999-2006).* Golder Associates, Perth.

NSW Department of Primary Industries (2005). *Salinity Glove Box Guide: NSW Murrumbidgee Catchment*. Print National, Gosford.

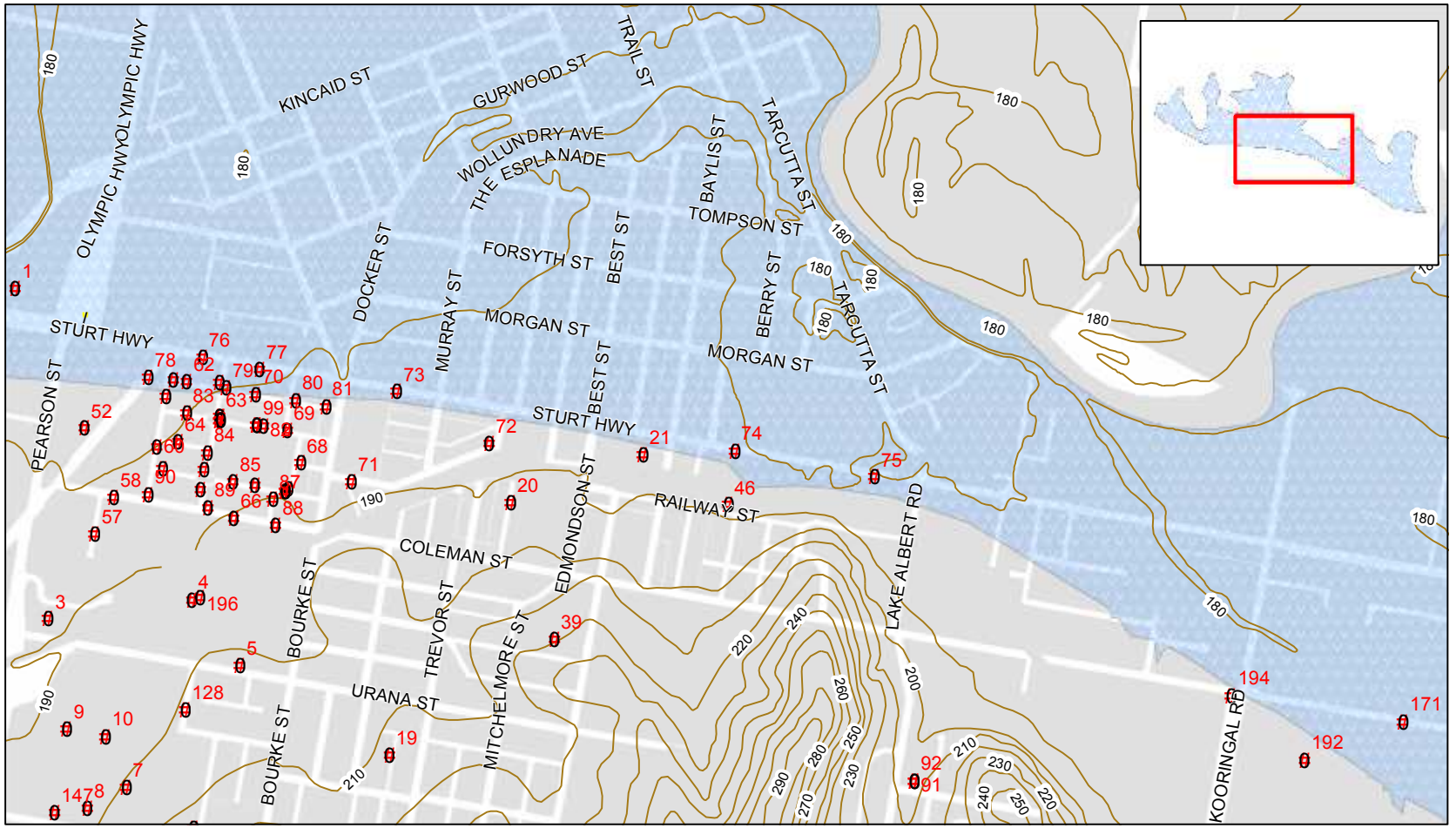
# APPENDIX A: MAPS OF PIEZOMETER LOCATIONS

# Piezometer Locations: Mid Murrumbidgee Alluvium



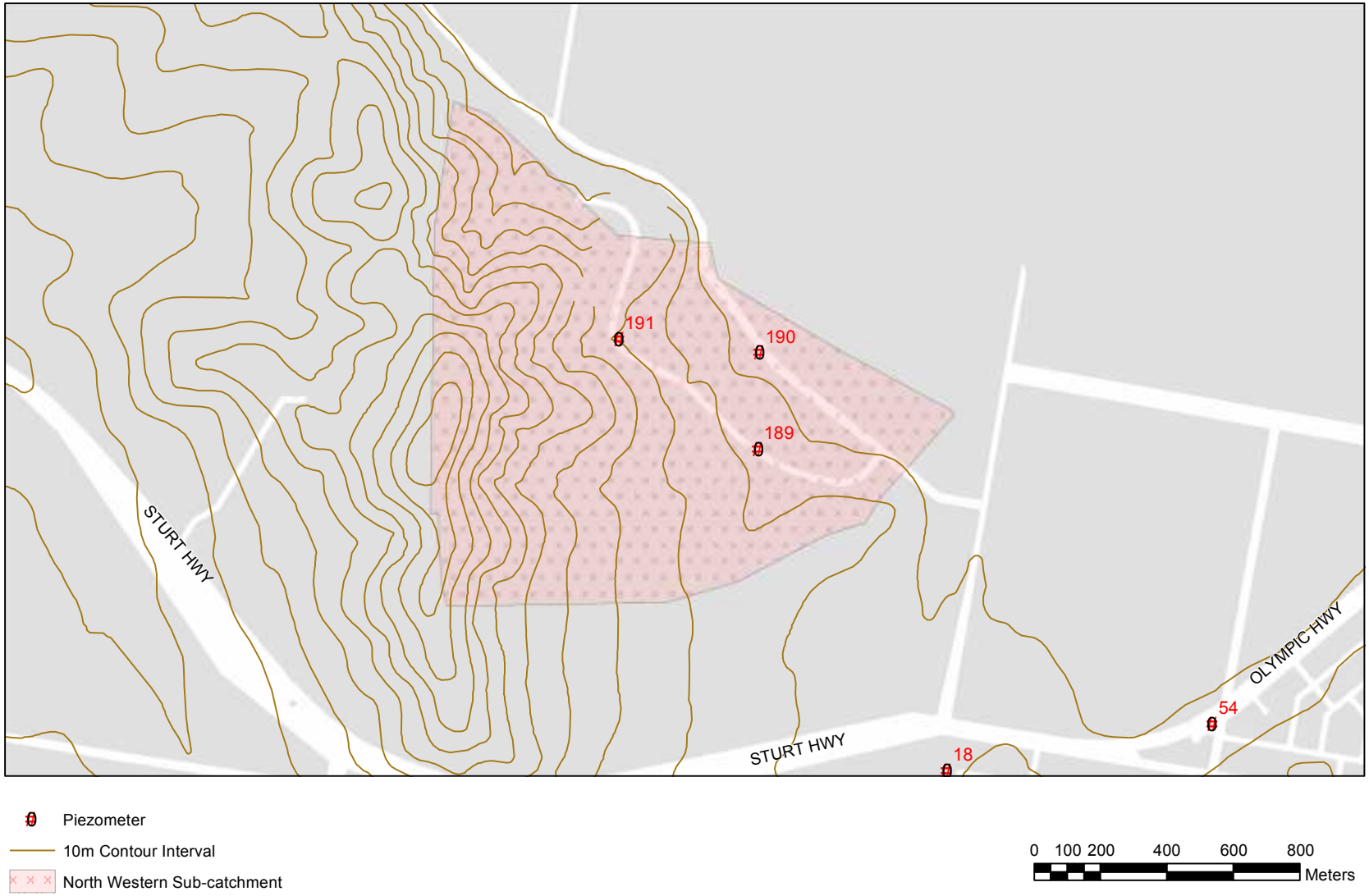
# Piezometer Locations: Mid Murrumbidgee Alluvium

E



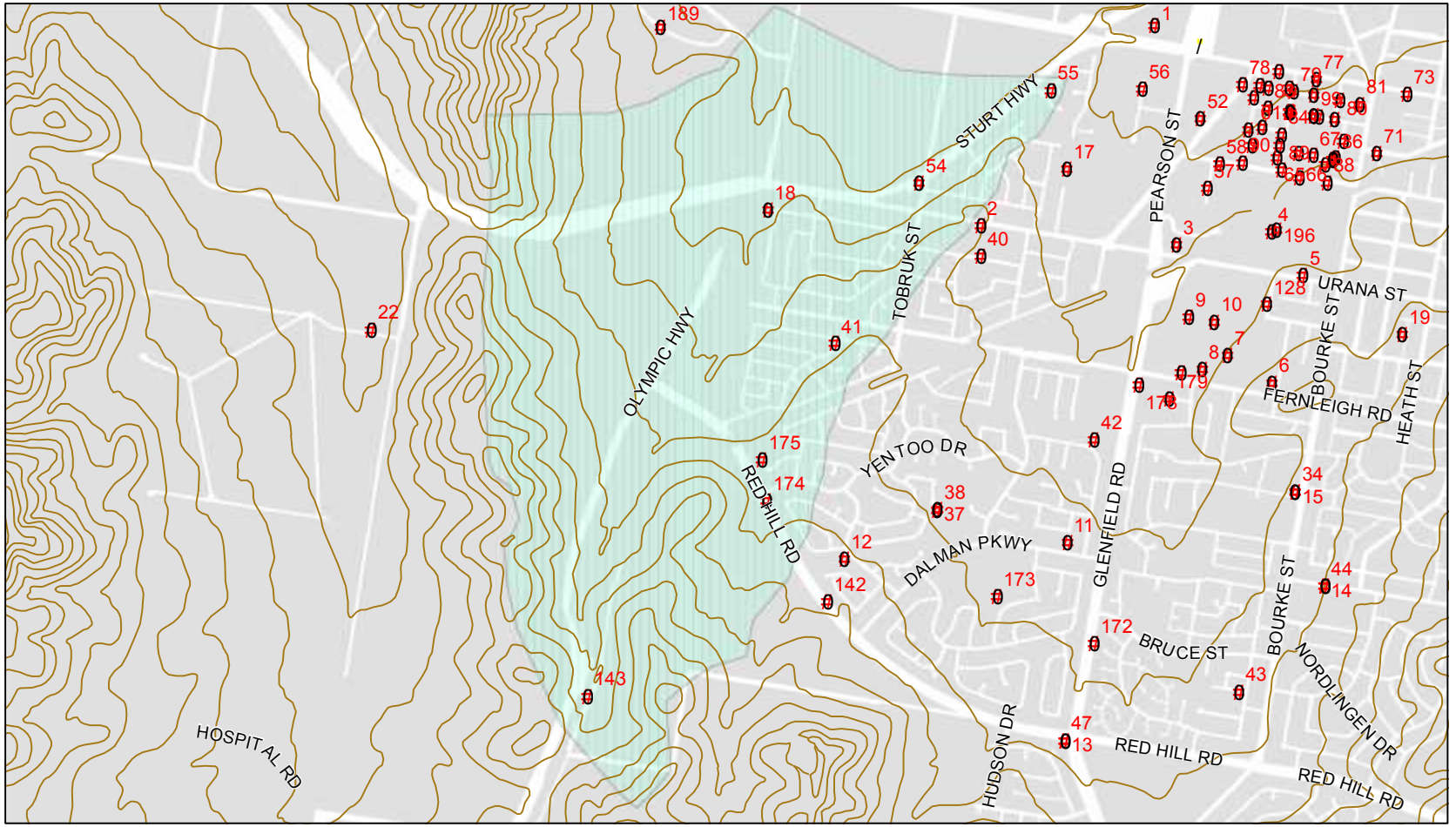
# Piezometer Locations: North Western Sub-catchment

E



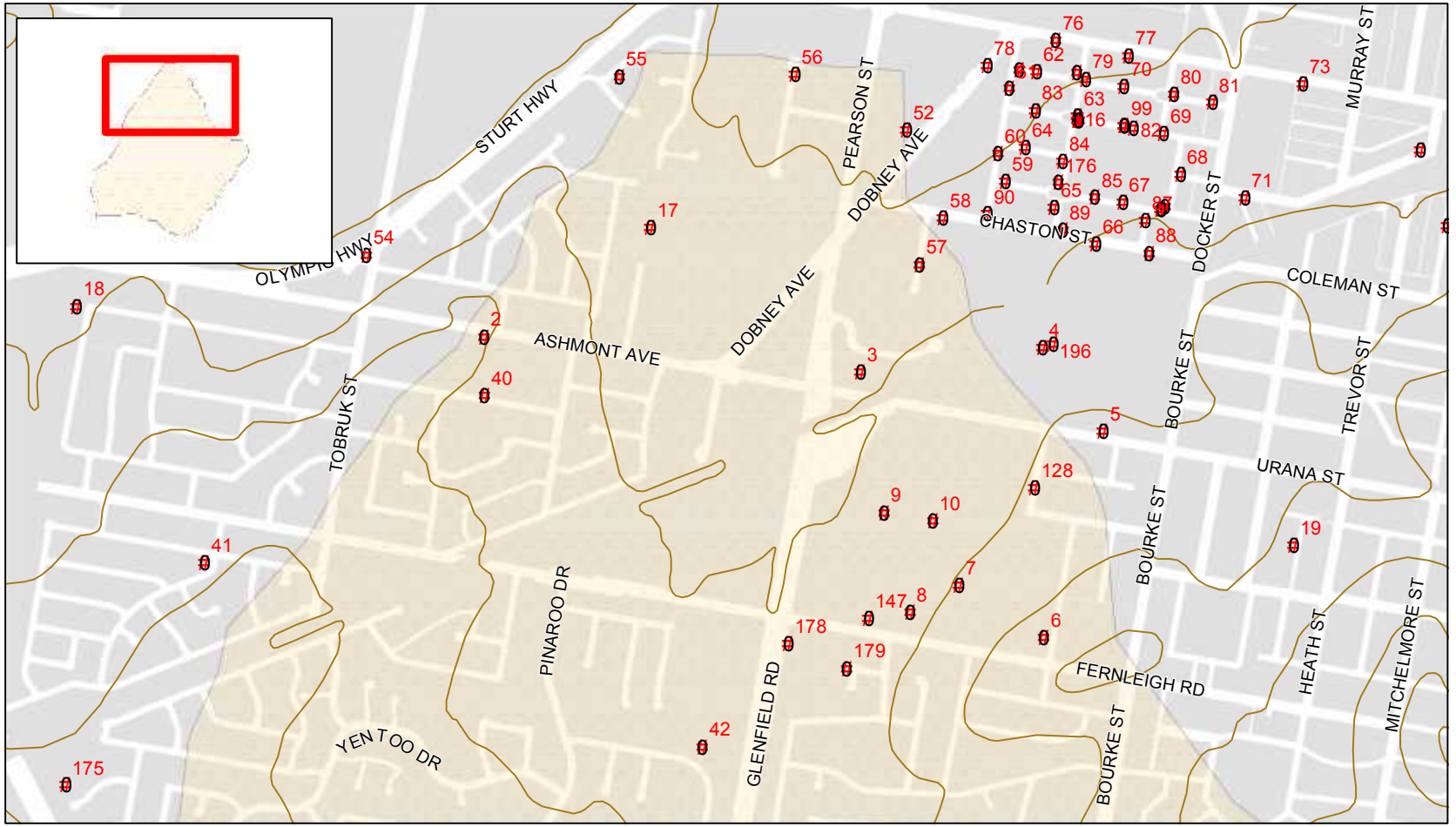
# Piezometer Locations: Far Western Sub-catchment

E



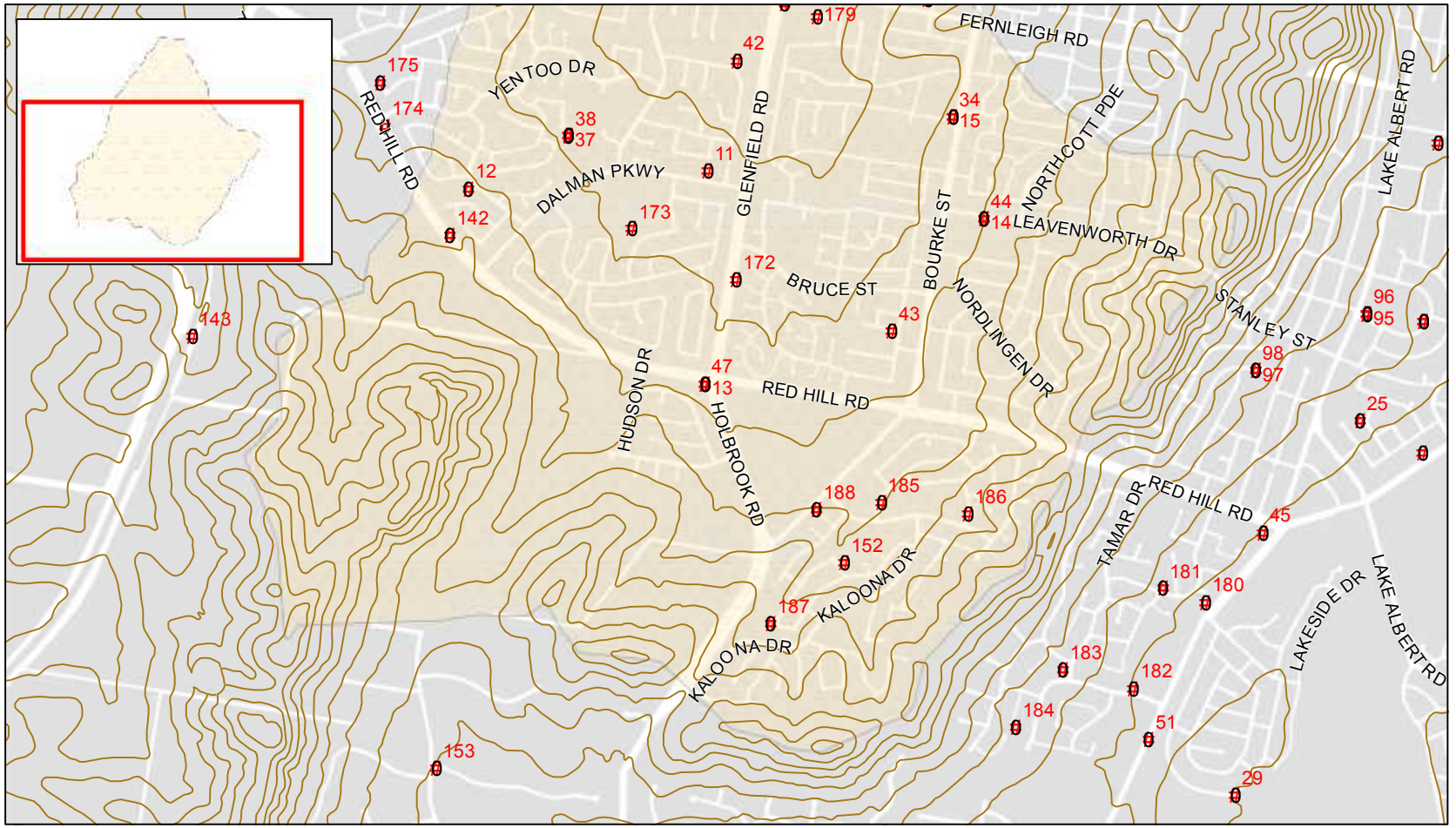
# Piezometer Locations: Western Sub-catchment

E



# Piezometer Locations: Western Sub-catchment

E




Piezometer

10m Contour Interval

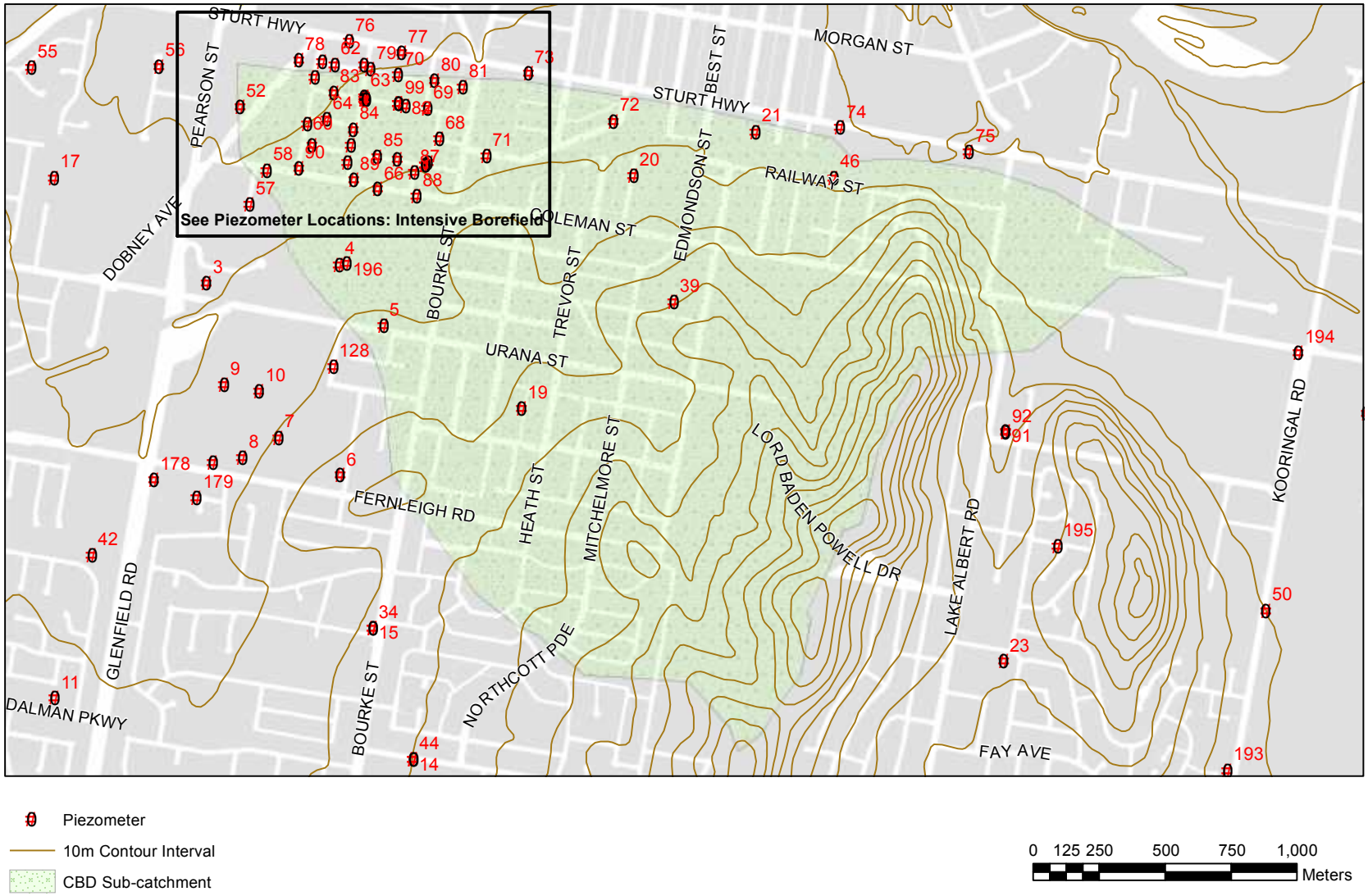
Western Sub-catchment

0 170 340 680 1,020 1,360

Meters

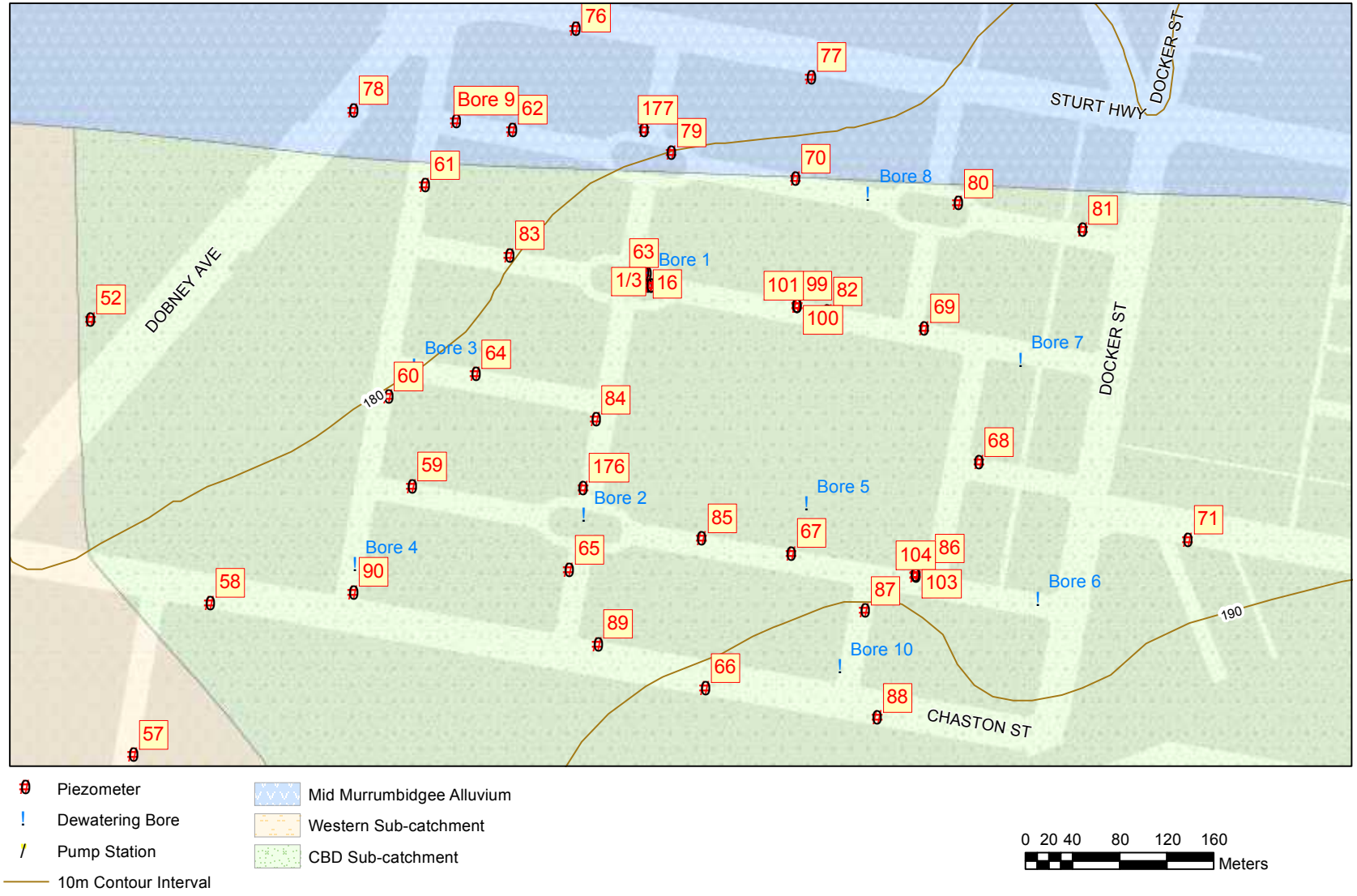
# Piezometer Locations: CBD Sub-catchment

E



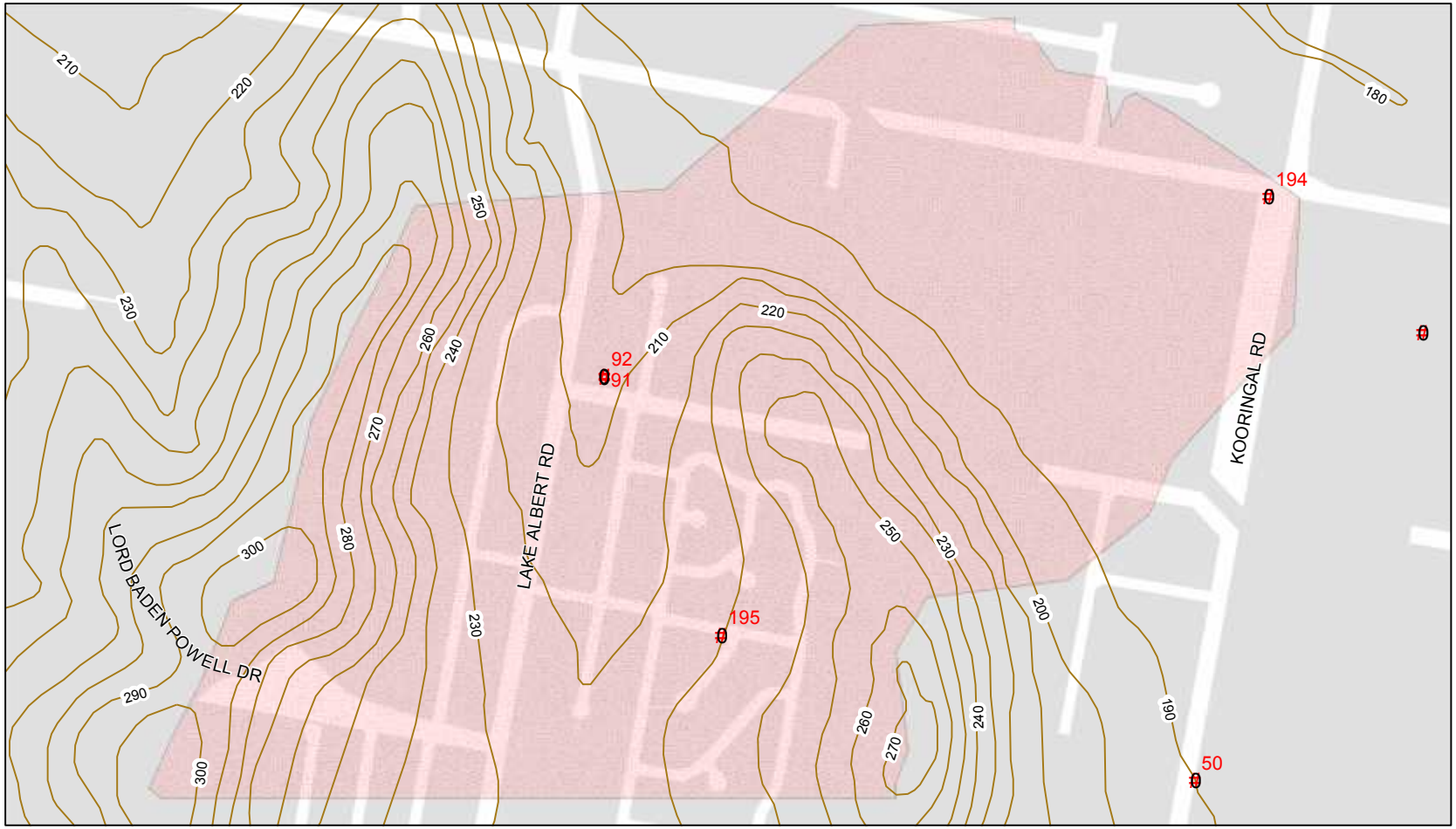
# Piezometer Locations: Intensive Borefield

E



# Piezometer Locations: Eastern CBD Sub-catchment

E



# Piezometer Locations: Far Eastern CBD Sub-catchment

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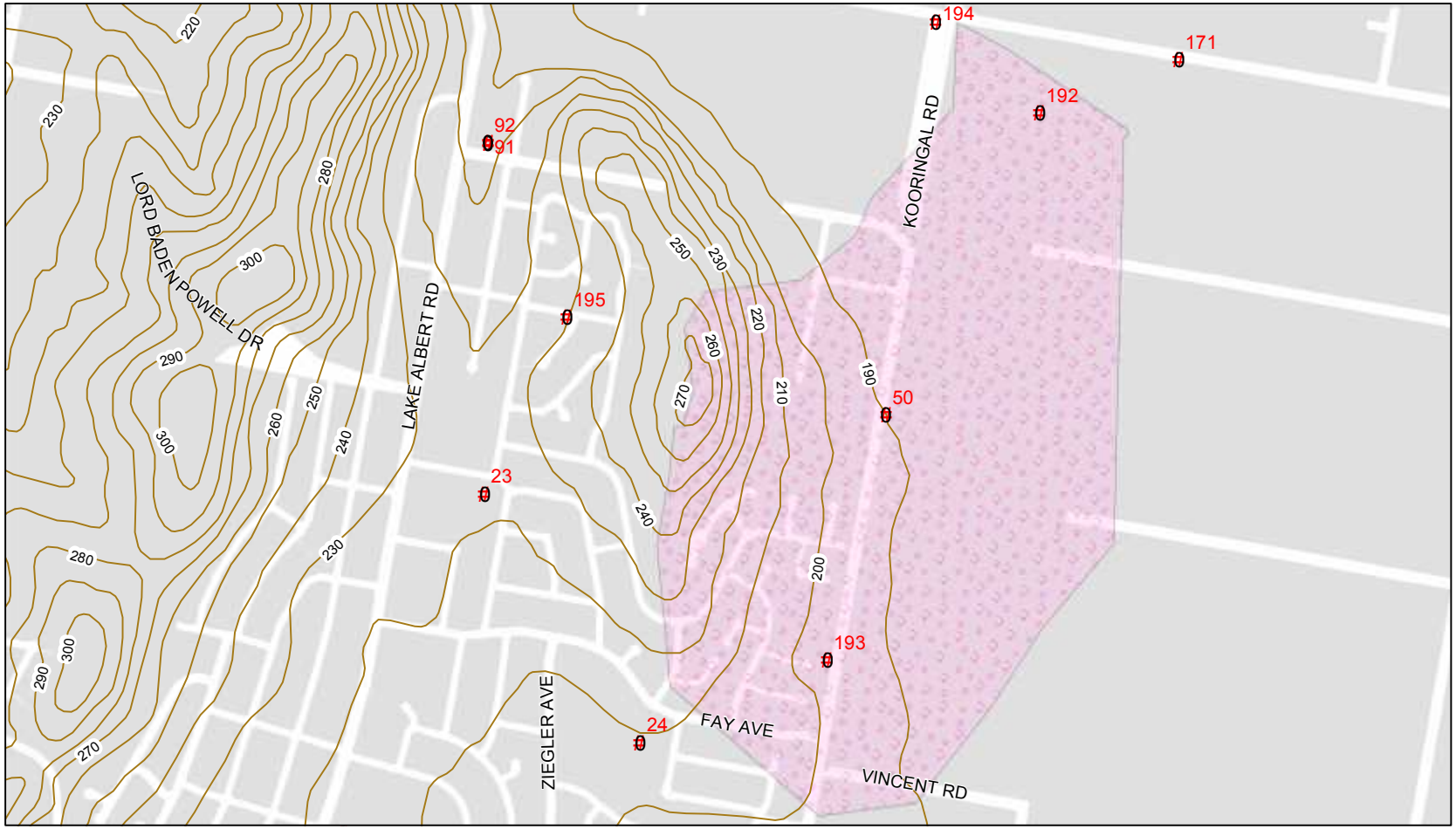
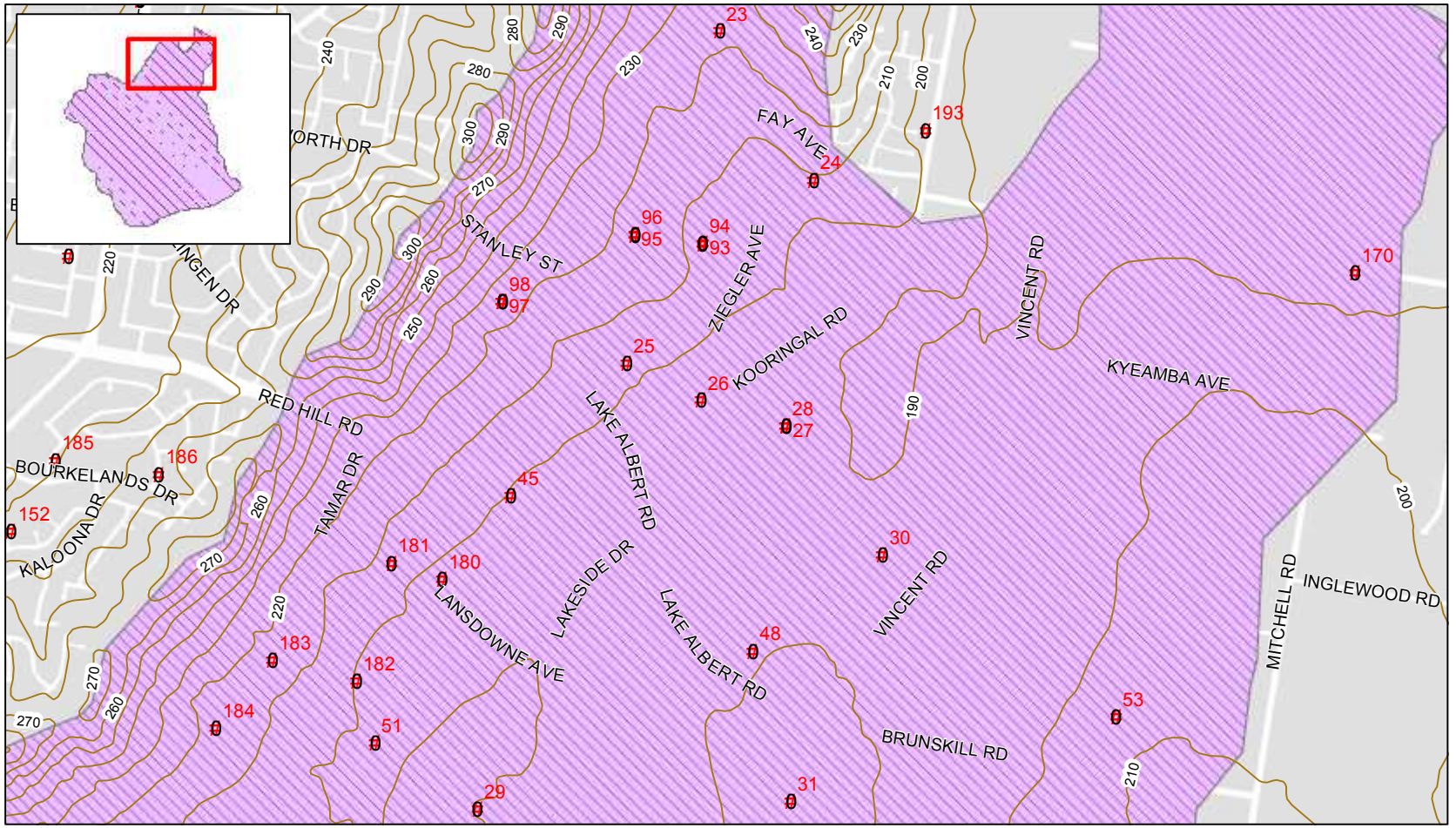


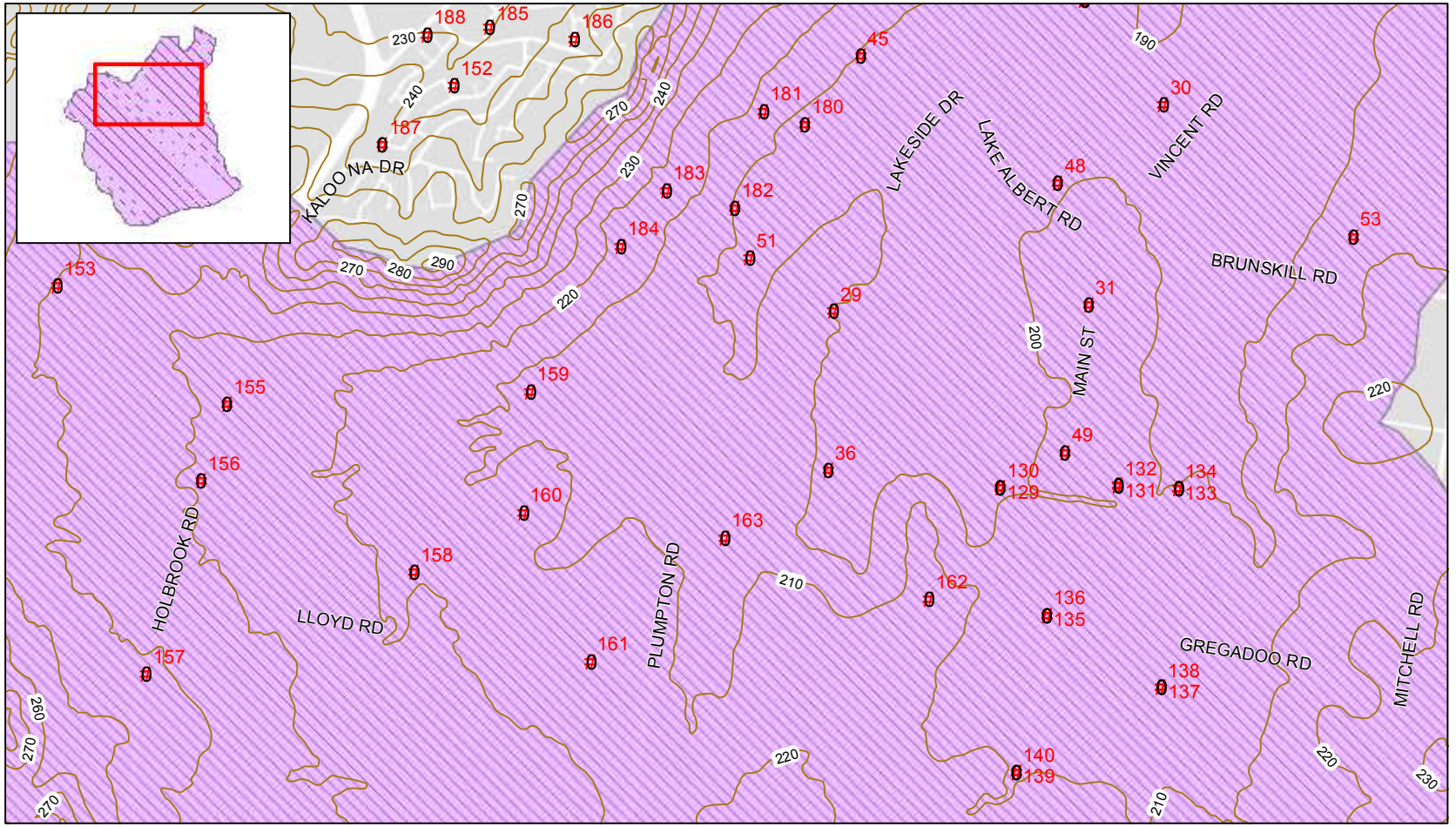
# Piezometer Locations: Eastern Sub-catchment

E



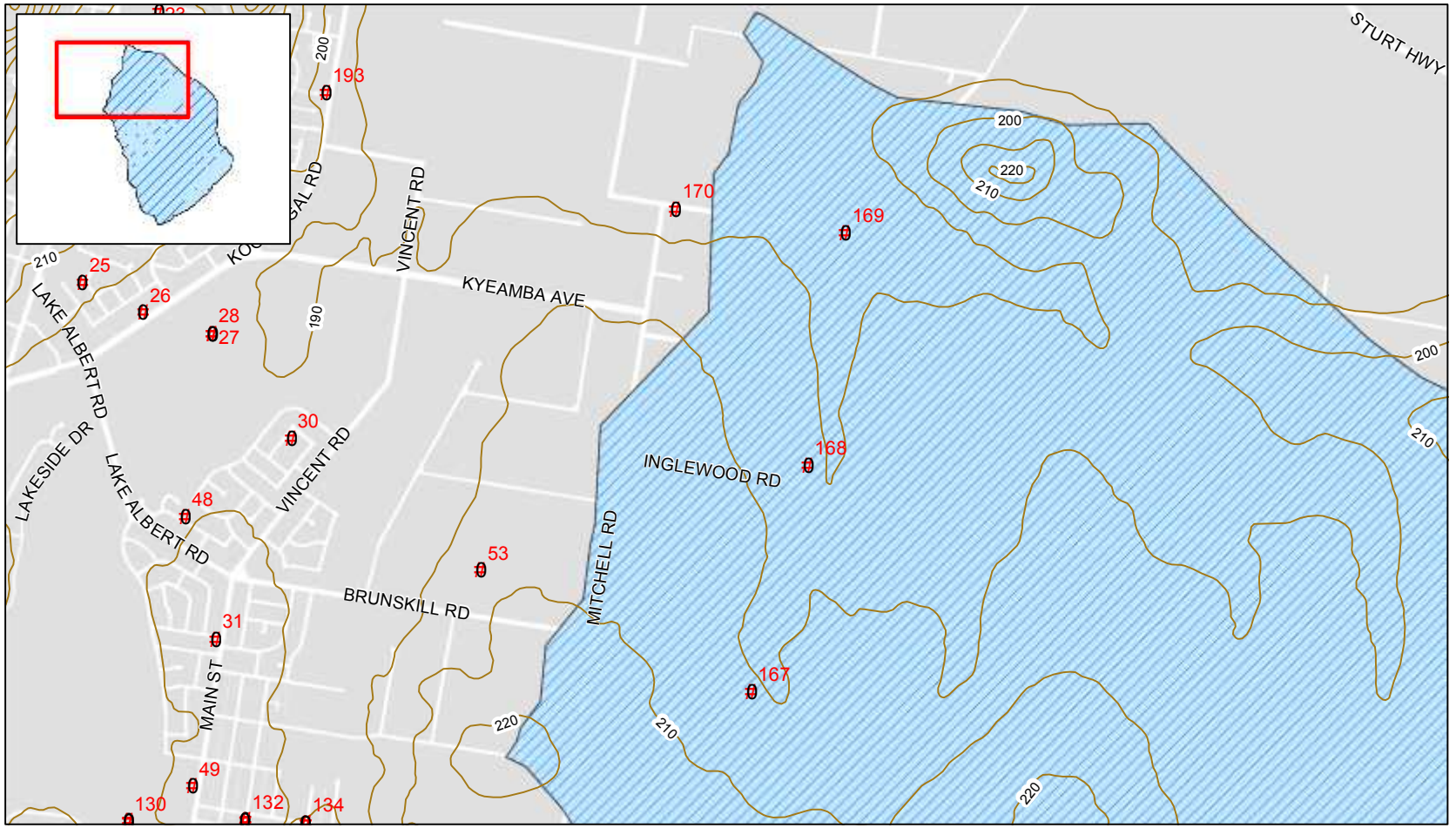
# Piezometer Locations: Eastern Sub-catchment

E



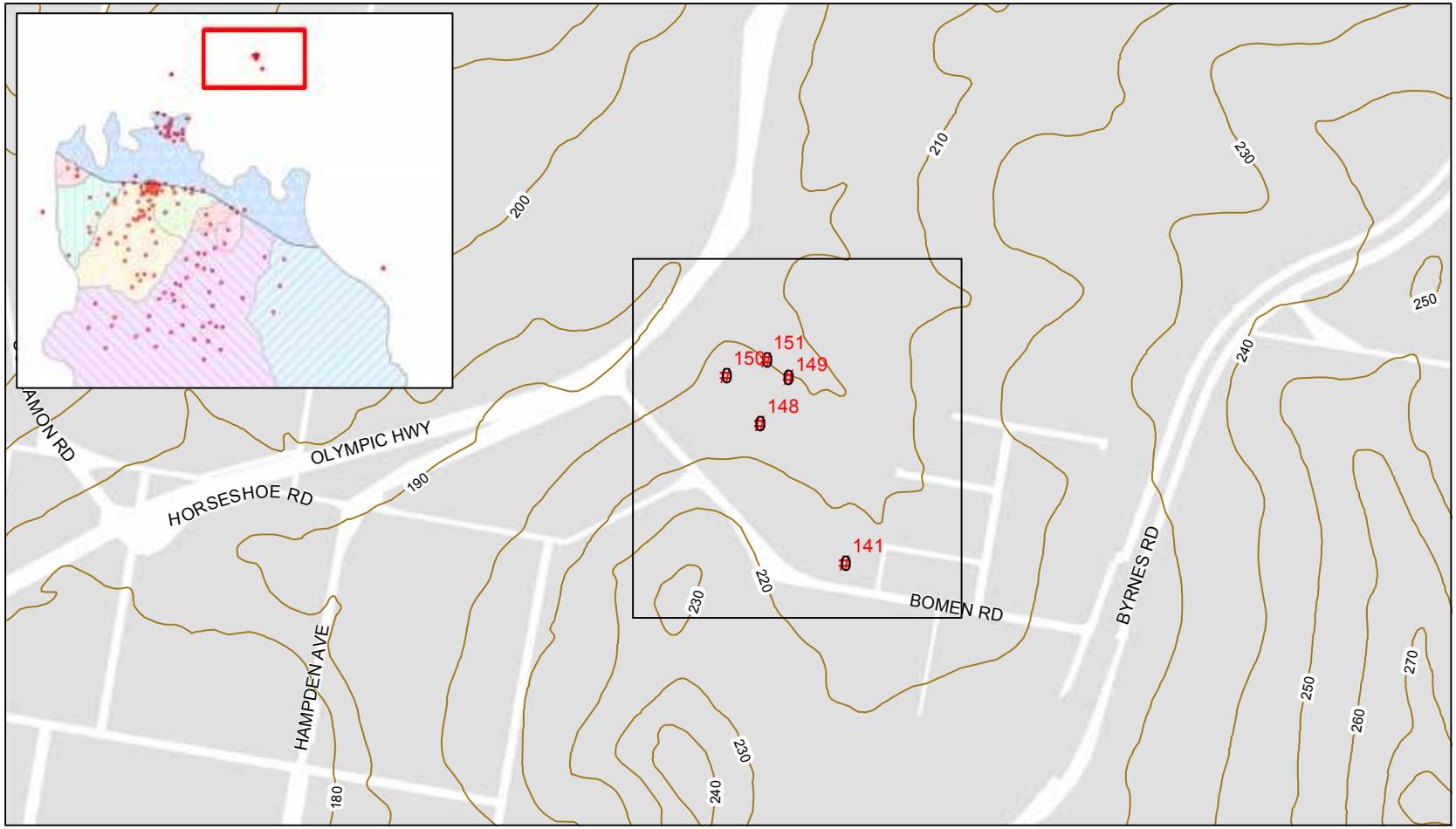
# Piezometer Locations: Far Eastern Sub-catchment

E

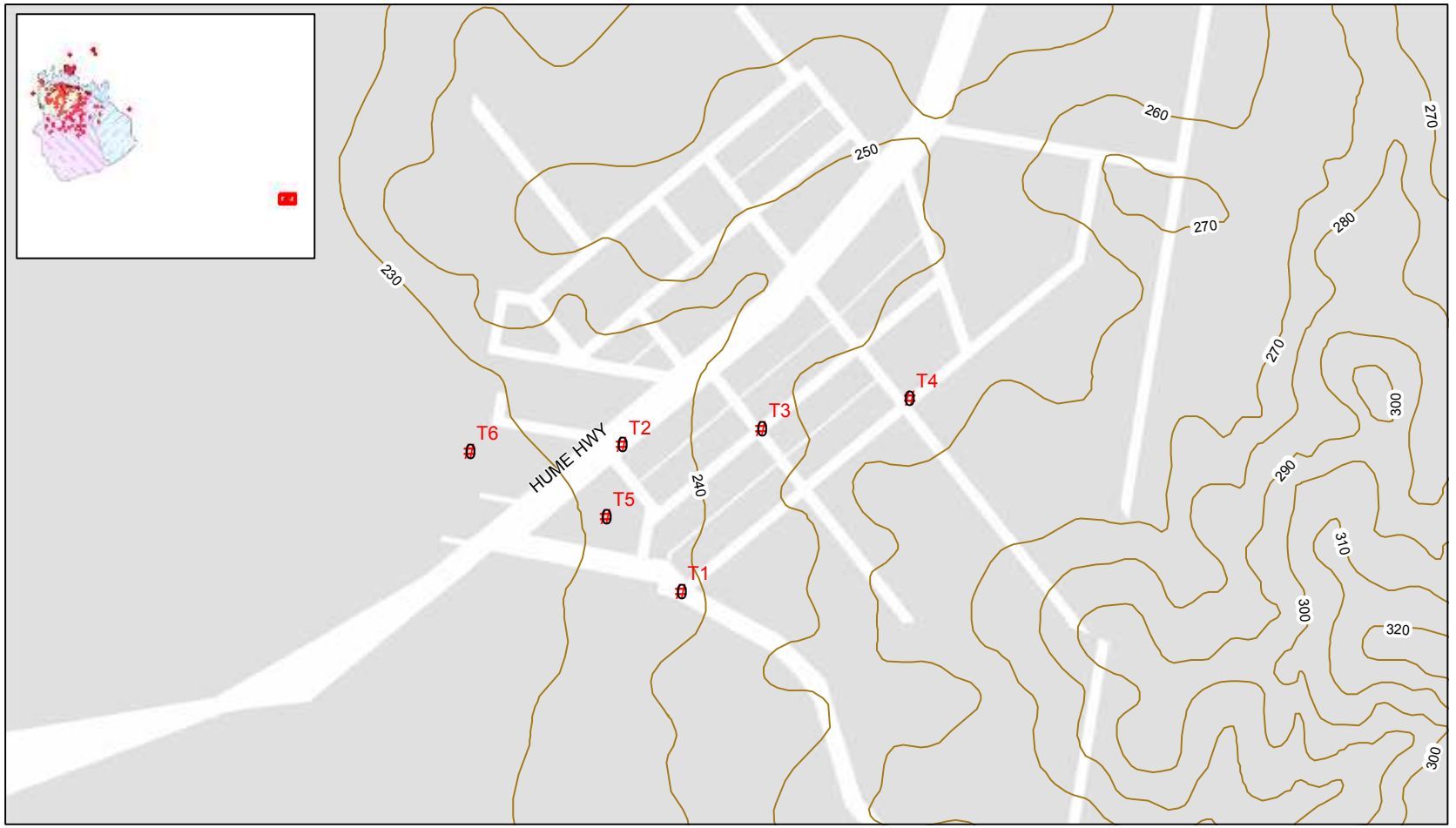


# Piezometer Locations: Undefined

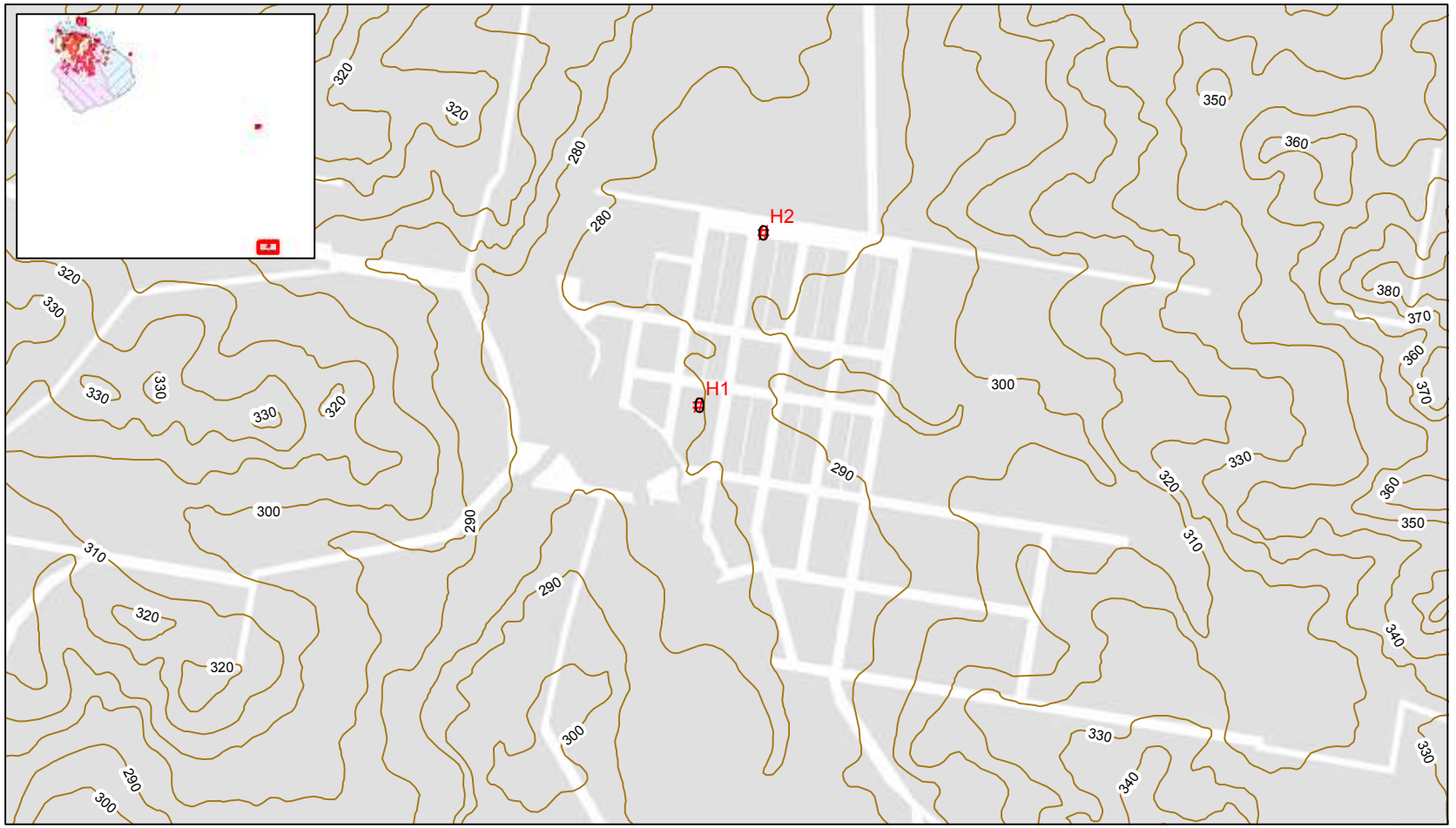
E



# Piezometer Locations: Tarcutta



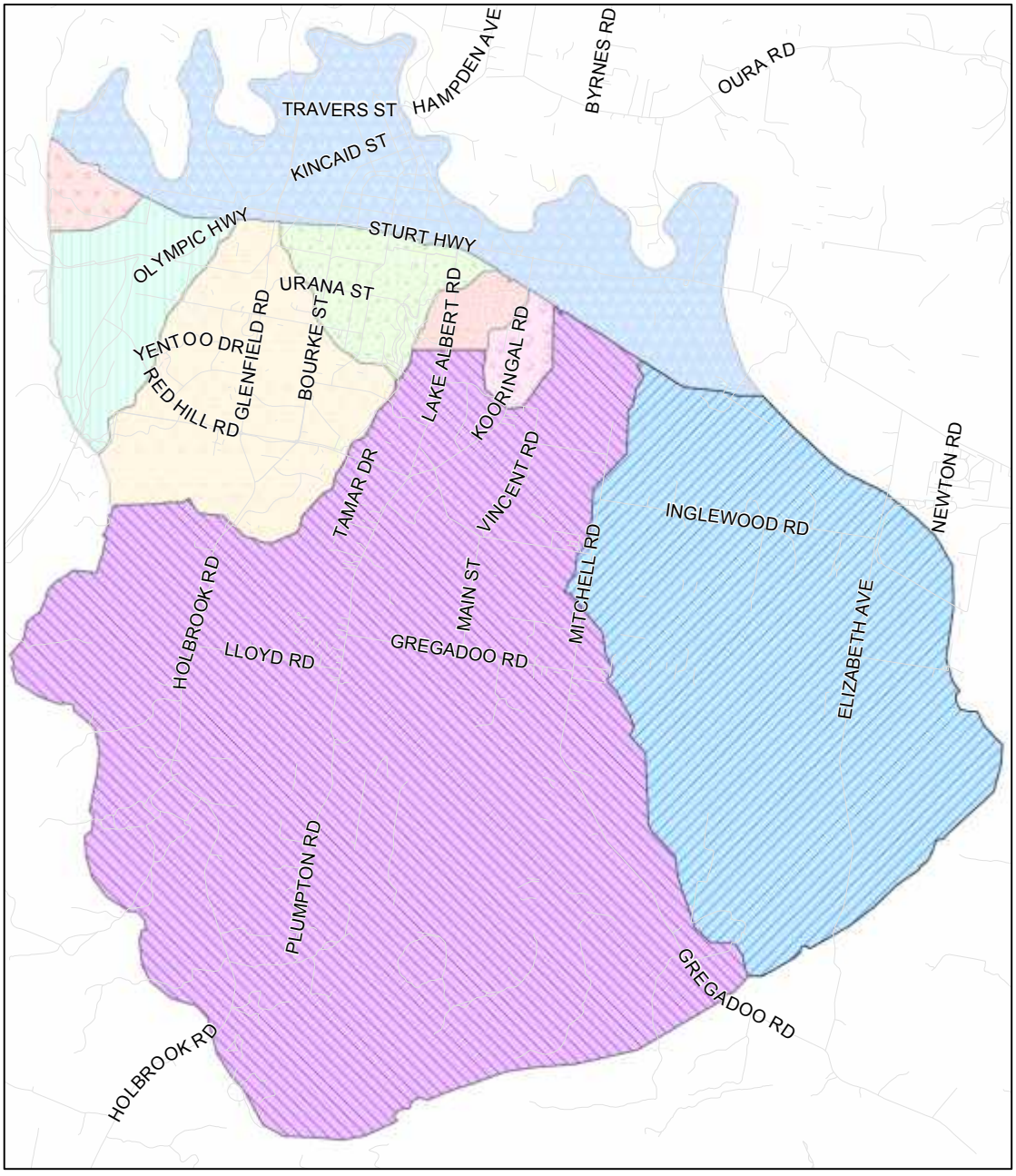
# Piezometer Locations: Humula



# APPENDIX B: WAGGA WAGGA MAJOR URBAN SUB-CATCHMENTS

# Wagga Wagga Major Urban Sub-catchments

E




Please note that the 'Undefined' and 'Tarcutta/Humula' piezometer categories are not presented on this map.

# APPENDIX C: SWL & SALINITY DATA - JULY 2010 TO JUNE 2011

| Piezometer Number | Piezometer Location | Urban Sub catchment | Piezometer Depth | Date Drilled | Average SWL 09/10 | Average SWL 10/11 | Change In SWL | Average EC 09/10 | Average EC 10/11 | Change in EC |
|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Cnr Moorong St - Sturt Hwy, Central Wagga | MA | 10.20 | May-94 | -9.92 | -8.97 | 0.95 | 1.93 | 1.29 | -0.63 |
| **2** | Ashmont Primary School, Ashmont | 3 | 10.30 | Jun-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **3** | Cheshire St, Central Wagga | 3 | 7.40 | May-94 | -1.42 | -0.64 | 0.78 | 15.56 | 16.15 | 0.60 |
| **4** | Showground arena, Turvey Park | | 3.30 | Mar-94 | LOST | | | | | |
| **5** | Showgrounds, Turvey Park | 4 | 9.70 | May-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **6** | South Campus, Turvey Park | 3 | 13.20 | May-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **7** | South Campus, Turvey Park | 3 | 3.90 | Mar-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **8** | South Campus, Turvey Park | | 4.20 | Mar-94 | DESTROYED | | | | | |
| **9** | South Campus, Turvey Park | 3 | 4.30 | Mar-94 | -0.63 | -0.04 | 0.59 | 9.24 | 9.27 | 0.04 |
| **10** | South Campus, Turvey Park | 3 | 4.10 | Mar-94 | -2.79 | -0.92 | 1.87 | 4.74 | 1.84 | -2.90 |
| **11** | 3 Dalman Parkway, Glenfield | 3 | 7.10 | May-94 | -6.16 | -4.12 | 2.04 | 1.62 | 0.35 | -1.27 |
| **12** | Kimba Dr, Glenfield | 3 | 14.00 | May-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **13** | Cnr Glenfield - Red Hill Rds, Lloyd (shallow) | 3 | 8.58 | May-94 | -7.85 | -5.91 | 1.94 | 1.51 | 1.45 | -0.06 |
| **14** | Mt Austin High School, Tolland (shallow) | 3 | 9.90 | May-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **15** | Mt Austin Public School, Mt Austin (shallow) | 3 | 9.90 | May-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **16** | Emblen Park, Central Wagga | 4 | 15.10 | Jan-95 | -6.75 | -4.20 | 2.55 | 1.32 | 1.28 | -0.04 |
| **17** | Best Park Reserve, Ashmont | 3 | 13.70 | Jan-95 | -4.55 | -3.19 | 1.36 | 3.75 | 3.46 | -0.29 |
| **18** | Nathan Park, Ashmont | 2 | 11.00 | Jan-95 | -3.26 | -1.17 | 2.09 | 9.53 | 9.66 | 0.13 |
| **19** | Turvey Park Public School, Turvey Park | 4 | 17.20 | Jan-95 | DRY | DRY | DRY | DRY | DRY | DRY |
| **20** | Kildare Catholic College, Turvey Park | 4 | 14.90 | Jan-95 | -13.73 | -12.17 | 1.56 | 12.85 | 10.64 | -2.21 |
| **21** | South Wagga Public School, Central Wagga | 4 | 13.00 | Jan-95 | DRY | DRY | DRY | DRY | DRY | DRY |
| **22** | Norman Duck Oval, San Isidore | 0 | 17.00 | Mar-95 | -13.75 | -17.35 | -3.60 | NETS | 2.28 | 2.28 |
| **23** | Sacred Heart Primary School, Kooringal | 7 | 23.00 | Mar-95 | -11.37 | -2.34 | 9.03 | 0.63 | 0.62 | -0.01 |
| **24** | Kooringal High School, Kooringal | 7 | 22.00 | Mar-95 | -12.97 | -8.84 | 4.13 | 1.75 | 1.90 | 0.15 |
| **25** | Kooringal Public School, Kooringal | 7 | 15.20* | Jun-07* | DRY | DRY | DRY | DRY | DRY | DRY |
| **26** | 514 Kooringal Rd, Kooringal | 7 | 27.00 | Mar-95 | -11.31 | -10.85 | 0.46 | 10.83 | 11.00 | 0.18 |

| Piezometer Number | Piezometer Location | Urban Sub catchment | Piezometer Depth | Date Drilled | Average SWL 09/10 | Average SWL 10/11 | Change In SWL | Average EC 09/10 | Average EC 10/11 | Change in EC |
|---|---|---|---|---|---|---|---|---|---|---|
| **27** | Kooringal Rd, Kooringal (shallow) | 7 | 13.50 | Mar-95 | -8.36 | -7.78 | 0.58 | 13.07 | 12.99 | -0.08 |
| **28** | Kooringal Rd, Kooringal (deep) | 7 | 21.50 | Mar-95 | -8.39 | -7.81 | 0.59 | 14.89 | 11.69 | -3.20 |
| **29** | Dalkeith Ave, Lake Albert | 7 | 10.00 | Mar-95 | -3.60 | -2.65 | 0.95 | 7.20 | 4.24 | -2.97 |
| **30** | Croker Park, Lake Albert | 7 | 13.00 | Mar-95 | -8.43 | -6.59 | 1.84 | 0.72 | 0.79 | 0.06 |
| **31** | Ron Wheeler Park, Lake Albert | 7 | 30.00 | Mar-95 | -20.84 | -21.15 | -0.30 | 1.97 | 1.94 | -0.03 |
| **32** | Fife St Reserve, Forest Hill | 0 | 16.00 | Jul-95 | DRY | DRY | DRY | DRY | DRY | DRY |
| **33** | Cooramin St, Boorooma | 0 | 18.00 | Mar-95 | -15.55 | -15.72 | -0.17 | 7.79 | NETS | NETS |
| **34** | Mt Austin Public School, Mt Austin (deep) | 3 | 24.00 | Jun-95 | -13.29 | -9.41 | 3.87 | 7.99 | 5.99 | -2.00 |
| **35** | Emblen Park, Central Wagga | | 50.00 | Jun-95 | DESTROYED | | | | | |
| **36** | Lake Albert foreshore, Lake Albert | 7 | 11.80 | Jan-96 | -2.23 | -0.88 | 1.35 | 6.06 | 6.15 | 0.10 |
| **37** | Kaldari Cres, Glenfield (deep) | 3 | 40.00 | May-96 | -6.81 | -4.28 | 2.53 | 2.71 | 2.81 | 0.10 |
| **38** | Kaldari Cres, Glenfield (shallow) | 3 | 15.00 | May-96 | -7.38 | -4.82 | 2.56 | 1.53 | 1.51 | -0.02 |
| **39** | Wagga Wagga High School, Turvey Park | 4 | 49.00 | May-96 | -31.86 | -28.62 | 3.24 | 2.33 | 2.37 | 0.04 |
| **40** | Holy Trinity Primary School, Ashmont | 3 | 25.77 | Apr-97 | -11.89 | -9.93 | 1.96 | 8.94 | 8.53 | -0.40 |
| **41** | Crisp Park, Ashmont | 2 | 16.85 | Apr-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **42** | Karoom Dr reserve, Glenfield | 3 | 12.60 | Apr-97 | -2.85 | -2.09 | 0.77 | 4.74 | 4.97 | 0.24 |
| **43** | Tolland Public School, Tolland | 3 | 9.50* | Jun-07* | -7.99 | -5.95 | 2.04 | 1.98 | 1.45 | -0.54 |
| **44** | Mt Austin High School, Tolland (deep) | 3 | 22.54 | Apr-97 | -16.51 | -10.34 | 6.17 | 6.11 | 5.87 | -0.24 |
| **45** | Caloola Hostel, Tatton | 7 | 12.89 | Apr-97 | -12.04 | -11.14 | 0.90 | 5.05 | 6.08 | 1.03 |
| **46** | Wagga Wagga Railway Station, Central Wagga | | 16.02 | Apr-97 | DESTROYED | | | | | |
| **47** | Cnr Red Hill - Glenfield Rds, Lloyd (deep) | 3 | 16.27 | Apr-97 | -11.29 | -9.77 | 1.52 | 1.53 | 1.24 | -0.29 |
| **48** | Jack Skeers Park, Lake Albert | 7 | 16.05 | Apr-97 | -8.52 | -7.93 | 0.59 | 2.75 | 2.78 | 0.04 |
| **49** | Lake Albert Public School, Lake Albert | 7 | 26.93 | Apr-97 | -20.04 | -18.84 | 1.21 | 1.65 | 1.73 | 0.08 |
| **50** | Wagga Wagga Christian College, East Wagga | 6 | 19.20 | May-97 | -18.26 | -17.83 | 0.43 | 1.31 | 1.39 | 0.07 |
| **51** | Plumpton Rd, Lake Albert | 7 | 16.70 | Apr-97 | -10.31 | -10.01 | 0.30 | 5.09 | 3.15 | -1.94 |
| **52** | 39 Dobney Ave, Central Wagga | 4 | 12.60 | May-97 | -11.03 | -10.20 | 0.82 | 4.93 | 5.06 | 0.13 |

| Piezometer Number | Piezometer Location | Urban Sub catchment | Piezometer Depth | Date Drilled | Average SWL 09/10 | Average SWL 10/11 | Change In SWL | Average EC 09/10 | Average EC 10/11 | Change in EC |
|---|---|---|---|---|---|---|---|---|---|---|
| **53** | Lawn Cemetery, Lake Albert | 7 | 21.50 | Jun-97 | -8.61 | -18.53 | -9.92 | 0.46 | 0.48 | 0.02 |
| **54** | Derna Pl, Ashmont | 2 | 3.00 | Nov-97 | -2.08 | -1.55 | 0.53 | 13.33 | 5.06 | -8.27 |
| **55** | 1 Clowes Pl, Ashmont | 2 | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **56** | 6 Saxon St, Central Wagga | 3 | 6.00* | Jun-07* | -5.66 | -5.78 | -0.12 | 8.10 | 9.15 | 1.05 |
| **57** | 7 Mortimer Pl, Central Wagga | 3 | 3.00 | Nov-97 | -0.95 | -0.53 | 0.42 | 11.11 | 15.02 | 3.91 |
| **58** | 62 Chaston St, Central Wagga | 4 | 3.00 | Nov-97 | -1.34 | -0.92 | 0.43 | 6.79 | 5.23 | -1.55 |
| **59** | 53-55 Meurant Ave, Central Wagga | 4 | 3.00 | Nov-97 | DRY | -1.90 | -1.90 | DRY | 1.90 | DRY |
| **60** | Opp 16 Cullen Rd, Central Wagga | 4 | 3.00 | Nov-97 | -2.43 | -1.40 | 1.03 | 7.89 | 6.08 | -1.81 |
| **61** | Opp 38 Cullen Rd, Central Wagga | 4 | 3.00 | Nov-97 | -2.90 | DRY | DRY | NETS | NETS | NETS |
| **62** | 59 Gormly Ave, Central Wagga | MA | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **63** | Emblen Park, Central Wagga | 4 | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **64** | 11 Sullivan St, Central Wagga | 4 | 3.00 | Nov-97 | -2.83 | -2.18 | 0.65 | NETS | 6.51 | NETS |
| **65** | 40 Meurant Ave, Central Wagga | 4 | 3.00 | Nov-97 | DRY | -1.58 | -1.58 | DRY | DRY | DRY |
| **66** | 18 Chaston St, Central Wagga | 4 | 3.00 | Nov-97 | -1.38 | -1.11 | 0.28 | 4.95 | 4.86 | -0.10 |
| **67** | Meurant Ave, Central Wagga | 4 | 6.00* | Jun-07* | DRY | -4.05 | -4.05 | DRY | DRY | DRY |
| **68** | 11 Lewisham Ave, Central Wagga | 4 | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **69** | 19 Hardy Ave, Central Wagga | 4 | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **70** | 33 Gormly Ave, Central Wagga | 4 | 1.70 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **71** | 1 Roma St, Central Wagga | 4 | 9.00* | Jun-08* | -3.72 | -1.88 | 1.85 | 1.00 | 1.27 | 0.26 |
| **72** | 9 Brookong Ave, Central Wagga | MA | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **73** | Wagga Wagga Base Hospital, Central Wagga | MA | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **74** | Edward St, Central Wagga | MA | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **75** | 6 Edward St, Central Wagga | MA | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **76** | 332-334 Edward St, Central Wagga | MA | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |
| **77** | 312 Edward St, Central Wagga | | 3.00 | Nov-97 | DESTROYED | | | | | |
| **78** | 2 Dobney Ave, Central Wagga | MA | 3.00 | Nov-97 | DRY | DRY | DRY | DRY | DRY | DRY |

| Piezometer Number | Piezometer Location | Urban Sub catchment | Piezometer Depth | Date Drilled | Average SWL 09/10 | Average SWL 10/11 | Change In SWL | Average EC 09/10 | Average EC 10/11 | Change in EC |
|---|---|---|---|---|---|---|---|---|---|---|
| **79** | Gormly-Emblen Sts roundabout, Central Wagga | MA | 4.40 | Sep-98 | DRY | DRY | DRY | DRY | DRY | DRY |
| **80** | Gormly-Harrison Sts roundabout, Central Wagga | 4 | 6.00 | Sep-98 | -5.17 | -3.27 | 1.90 | 0.95 | 0.83 | -0.12 |
| **81** | 48 Docker St, Central Wagga | MA | 6.80 | Sep-98 | -4.21 | -4.38 | -0.17 | 0.72 | 0.98 | 0.26 |
| **82** | 27 Hardy Ave, Central Wagga | 4 | 2.60 | Sep-98 | DRY | DRY | DRY | DRY | DRY | DRY |
| **83** | 57 Hardy Ave, Central Wagga | 4 | 5.20* | Jun-07* | -5.03 | -5.05 | -0.02 | NETS | NETS | NETS |
| **84** | 2 Sullivan Ave, Central Wagga | 4 | 3.40 | Sep-98 | DRY | -3.33 | -3.33 | NETS | DRY | DRY |
| **85** | 27 Meurant Ave, Central Wagga | 4 | 4.80* | Sep-98 | DRY | -4.38 | -4.38 | NETS | DRY | DRY |
| **86** | 2 Lewisham Ave, Central Wagga | 4 | 7.50 | Sep-98 | -6.16 | -2.39 | 3.77 | 4.21 | 1.64 | -2.57 |
| **87** | 12 Meurant Ave, Central Wagga | 4 | 5.20 | Sep-98 | DRY | -3.75 | -3.75 | NETS | DRY | DRY |
| **88** | 2 Chaston St, Central Wagga | 4 | 10.00* | May-07* | -7.68 | -7.50 | 0.18 | 19.67 | 19.58 | -0.09 |
| **89** | 31 Chaston St, Central Wagga | 4 | 5.50 | Sep-98 | -5.18 | -2.22 | 2.96 | 12.95 | 9.96 | -2.98 |
| **90** | 51 Chaston St, Central Wagga | 4 | 6.60 | Sep-98 | -3.01 | -1.52 | 1.49 | 7.05 | 5.27 | -1.78 |
| **91** | Mount St, Kooringal (shallow) | 5 | 10.60 | Jun-99 | -2.05 | -0.98 | 1.07 | 1.03 | 1.11 | 0.08 |
| **92** | Mount St, Kooringal (deep) | 5 | 27.70 | Jun-99 | -2.14 | -0.87 | 1.27 | 0.98 | 0.98 | 0.00 |
| **93** | Henwood Park, Kooringal (shallow) | 7 | 13.60 | Jun-99 | -12.84 | DRY | DRY | DRY | DRY | DRY |
| **94** | Henwood Park, Kooringal (deep) | 7 | 29.90 | Jun-99 | -16.74 | -16.07 | 0.67 | 1.35 | 1.37 | 0.02 |
| **95** | Henwood Park, Kooringal (shallow) | 7 | 7.90 | Jun-99 | DRY | DRY | DRY | DRY | DRY | DRY |
| **96** | Henwood Park, Kooringal (deep) | 7 | 66.00 | Jun-99 | -25.51 | -24.91 | 0.60 | 1.06 | 1.10 | 0.04 |
| **97** | Opp 22 Amaroo St, Kooringal (shallow) | 7 | 9.30 | Jul-99 | DRY | DRY | DRY | DRY | DRY | DRY |
| **98** | Opp 22 Amaroo St, Kooringal (deep) | 7 | 83.00 | Jul-99 | -52.63 | -51.44 | 1.18 | 1.39 | 1.44 | 0.05 |
| **99** | 29 Hardy Ave, Central Wagga | 4 | 15.00 | Mar-01 | -10.20 | -7.50 | 2.70 | 1.16 | 1.16 | 0.00 |
| **100** | 29 Hardy Ave, Central Wagga | 4 | 31.00 | Mar-01 | -10.21 | -7.51 | 2.71 | 1.16 | 1.10 | -0.06 |
| **101** | 29 Hardy Ave, Central Wagga | 4 | 60.00 | Mar-01 | -10.28 | -7.60 | 2.68 | 1.16 | 0.90 | -0.26 |
| **102** | Cnr Meurant St - Lewisham Ave, Central Wagga | 4 | 15.00 | Mar-01 | -7.40 | -4.25 | 3.15 | 16.83 | 9.43 | -7.40 |
| **103** | Cnr Meurant St - Lewisham Ave, Central Wagga | 4 | 31.50 | Mar-01 | -8.31 | -5.53 | 2.78 | 2.26 | 2.84 | 0.57 |
| **104** | Cnr Meurant St - Lewisham Ave, Central Wagga | 4 | 61.00 | Mar-01 | -8.13 | -5.39 | 2.75 | 0.96 | 4.94 | 3.98 |

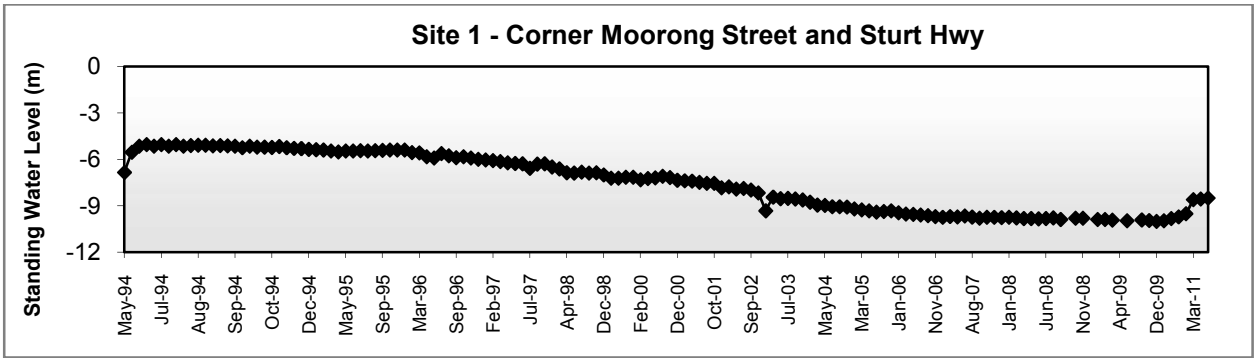
| Piezometer Number | Piezometer Location | Urban Sub catchment | Piezometer Depth | Date Drilled | Average SWL 09/10 | Average SWL 10/11 | Change In SWL | Average EC 09/10 | Average EC 10/11 | Change in EC |
|---|---|---|---|---|---|---|---|---|---|---|
| **105** | Narrung St, Wiradjuri (shallow) | MA | 8.09 | May-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **106** | Narrung St, Wiradjuri (deep) | MA | 17.88 | Mar-99 | -11.93 | -8.66 | 3.27 | 0.92 | 0.71 | -0.21 |
| **107** | Narrung St STW, Wiradjuri (shallow) | MA | 8.13 | May-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **108** | Narrung St STW, Wiradjuri (deep) | MA | 16.00 | Mar-99 | -13.69 | -9.19 | 4.49 | 0.87 | 0.58 | -0.29 |
| **109** | Narrung St STW, Wiradjuri (shallow) | MA | 7.80 | May-94 | DRY | -2.62 | -2.62 | DRY | DRY | DRY |
| **110** | Narrung St STW, Wiradjuri (deep) | MA | 11.49 | Mar-99 | -7.68 | -5.56 | 2.12 | 0.39 | 0.26 | -0.14 |
| **111** | Narrung St STW, Wiradjuri | MA | 7.75 | May-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **112** | Narrung St STW, Wiradjuri | MA | 6.58 | May-94 | DRY | DRY | DRY | DRY | DRY | DRY |
| **113** | Narrung St STW, Wiradjuri (shallow) | MA | 7.87 | May-94 | DRY | -7.03 | -7.03 | DRY | DRY | DRY |
| **114** | Narrung St STW, Wiradjuri (deep) | MA | 16.39 | Mar-99 | -9.62 | -7.57 | 2.05 | 0.80 | 0.78 | -0.02 |
| **115** | Narrung St liquid waste cell, Wiradjuri | MA | 10.20 | Jan-95 | DRY | -7.79 | -7.79 | DRY | DRY | DRY |
| **116** | Narrung St liquid waste cell, Wiradjuri | MA | 15.78 | Mar-99 | -11.24 | -8.85 | 2.38 | 1.87 | 1.40 | -0.47 |
| **117** | Billagha St, Wiradjuri | | 6.22 | Jan-95 | DESTROYED | | | | | |
| **118** | Billagha St, Wiradjuri | MA | 15.96 | Mar-99 | -12.28 | -8.76 | 3.51 | 1.13 | 1.16 | 0.02 |
| **119** | Narrung St sweeper waste dump, Wiradjuri | | 9.60 | May-94 | DESTROYED | | | | | |
| **120** | Narrung St sweeper waste dump, Wiradjuri | MA | 16.07 | Mar-99 | -12.06 | -9.48 | 2.58 | 0.98 | 1.02 | 0.04 |
| **121** | Narrung St, Wiradjuri | MA | 16.09 | Mar-99 | -12.55 | -9.18 | 3.37 | NA | NA | NA |
| **122** | 59 Galing Pl, Wiradjuri | MA | 19.38 | Aug-01 | -15.44 | -11.59 | 3.85 | 1.84 | 1.74 | -0.10 |
| **123** | 33 Galing Pl, Wiradjuri | MA | 17.48 | Aug-01 | -15.32 | -11.39 | 3.92 | 1.32 | 1.30 | -0.02 |
| **124** | Wiradjuri Cres, Wiradjuri | MA | 16.39 | Aug-01 | -15.18 | -10.41 | 4.76 | 1.72 | 1.60 | -0.12 |
| **125** | Cnr Narrung St - Wiradjuri Reserve, Wiradjuri | MA | 18.39 | Aug-01 | -13.24 | -10.44 | 2.80 | 0.34 | 0.35 | 0.01 |
| **126** | Billagha St, Wiradjuri | MA | 19.13 | Aug-01 | -14.63 | -10.68 | 3.95 | 0.93 | 0.85 | -0.08 |
| **127** | Toll Group, Wiradjuri | MA | 13.78 | Aug-01 | DRY | -1.60 | -1.60 | DRY | DRY | DRY |
| **128** | 9 College Ave, Turvey Park | 3 | 10.20* | May-07* | -9.32 | -6.88 | 2.44 | 3.77 | 2.23 | -1.54 |
| **129** | Lakehaven Dr, Lake Albert (shallow) | 7 | 5.91 | Oct-92 | DRY | DRY | DRY | DRY | DRY | DRY |
| **130** | Lakehaven Dr, Lake Albert (deep) | 7 | 15.00* | May-07* | -14.11 | -11.52 | 2.60 | 6.57 | 8.56 | 1.99 |

| Piezometer Number | Piezometer Location | Urban Sub catchment | Piezometer Depth | Date Drilled | Average SWL 09/10 | Average SWL 10/11 | Change In SWL | Average EC 09/10 | Average EC 10/11 | Change in EC |
|---|---|---|---|---|---|---|---|---|---|---|
| **131** | Cnr Craft - Graham Sts, Lake Albert (shallow) | 7 | 5.13 | Oct-92 | DRY | DRY | DRY | DRY | DRY | DRY |
| **132** | Cnr Craft - Graham Sts, Lake Albert (deep) | 7 | 12.30 | Oct-92 | -8.79 | -7.09 | 1.70 | 3.25 | 3.42 | 0.17 |
| **133** | Cnr Craft - Bouquet Sts, Lake Albert (shallow) | 7 | 5.84 | Oct-92 | DRY | DRY | DRY | DRY | DRY | DRY |
| **134** | Cnr Craft - Bouquet Sts, Lake Albert (deep) | 7 | 11.96 | Oct-92 | DRY | DRY | DRY | DRY | DRY | DRY |
| **135** | Cnr Main St - Gregadoo Rd, Lake Albert (shallow) | 7 | 5.04 | Oct-92 | -4.38 | -4.26 | 0.12 | 0.26 | 0.23 | -0.03 |
| **136** | Cnr Main St - Gregadoo Rd, Lake Albert (deep) | 7 | 12.01 | Oct-92 | DRY | DRY | DRY | DRY | DRY | DRY |
| **137** | 10 Gregadoo Rd, Lake Albert (shallow) | | 4.70 | Oct-92 | DESTROYED | | | | | |
| **138** | 10 Gregadoo Rd, Lake Albert (deep) | | 12.20 | Oct-92 | DESTROYED | | | | | |
| **139** | Redbank Rd, Lake Albert (shallow) | 7 | 5.87 | Oct-92 | DRY | -2.86 | -2.86 | NETS | DRY | DRY |
| **140** | Redbank Rd, Lake Albert (deep) | 7 | 12.40 | Oct-92 | DRY | -10.96 | -10.96 | NETS | DRY | DRY |
| **141** | Travelling stock reserve, Bomen | | 16.04 | Jun-00 | DESTROYED | | | | | |
| **142** | Red Hill Rd, Glenfield | 3 | 25.60 | Apr-02 | -23.47 | -21.85 | 1.62 | NA | NA | NA |
| **143** | 6930 Olympic Hwy, Kapooka | 2 | 42.00 | Apr-02 | DRY | DRY | DRY | DRY | DRY | DRY |
| **144** | Cnr Narrung - Billagha Sts, Wiradjuri | MA | 15.50 | Nov-06 | -11.78 | -9.09 | 2.69 | 1.05 | 0.99 | -0.06 |
| **145** | Wiradjuri Reserve, Wiradjuri | MA | 14.00 | Nov-06 | -7.33 | -5.96 | 1.37 | 0.12 | 0.24 | 0.13 |
| **146** | Orana Pl, Wiradjuri | MA | 19.50 | Nov-06 | -15.34 | -11.62 | 3.73 | 1.94 | 1.51 | -0.43 |
| **147** | South Campus, Turvey Park | 3 | 3.30 | unknown | -1.01 | -0.50 | 0.51 | 13.97 | 16.67 | 2.69 |
| **148** | Bomen Industrial Sewage Treatment Facility | 0 | 13.20 | unknown | -5.53 | -4.27 | 1.26 | 2.26 | 1.68 | -0.57 |
| **149** | BISTF, Bomen | 0 | 14.20 | unknown | -0.35 | 0.21 | 0.56 | 2.82 | 2.90 | 0.07 |
| **150** | BISTF, Bomen | 0 | 13.10 | unknown | -4.68 | -3.30 | 1.38 | 1.82 | 1.12 | -0.71 |
| **151** | BISTF, Bomen | 0 | unknown | unknown | -1.71 | -0.98 | 0.72 | 4.64 | 3.21 | -1.44 |
| **152** | 1 Bedervale St, Bourkelands | 3 | 14.70 | Jun-07 | -6.35 | -6.71 | -0.36 | 1.20 | 0.73 | -0.46 |
| **153** | Cnr Burgan - Indigo Dr, Glenoak | 7 | 15.00 | May-07 | DRY | -12.48 | -12.48 | DRY | DRY | DRY |
| **154** | 19 Mirbelia Dr, Glenoak | 7 | 13.00 | Jun-07 | -7.54 | -4.69 | 2.85 | 0.57 | 0.49 | -0.07 |
| **155** | Cnr Indigo Dr - Holbrook Rd, Springvale | 7 | 10.20 | Jun-07 | -8.98 | -7.24 | 1.74 | 0.81 | 0.67 | -0.13 |
| **156** | Cnr Mirbelia Dr - Holbrook Rd, Springvale | 7 | 15.20 | Jun-07 | DRY | DRY | DRY | DRY | DRY | DRY |

| Piezometer Number | Piezometer Location | Urban Sub catchment | Piezometer Depth | Date Drilled | Average SWL 09/10 | Average SWL 10/11 | Change In SWL | Average EC 09/10 | Average EC 10/11 | Change in EC |
|---|---|---|---|---|---|---|---|---|---|---|
| **157** | Holbrook Rd, Springvale | 7 | 15.00 | May-07 | -10.45 | -8.38 | 2.08 | 5.36 | 5.05 | -0.31 |
| **158** | Stringybark Pl, Springvale | 7 | 15.00 | Jun-07 | DRY | DRY | DRY | DRY | DRY | DRY |
| **159** | 6 Yarran Pl, Springvale | 7 | 10.00 | May-07 | -6.39 | -3.50 | 2.88 | 0.80 | 0.64 | -0.16 |
| **160** | 3 Mallee Rd, Springvale | 7 | 15.30 | Jun-07 | DRY | DRY | DRY | DRY | DRY | DRY |
| **161** | 1 Lloyd Rd, Springvale | 7 | 8.60 | May-07 | -5.67 | -4.58 | 1.09 | 4.72 | 3.87 | -0.85 |
| **162** | 39 Gregadoo Rd, Lake Albert | 7 | 9.00 | May-07 | -6.30 | -4.58 | 1.72 | 4.25 | 3.51 | -0.75 |
| **163** | Stringybark Creek Wetland, Gregadoo Rd, L.A | 7 | 8.50 | unknown | DRY | DRY | DRY | DRY | DRY | DRY |
| **164** | Adjacent to Murrumbidgee River, Narrung Street | MA | 20.00 | Dec-07 | -11.44 | -9.24 | 2.20 | 0.13 | 0.16 | 0.03 |
| **165** | Travers St at entrance of Narrung St, Wiradjuri | MA | 13.00 | Dec-07 | -12.26 | -10.12 | 2.14 | 0.19 | 0.26 | 0.06 |
| **166** | Travers St behind 10 Incarnie Cres, Wiradjuri | MA | 14.80 | Dec-07 | DRY | -11.52 | -11.52 | DRY | DRY | DRY |
| **167** | 56 Cummins Road, Lake Albert | 8 | 11.00 | Jun-08 | DRY | DRY | DRY | DRY | DRY | DRY |
| **168** | 378 Bakers Ln., Lake Albert | 8 | 13.50 | Jun-08 | -12.11 | -12.02 | 0.10 | 2.47 | 2.91 | 0.44 |
| **169** | 334 Bakers Ln., Lake Albert | 8 | 13.50 | Jun-08 | -8.52 | -7.98 | 0.54 | 10.59 | 10.93 | 0.34 |
| **170** | 1 Mitchell Road, Lake Albert | 7 | 13.00 | Jun-08 | -12.70 | -12.34 | 0.37 | 4.52 | 3.50 | -1.01 |
| **171** | 124-156 Copland street, East Wagga Wagga | MA | 8.50 | Jun-08 | DRY | DRY | DRY | DRY | DRY | DRY |
| **172** | Rear of 5-6 Kenny Place, Tolland | | 9.50 | Jun-08 | DESTROYED | | | | | |
| **173** | Rear of 28 Bandera Avenue, Glenfield Park | 3 | 8.00 | Jun-08 | DRY | DRY | DRY | DRY | DRY | DRY |
| **174** | Rear of 48 Paldi Cres, Glenfield Park | 2 | 14.00 | Jun-08 | -10.54 | -10.37 | 0.17 | 12.80 | 12.73 | -0.06 |
| **175** | Rear of 12 Birri Place, Glenfield Park | 2 | 15.00 | Jun-08 | -9.99 | -8.59 | 1.40 | 2.45 | 2.38 | -0.06 |
| **176** | 39 Meurant Avenue (on Emblem Street) | 4 | 9.00 | Jun-08 | -6.65 | -3.74 | 2.92 | 12.35 | 11.99 | -0.37 |
| **177** | 47 Gormly Avenue (on Emblem St) | MA | 5.50 | Jun-08 | DRY | DRY | DRY | DRY | DRY | DRY |
| **178** | Anderson Oval, Tolland | 3 | 7.30 | Jun-10 | NEW | -2.58 | NEW | NEW | 0.86 | 0.86 |
| **179** | Anderson Oval, Tolland | 3 | 7.50 | Jun-10 | NEW | -0.43 | NEW | NEW | 5.77 | 5.77 |
| **180** | Plumpton Rd, Tatton | 7 | 6.80 | Jun-10 | NEW | DRY | NEW | DRY | DRY | DRY |
| **181** | Kimberley Dr, Tatton | 7 | 10.00 | Jun-10 | NEW | -8.32 | NEW | NEW | 6.13 | 6.13 |
| **182** | 2 Stirling Blvd, Tatton | 7 | 12.00 | Jun-10 | NEW | -2.30 | NEW | NEW | 1.08 | 1.08 |

| Piezometer Number | Piezometer Location | Urban Sub catchment | Piezometer Depth | Date Drilled | Average SWL 09/10 | Average SWL 10/11 | Change In SWL | Average EC 09/10 | Average EC 10/11 | Change in EC |
|---|---|---|---|---|---|---|---|---|---|---|
| **183** | 46 Stirling Blvd, Tatton | 7 | 11.70 | Jun-10 | NEW | -10.89 | NEW | DRY | 8.71 | 8.71 |
| **184** | 72 Stirling Blvd, Tatton | 7 | 5.80 | Jun-10 | NEW | DRY | NEW | DRY | DRY | DRY |
| **185** | 43A Berembee St, Bourkelands | 3 | 6.30 | Jun-10 | NEW | DRY | NEW | DRY | DRY | DRY |
| **186** | Wilgoma St, Bourkelands | 3 | 8.60 | Jun-10 | NEW | -2.59 | NEW | NEW | 0.82 | 0.82 |
| **187** | Yarrawah Cres, Bourkelands | 3 | 9.00 | Jun-10 | NEW | -2.05 | NEW | NEW | 0.74 | 0.74 |
| **188** | Audervale Cl, Bourkelands | 3 | 5.00 | Jun-10 | NEW | -2.53 | NEW | NEW | 0.99 | 0.99 |
| **189** | 46 Riverview Dr, Riverview | 1 | 5.70 | Jun-10 | NEW | -3.65 | NEW | NEW | 2.20 | 2.20 |
| **190** | Roach Rd, Riverview | 1 | 9.20 | Jun-10 | NEW | -7.15 | NEW | NEW | 6.46 | 6.46 |
| **191** | 110 Riverview Dr, Riverview | 1 | 5.00 | Jun-10 | NEW | -3.32 | NEW | NEW | 0.50 | 0.50 |
| **192** | Exhibition Centre, East Wagga Wagga | 6 | 10.50 | Jun-10 | NEW | -9.24 | NEW | NEW | 1.22 | |
| **193** | Kooringal Rd, Kooringal | 6 | 8.00 | Jun-10 | NEW | DRY | NEW | DRY | DRY | DRY |
| **194** | Copeland St, East Wagga Wagga | 5 | 12.00 | Jun-10 | NEW | DESTROYED | | | | |
| **195** | Macintosh Place, Kooringal | 5 | 6.00 | Jun-10 | NEW | DRY | NEW | DRY | DRY | DRY |
| **196** | Showground, Central Wagga | 4 | 14.60 | Jun-10 | NEW | -3.36 | NEW | NEW | 1.57 | 1.57 |
| **1/1** | Emblen Park, Central Wagga | 4 | 15.00 | Unknown | -6.60 | -3.88 | 2.71 | 1.29 | 1.93 | 0.64 |
| **1/2** | Emblen Park, Central Wagga | 4 | 30 | Unknown | -6.47 | -4.01 | 2.46 | 1.86 | 1.86 | -0.01 |
| **1/3** | Emblen Park, Central Wagga | 4 | 60.00 | Unknown | -6.22 | -3.96 | 2.26 | 1.33 | 1.19 | -0.14 |
| **Bore 9** | 63 Gormly Ave, Central Wagga | MA | 48.8 | Unknown | -11.87 | -15.96 | -4.08 | 0.52 | 0.53 | 0.02 |
| **H1** | Cnr Clark - Mate Sts, Humula | T | 4.50 | Unknown | DRY | -1.05 | -1.05 | DRY | DRY | DRY |
| **H2** | Cnr Boundary Rd - Mount St, Humula | T | 4.20 | Unknown | DRY | -1.41 | -1.41 | DRY | DRY | DRY |
| **T1** | 26 Centenary Ave, Tarcutta | T | unknown | Unknown | -12.00 | -9.46 | 2.54 | 1.37 | 1.41 | 0.04 |
| **T2** | Sydney St, Tarcutta | T | unknown | Unknown | -9.46 | -7.07 | 2.40 | 1.32 | 1.64 | 0.32 |
| **T3** | Cnr Cynthia - Young Sts, Tarcutta | T | 16.00 | Unknown | -15.64 | -15.72 | -0.08 | NETS | NETS | NETS |
| **T4** | Cnr Argent - Spring Sts, Tarcutta | T | 19.50 | Unknown | -19.34 | DRY | DRY | DRY | DRY | DRY |
| **T5** | Sydney St, Tarcutta | T | 5.75 | Unknown | DRY | -3.01 | -3.01 | DRY | DRY | DRY |
| **T6** | Breaden Sports Ground, Tarcutta | T | 4.15 | Unknown | -3.90 | -1.23 | -3.01 | 1.01 | 0.68 | -0.33 |

# APPENDIX D:
# SWL - HISTORICAL HYDROGRAPHS


Site 1 - Corner Moorong Street and Sturt Hwy
Standing Water Level (m)
0
-3
-6
-9
-12
May-94
Jul-94
Aug-94
Sep-94
Oct-94
Dec-94
May-95
Sep-95
Mar-96
Sep-96
Feb-97
Jul-97
Apr-98
Dec-98
Feb-00
Dec-00
Oct-01
Sep-02
Jul-03
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Mar-05
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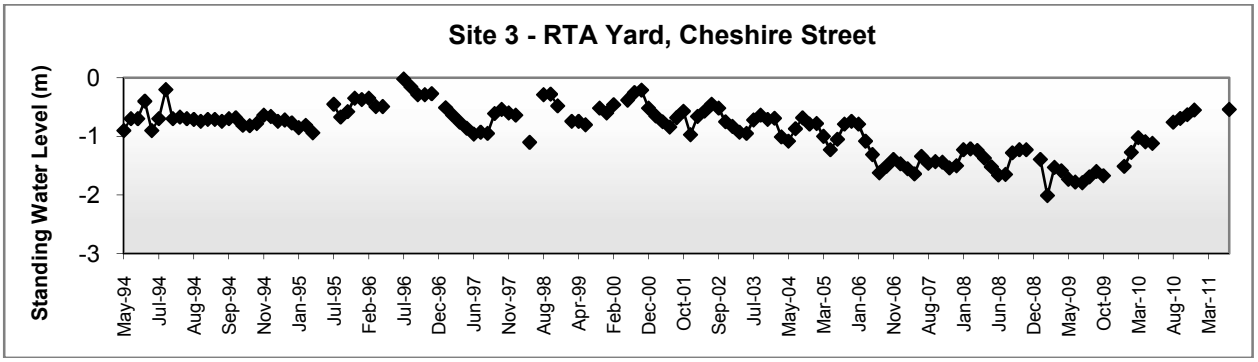
Nov-06
Aug-07
Jan-08
Jun-08
Nov-08
Apr-09
Dec-09
Mar-11


Site 3 - RTA Yard, Cheshire Street
Standing Water Level (m)
0
-1
-2
-3
May-94
Jul-94
Aug-94
Sep-94
Nov-94
Jan-95
Jul-95
Feb-96
Jul-96
Dec-96
Jun-97
Nov-97
Aug-98
Apr-99
Feb-00
Dec-00
Oct-01
Sep-02
Jul-03
May-04
Mar-05
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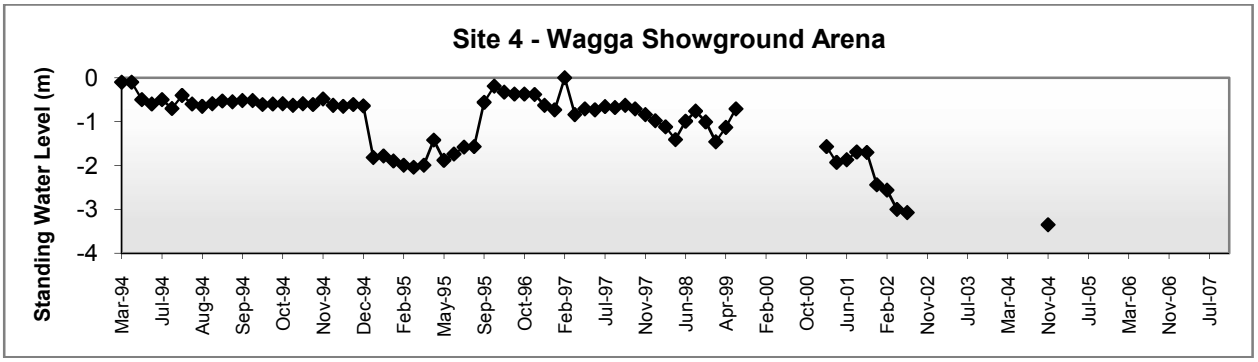
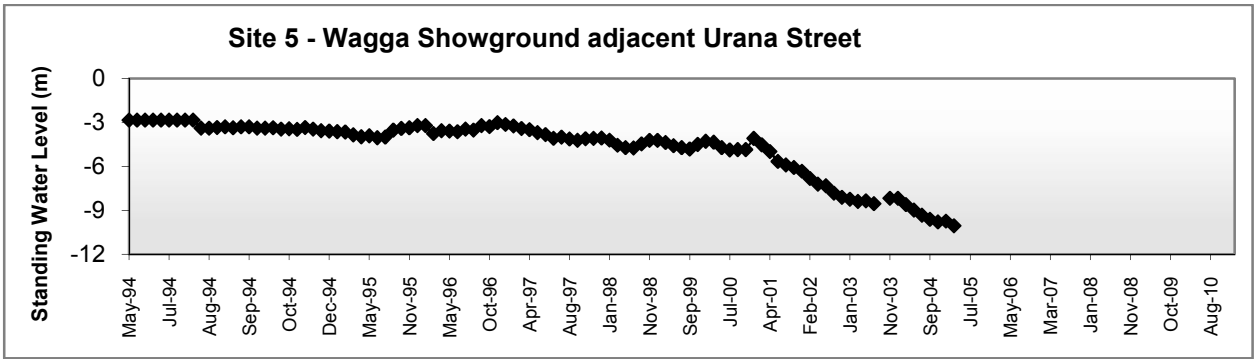
Nov-06
Aug-07
Jan-08
Jun-08
Dec-08
May-09
Oct-09
Mar-10
Aug-10
Mar-11


Site 4 - Wagga Showground Arena
Standing Water Level (m)
0
-1
-2
-3
-4
Mar-94
Jul-94
Aug-94
Sep-94
Oct-94
Nov-94
Dec-94
Feb-95
May-95
Sep-95
Oct-96
Feb-97
Jul-97
Nov-97
Jun-98
Apr-99
Feb-00
Oct-00
Jun-01
Feb-02
Nov-02
Jul-03
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07


Site 5 - Wagga Showground adjacent Urana Street
Standing Water Level (m)
0
-3
-6
-9
-12
May-94
Jul-94
Aug-94
Sep-94
Oct-94
Dec-94
May-95
Nov-95
May-96
Oct-96
Apr-97
Aug-97
Jan-98
Nov-98
Sep-99
Jul-00
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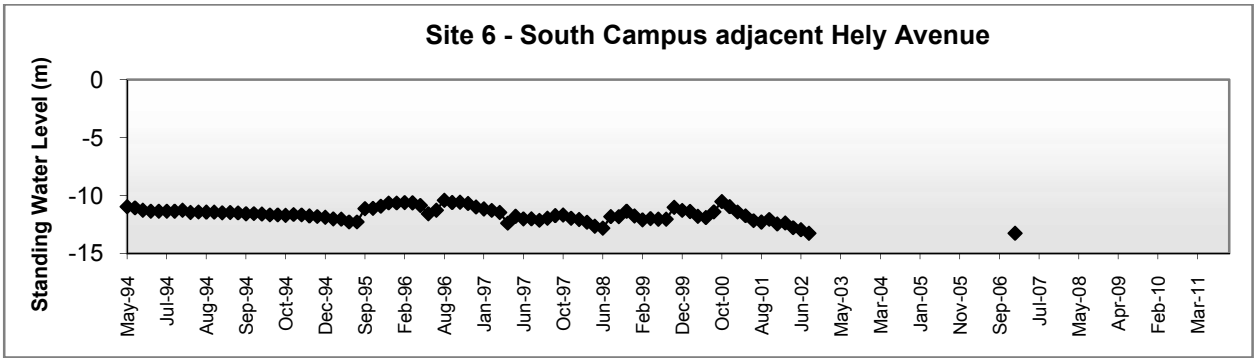
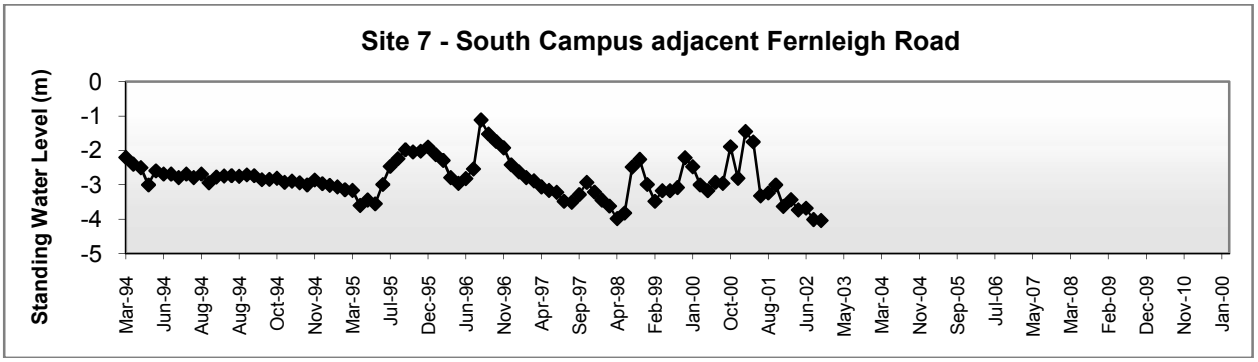
May-06
Mar-07
Jan-08
Nov-08
Oct-09
Aug-10


Site 6 - South Campus adjacent Hely Avenue
Standing Water Level (m)
0
-5
-10
-15
May-94
Jul-94
Aug-94
Sep-94
Oct-94
Dec-94
Sep-95
Feb-96
Aug-96
Jan-97
Jun-97
Oct-97
Jun-98
Feb-99
Dec-99
Oct-00
Aug-01
Jun-02
May-03
Mar-04
Jan-05
Nov-05
Sep-06
Jul-07
May-08
Apr-09
Feb-10
Mar-11


Site 7 - South Campus adjacent Fernleigh Road
Standing Water Level (m)
0
-1
-2
-3
-4
-5
Mar-94
Jun-94
Aug-94
Aug-94
Oct-94
Nov-94
Mar-95
Jul-95
Dec-95
Jun-96
Nov-96
Apr-97
Sep-97
Apr-98
Feb-99
Jan-00
Oct-00
Aug-01
Jun-02
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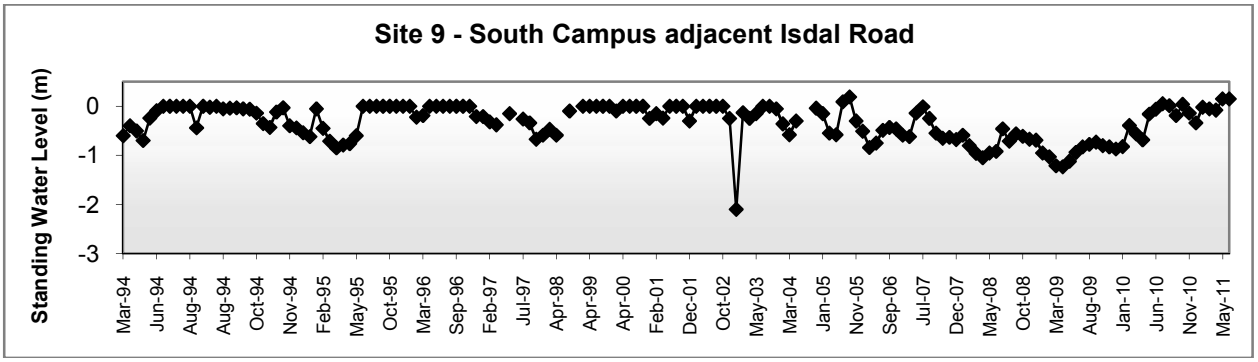
Sep-05
Jul-06
May-07
Mar-08
Feb-09
Dec-09
Nov-10
Jan-00


Site 9 - South Campus adjacent Isdal Road
Standing Water Level (m)
0
-1
-2
-3
Mar-94
Jun-94
Aug-94
Aug-94
Oct-94
Nov-94
Feb-95
May-95
Oct-95
Mar-96
Sep-96
Feb-97
Jul-97
Apr-98
Apr-99
Apr-00
Feb-01
Dec-01
Oct-02
May-03
Mar-04
Jan-05
Nov-05
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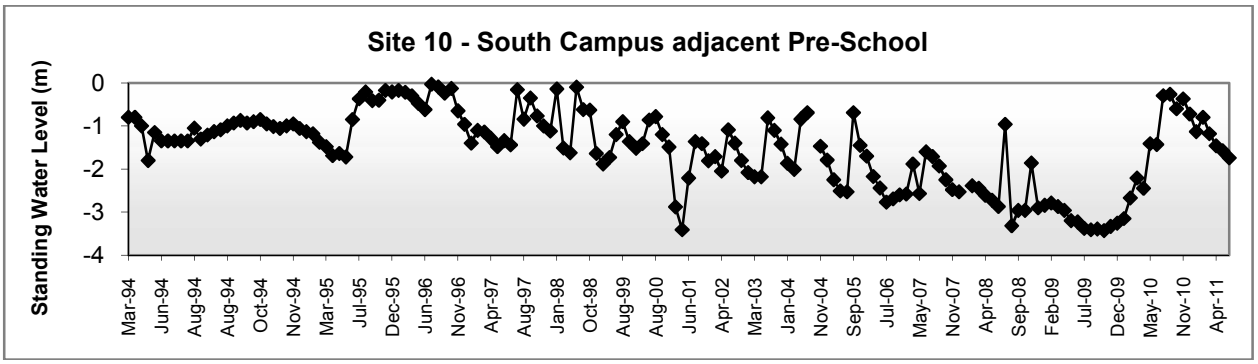
May-08
Oct-08
Mar-09
Aug-09
Jan-10
Jun-10
Nov-10
May-11


Site 10 - South Campus adjacent Pre-School
Standing Water Level (m)
0
-1
-2
-3
-4
Mar-94
Jun-94
Aug-94
Aug-94
Oct-94
Nov-94
Mar-95
Jul-95
Dec-95
Jun-96
Nov-96
Apr-97
Aug-97
Jan-98
Oct-98
Aug-99
Aug-00
Jun-01
Apr-02
Mar-03
Jan-04
Nov-04
Sep-05
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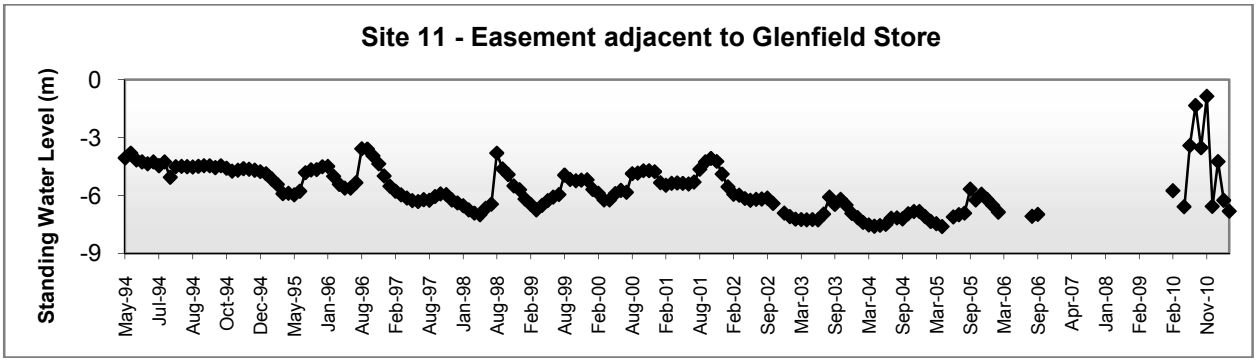
May-07
Nov-07
Apr-08
Sep-08
Feb-09
Jul-09
Dec-09
May-10
Nov-10
Apr-11


Site 11 - Easement adjacent to Glenfield Store
Standing Water Level (m)
0
-3
-6
-9
May-94
Jul-94
Aug-94
Oct-94
Dec-94
May-95
Jan-96
Aug-96
Feb-97
Aug-97
Jan-98
Aug-98
Feb-99
Aug-99
Feb-00
Aug-00
Feb-01
Aug-01
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Sep-02
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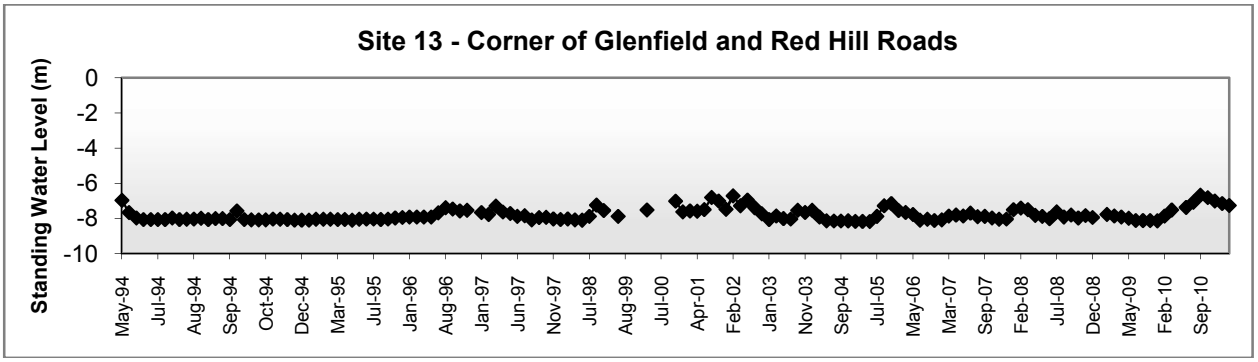
Feb-10
Nov-10


Site 13 - Corner of Glenfield and Red Hill Roads
Standing Water Level (m)
0
-2
-4
-6
-8
-10
May-94
Jul-94
Aug-94
Sep-94
Oct-94
Dec-94
Mar-95
Jul-95
Jan-96
Aug-96
Jan-97
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Jul-98
Aug-99
Jul-00
Apr-01
Feb-02
Jan-03
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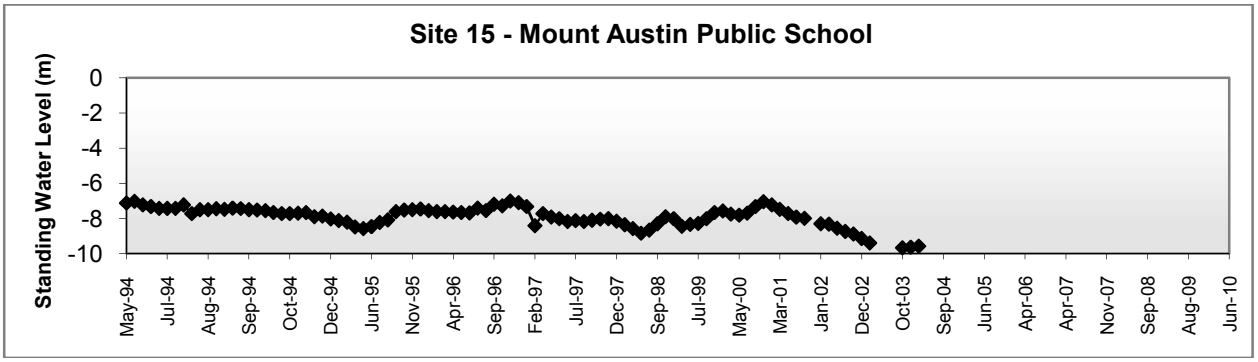
Feb-08
Jul-08
Dec-08
May-09
Feb-10
Sep-10


Site 15 - Mount Austin Public School
Standing Water Level (m)
0
-2
-4
-6
-8
-10
May-94
Jul-94
Aug-94
Sep-94
Oct-94
Dec-94
Jun-95
Nov-95
Apr-96
Sep-96
Feb-97
Jul-97
Dec-97
Sep-98
Jul-99
May-00
Mar-01
Jan-02
Dec-02
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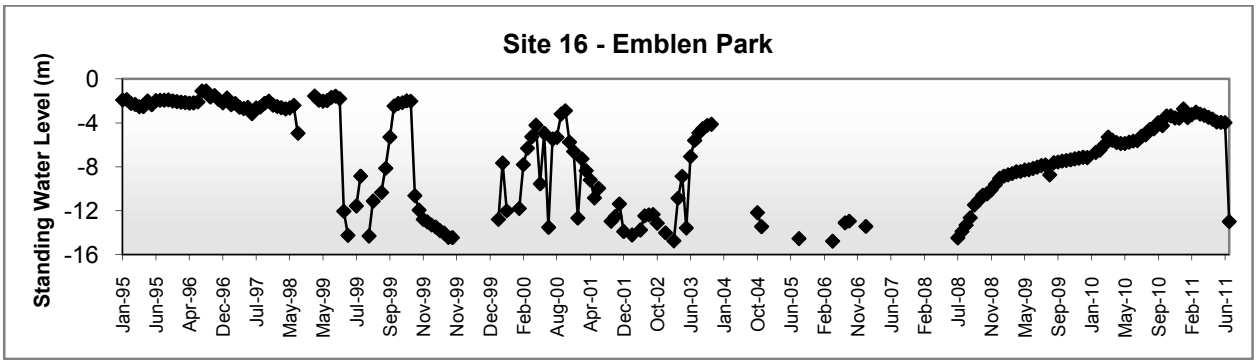
Apr-07
Nov-07
Sep-08
Aug-09
Jun-10


Site 16 - Emblen Park
Standing Water Level (m)
0
-4
-8
-12
-16
Jan-95
Jun-95
Apr-96
Dec-96
Jul-97
May-98
May-99
Jul-99
Sep-99
Nov-99
Nov-99
Dec-99
Feb-00
Aug-00
Apr-01
Dec-01
Oct-02
Jun-03
Jan-04
Oct-04
Jun-05
Feb-06
Nov-06
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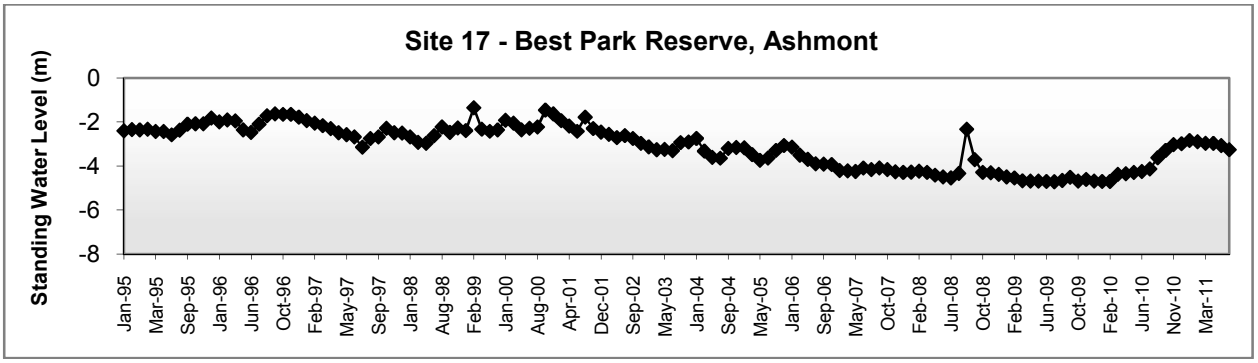
May-09
Sep-09
Jan-10
May-10
Sep-10
Feb-11
Jun-11


Site 17 - Best Park Reserve, Ashmont
Standing Water Level (m)
0
-2
-4
-6
-8
Jan-95
Mar-95
Sep-95
Jan-96
Jun-96
Oct-96
Feb-97
May-97
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Aug-98
Feb-99
Jan-00
Aug-00
Apr-01
Dec-01
Sep-02
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Jan-04
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May-05
Jan-06
Sep-06
May-07
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Feb-08
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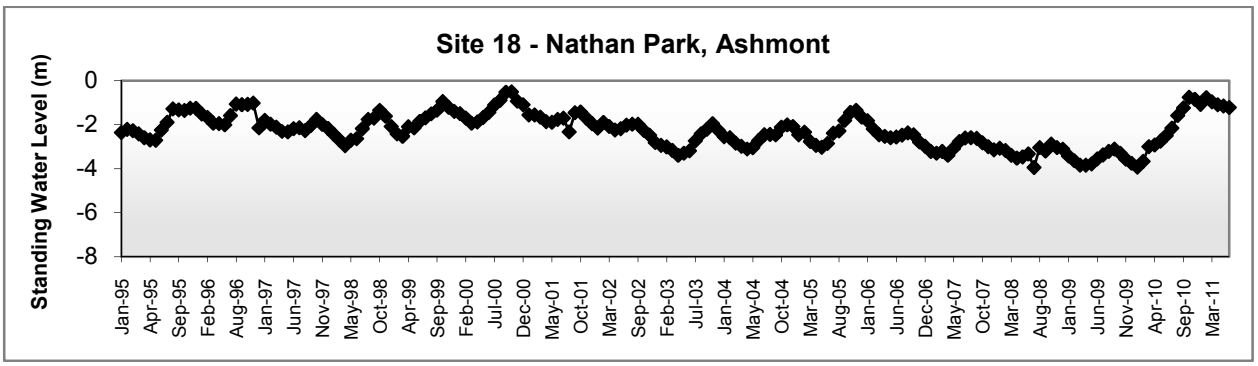
Feb-09
Jun-09
Oct-09
Feb-10
Jun-10
Nov-10
Mar-11


Site 18 - Nathan Park, Ashmont
Standing Water Level (m)
0
-2
-4
-6
-8
Jan-95
Apr-95
Sep-95
Feb-96
Aug-96
Jan-97
Jun-97
Nov-97
May-98
Oct-98
Apr-99
Sep-99
Feb-00
Jul-00
Dec-00
May-01
Oct-01
Mar-02
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Feb-03
Jul-03
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Mar-05
Aug-05
Jan-06
Jun-06
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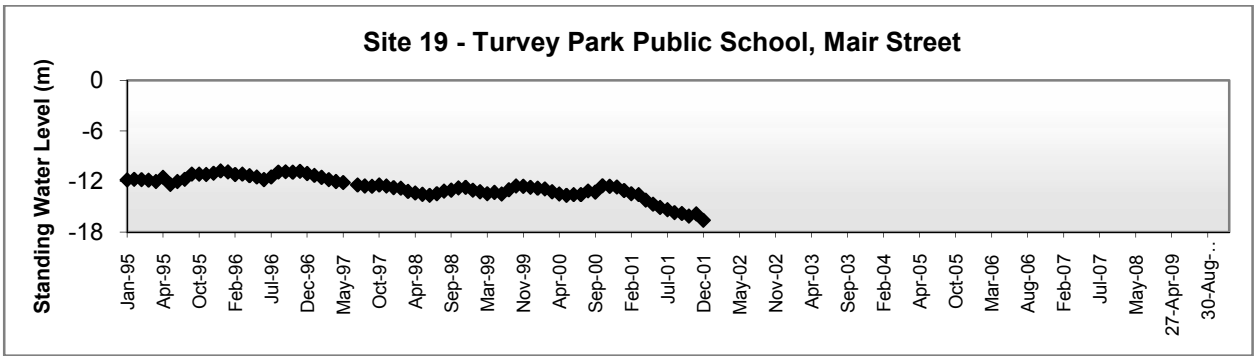
Jan-09
Jun-09
Nov-09
Apr-10
Sep-10
Mar-11


Site 19 - Turvey Park Public School, Mair Street
Standing Water Level (m)
0
-6
-12
-18
Jan-95
Apr-95
Oct-95
Feb-96
Jul-96
Dec-96
May-97
Oct-97
Apr-98
Sep-98
Mar-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Nov-02
Apr-03
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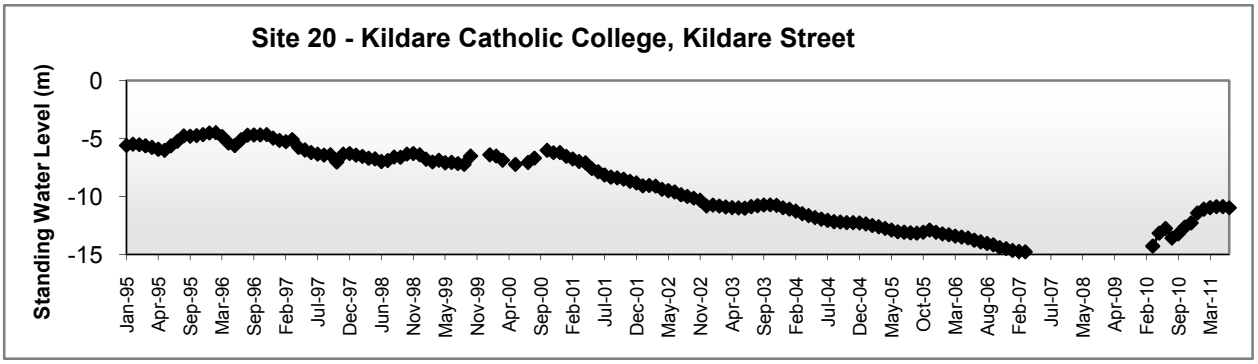
Jul-07
May-08
27-Apr-09
30-Aug-...


Site 20 - Kildare Catholic College, Kildare Street
Standing Water Level (m)
0
-5
-10
-15
Jan-95
Apr-95
Sep-95
Mar-96
Sep-96
Feb-97
Jul-97
Dec-97
Jun-98
Nov-98
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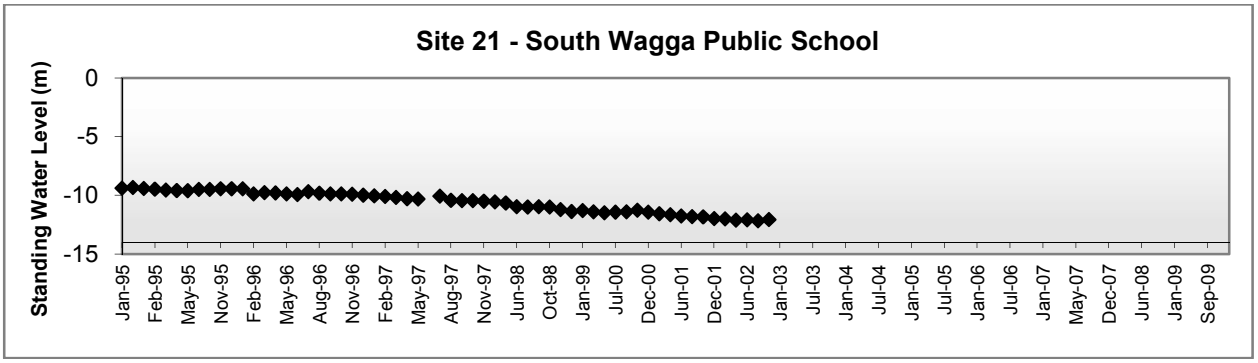
Mar-11


Site 21 - South Wagga Public School
Standing Water Level (m)
0
-5
-10
-15
Jan-95
Feb-95
May-95
Nov-95
Feb-96
May-96
Aug-96
Nov-96
Feb-97
May-97
Aug-97
Nov-97
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Jan-03
Jul-03
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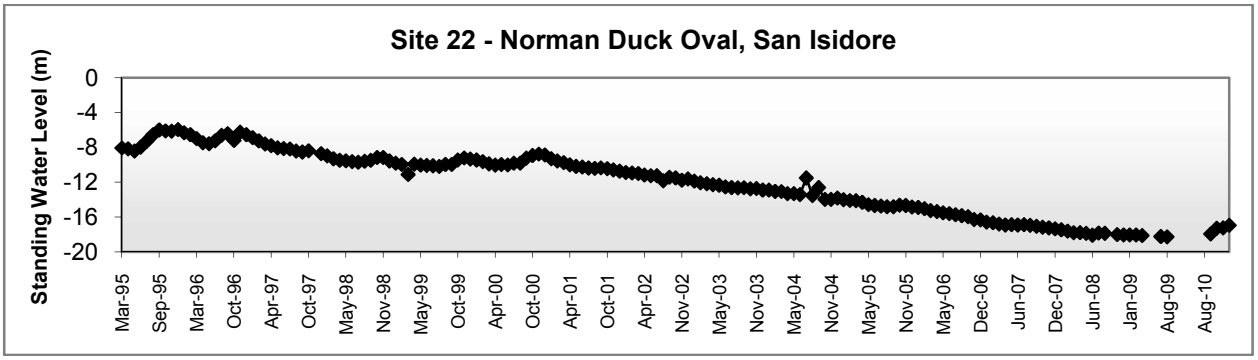
Jun-08
Jan-09
Sep-09


Site 22 - Norman Duck Oval, San Isidore
Standing Water Level (m)
0
-4
-8
-12
-16
-20
Mar-95
Sep-95
Mar-96
Oct-96
Apr-97
Oct-97
May-98
Nov-98
May-99
Oct-99
Apr-00
Oct-00
Apr-01
Oct-01
Apr-02
Nov-02
May-03
Nov-03
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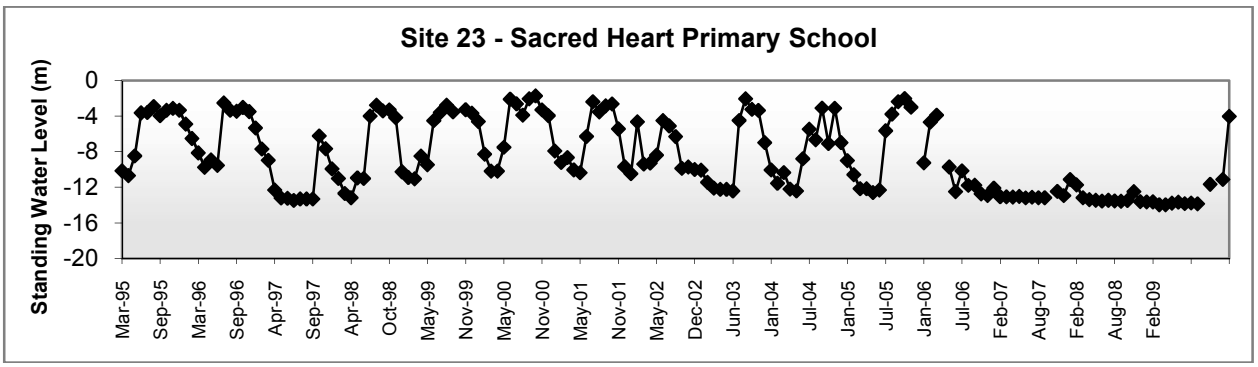
Jan-09
Aug-09
Aug-10


Site 23 - Sacred Heart Primary School
Standing Water Level (m)
0
-4
-8
-12
-16
-20
Mar-95
Sep-95
Mar-96
Sep-96
Apr-97
Sep-97
Apr-98
Oct-98
May-99
Nov-99
May-00
Nov-00
May-01
Nov-01
May-02
Dec-02
Jun-03
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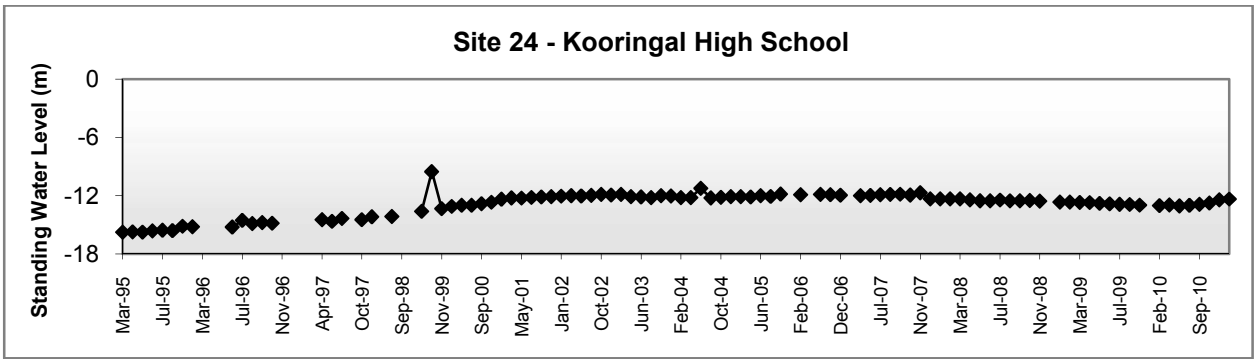
Aug-07
Feb-08
Aug-08
Feb-09


Site 24 - Kooringal High School
Standing Water Level (m)
0
-6
-12
-18
Mar-95
Jul-95
Mar-96
Jul-96
Nov-96
Apr-97
Oct-97
Sep-98
Nov-99
Sep-00
May-01
Jan-02
Oct-02
Jun-03
Feb-04
Oct-04
Jun-05
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Jul-08
Nov-08
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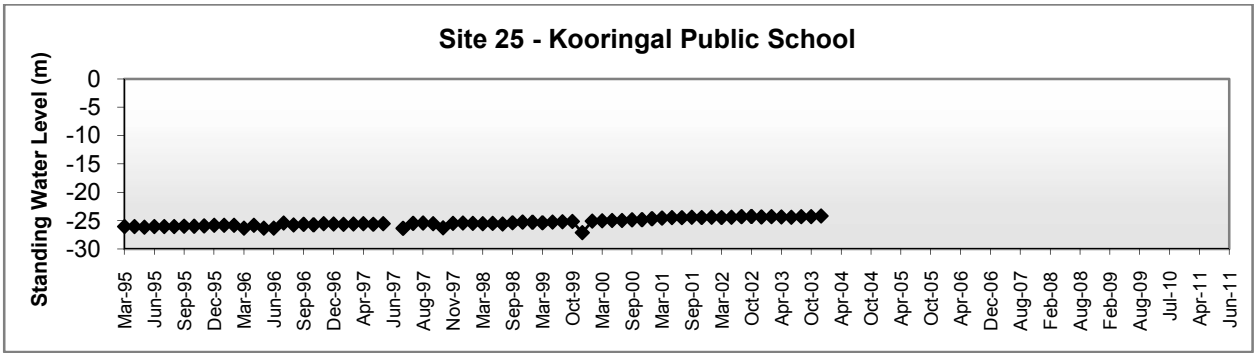
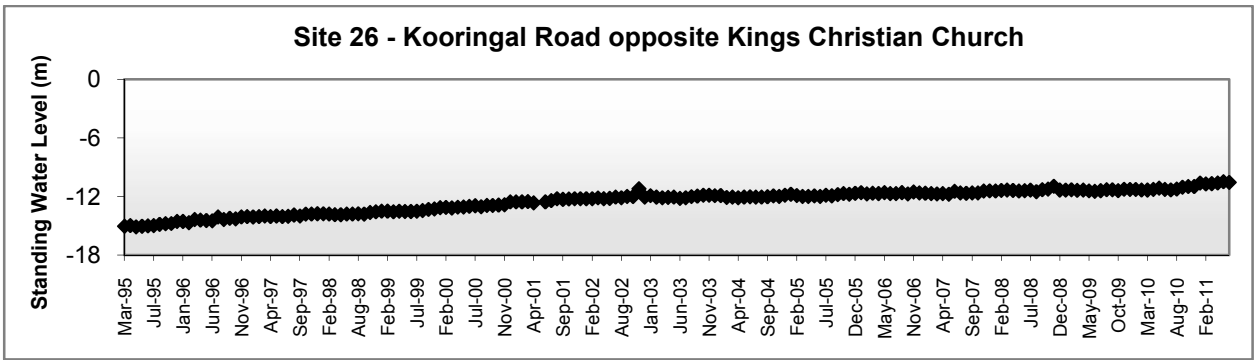
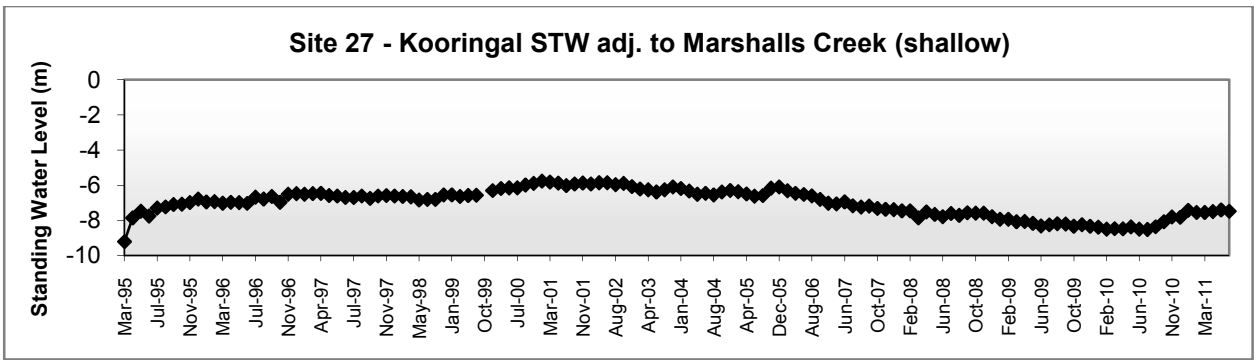
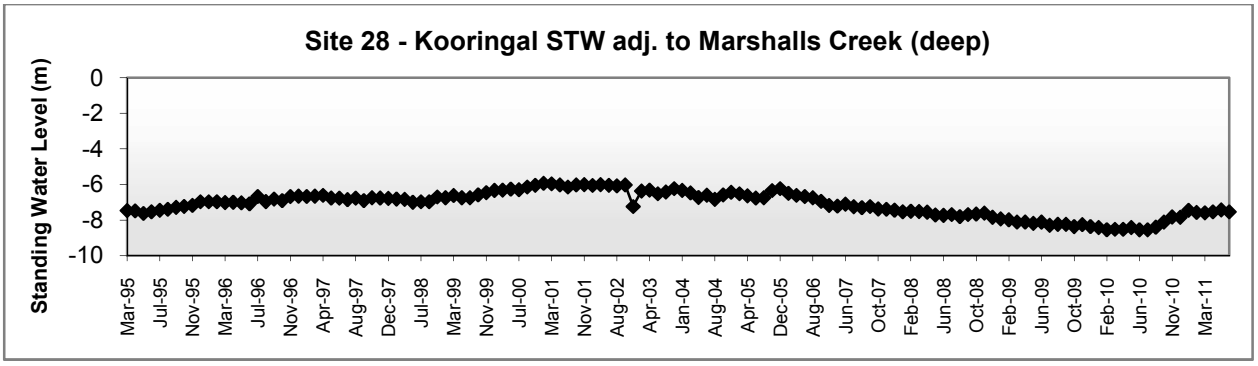
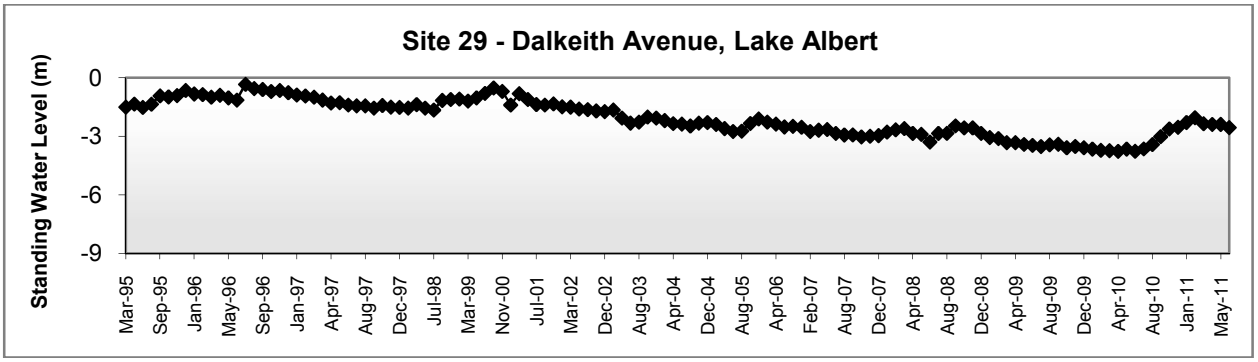
Jul-09
Feb-10
Sep-10

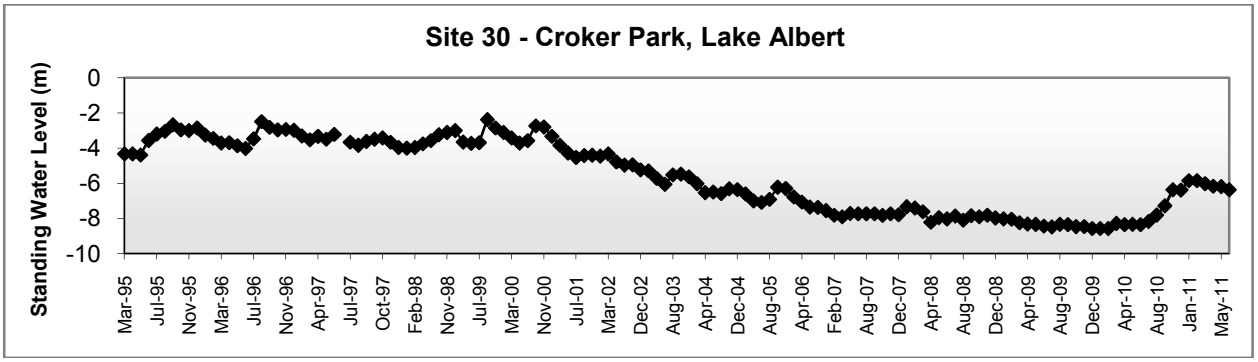

Site 25 - Kooringal Public School
Standing Water Level (m)
0
-5
-10
-15
-20
-25
-30
Mar-95
Jun-95
Sep-95
Dec-95
Mar-96
Jun-96
Sep-96
Dec-96
Apr-97
Jun-97
Aug-97
Nov-97
Mar-98
Sep-98
Mar-99
Oct-99
Mar-00
Sep-00
Mar-01
Sep-01
Mar-02
Oct-02
Apr-03
Oct-03
Apr-04
Oct-04
Apr-05
Oct-05
Apr-06
Dec-06
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Jul-10
Apr-11
Jun-11

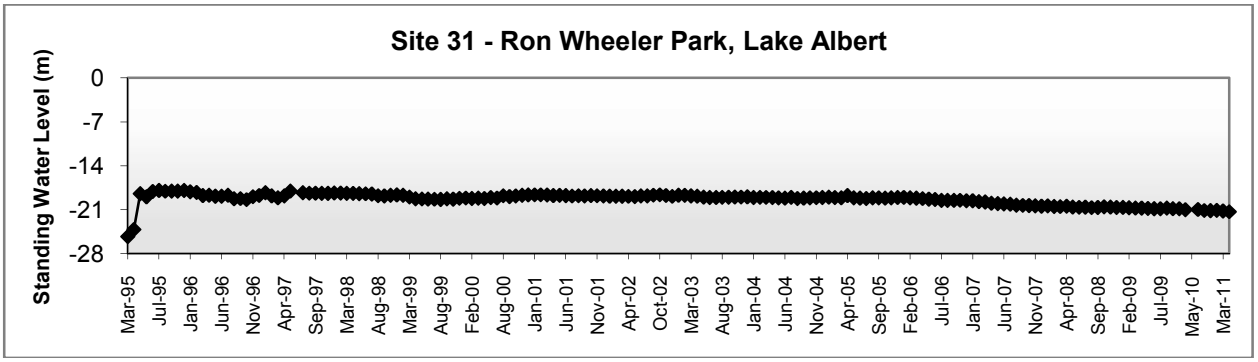

Site 26 - Kooringal Road opposite Kings Christian Church
Standing Water Level (m)
0
-6
-12
-18
Mar-95
Jul-95
Jan-96
Jun-96
Nov-96
Apr-97
Sep-97
Feb-98
Aug-98
Feb-99
Jul-99
Feb-00
Jul-00
Nov-00
Apr-01
Sep-01
Feb-02
Aug-02
Jan-03
Jun-03
Nov-03
Apr-04
Sep-04
Feb-05
Jul-05
Dec-05
May-06
Nov-06
Apr-07
Sep-07
Feb-08
Jul-08
Dec-08
May-09
Oct-09
Mar-10
Aug-10
Feb-11

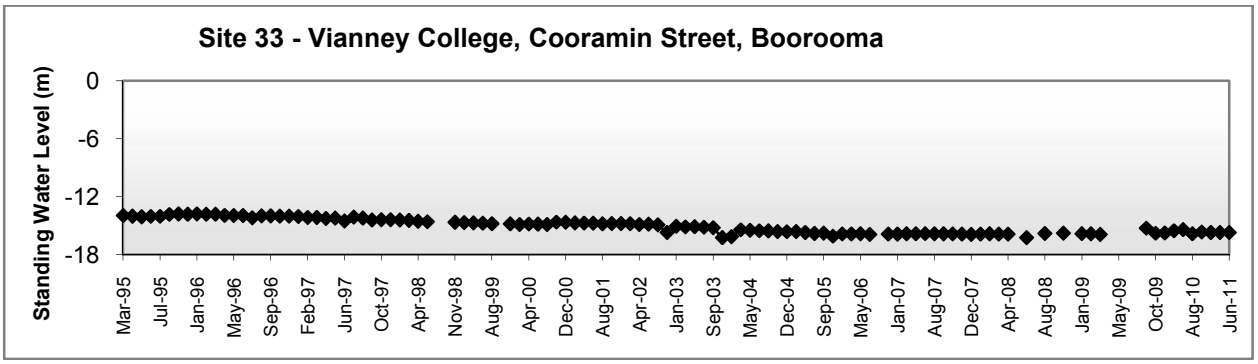

Site 27 - Kooringal STW adj. to Marshalls Creek (shallow)
Standing Water Level (m)
0
-2
-4
-6
-8
-10
Mar-95
Jul-95
Nov-95
Mar-96
Jul-96
Nov-96
Apr-97
Jul-97
Nov-97
May-98
Jan-99
Oct-99
Jul-00
Mar-01
Nov-01
Aug-02
Apr-03
Jan-04
Aug-04
Apr-05
Dec-05
Aug-06
Jun-07
Oct-07
Feb-08
Jun-08
Oct-08
Feb-09
Jun-09
Oct-09
Feb-10
Jun-10
Nov-10
Mar-11

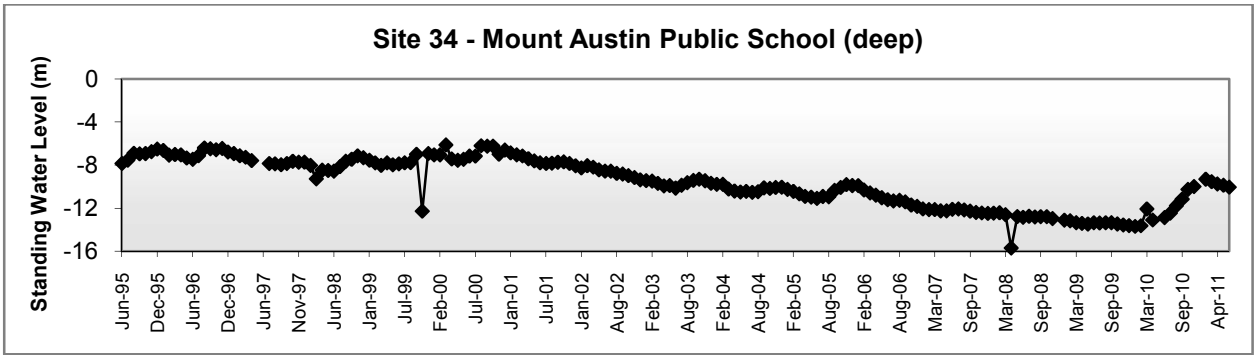

Site 28 - Kooringal STW adj. to Marshalls Creek (deep)
Standing Water Level (m)
0
-2
-4
-6
-8
-10
Mar-95
Jul-95
Nov-95
Mar-96
Jul-96
Nov-96
Apr-97
Aug-97
Dec-97
Jul-98
Mar-99
Nov-99
Jul-00
Mar-01
Nov-01
Aug-02
Apr-03
Jan-04
Aug-04
Apr-05
Dec-05
Aug-06
Jun-07
Oct-07
Feb-08
Jun-08
Oct-08
Feb-09
Jun-09
Oct-09
Feb-10
Jun-10
Nov-10
Mar-11

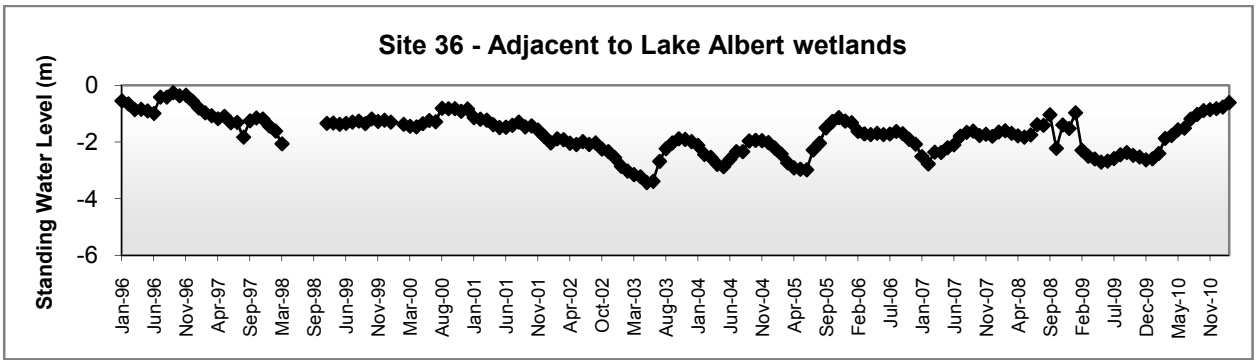

Site 29 - Dalkeith Avenue, Lake Albert
Standing Water Level (m)
0
-3
-6
-9
Mar-95
Sep-95
Jan-96
May-96
Sep-96
Jan-97
Apr-97
Aug-97
Dec-97
Jul-98
Mar-99
Nov-00
Jul-01
Mar-02
Dec-02
Aug-03
Apr-04
Dec-04
Aug-05
Apr-06
Feb-07
Aug-07
Dec-07
Apr-08
Aug-08
Dec-08
Apr-09
Aug-09
Dec-09
Apr-10
Aug-10
Jan-11
May-11

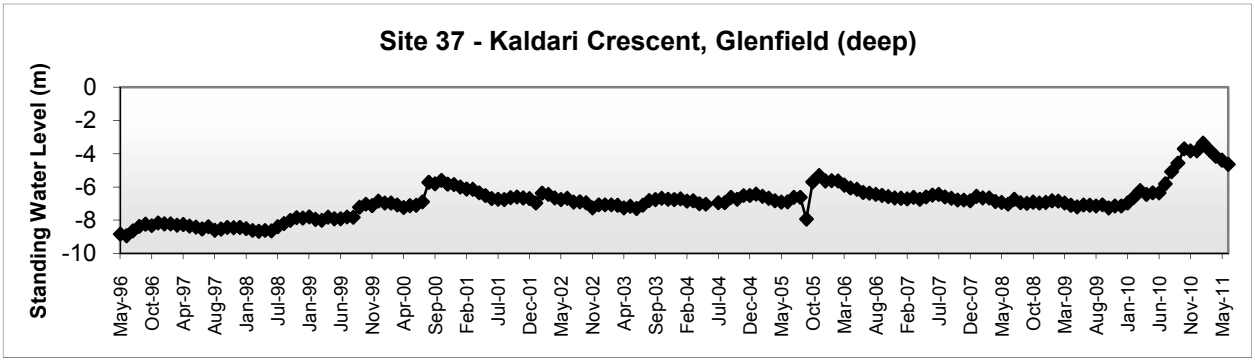

Site 30 - Croker Park, Lake Albert
Standing Water Level (m)
0
-2
-4
-6
-8
-10
Mar-95
Jul-95
Nov-95
Mar-96
Jul-96
Nov-96
Apr-97
Jul-97
Oct-97
Feb-98
Nov-98
Jul-99
Mar-00
Nov-00
Jul-01
Mar-02
Dec-02
Aug-03
Apr-04
Dec-04
Aug-05
Apr-06
Feb-07
Aug-07
Dec-07
Apr-08
Aug-08
Dec-08
Apr-09
Aug-09
Dec-09
Apr-10
Aug-10
Jan-11
May-11

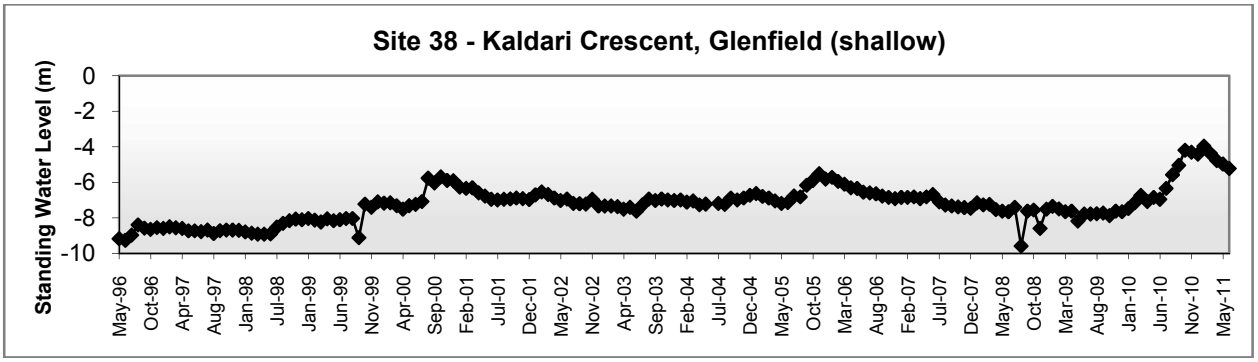

Site 31 - Ron Wheeler Park, Lake Albert
Standing Water Level (m)
0
-7
-14
-21
-28
Mar-95
Jul-95
Jan-96
Jun-96
Nov-96
Apr-97
Sep-97
Mar-98
Aug-98
Mar-99
Aug-99
Feb-00
Aug-00
Jan-01
Jun-01
Nov-01
Apr-02
Oct-02
Mar-03
Aug-03
Jan-04
Jun-04
Nov-04
Apr-05
Sep-05
Feb-06
Jul-06
Jan-07
Jun-07
Nov-07
Apr-08
Sep-08
Feb-09
Jul-09
May-10
Mar-11

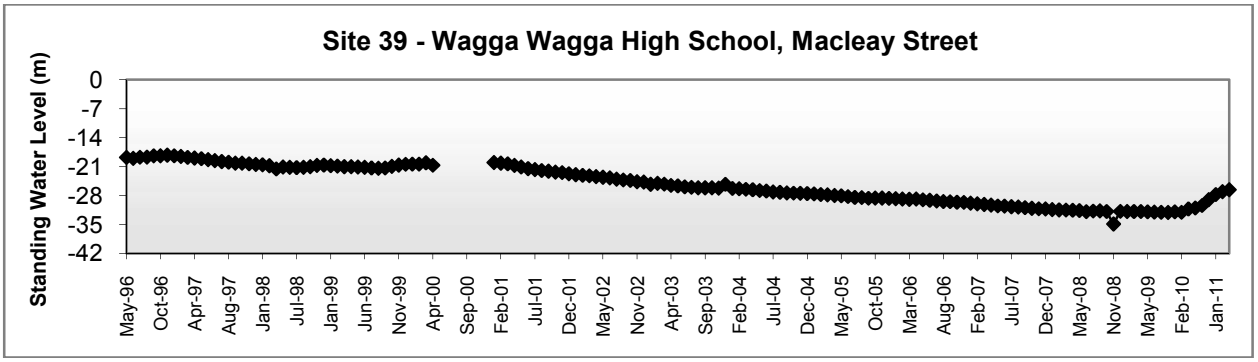

Site 33 - Vianney College, Cooramin Street, Boorooma
Standing Water Level (m)
0
-6
-12
-18
Mar-95
Jul-95
Jan-96
May-96
Sep-96
Feb-97
Jun-97
Oct-97
Apr-98
Nov-98
Aug-99
Apr-00
Dec-00
Aug-01
Apr-02
Jan-03
Sep-03
May-04
Dec-04
Sep-05
May-06
Jan-07
Aug-07
Dec-07
Apr-08
Aug-08
Jan-09
May-09
Oct-09
Aug-10
Jun-11

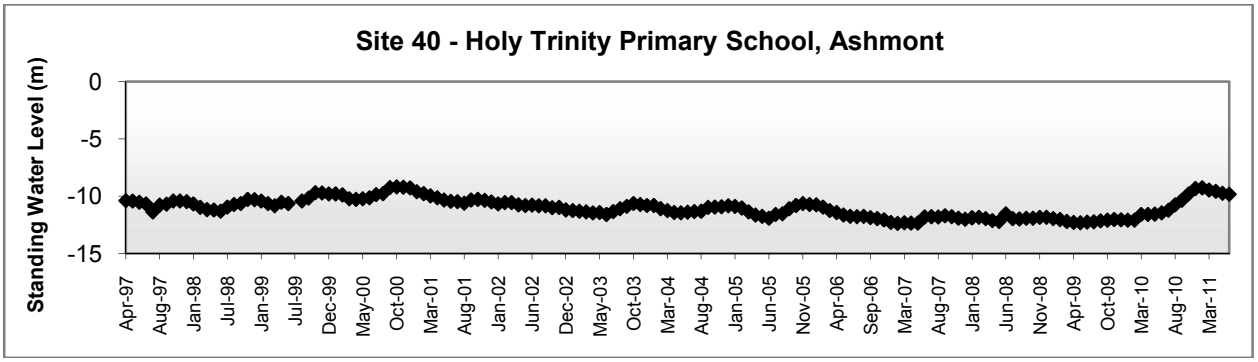

Site 34 - Mount Austin Public School (deep)
Standing Water Level (m)
0
-4
-8
-12
-16
Jun-95
Dec-95
Jun-96
Dec-96
Jun-97
Nov-97
Jun-98
Jan-99
Jul-99
Feb-00
Jul-00
Jan-01
Jul-01
Jan-02
Aug-02
Feb-03
Aug-03
Feb-04
Aug-04
Feb-05
Aug-05
Feb-06
Aug-06
Mar-07
Sep-07
Mar-08
Sep-08
Mar-09
Sep-09
Mar-10
Sep-10
Apr-11

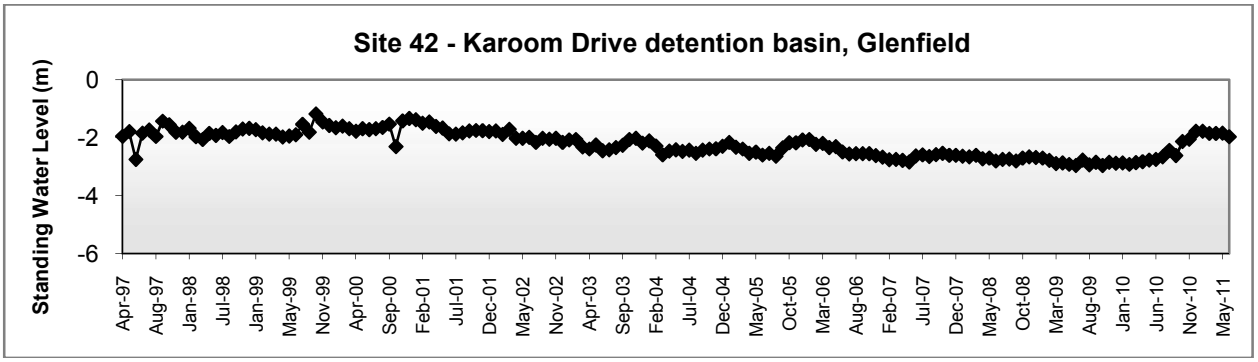

Site 36 - Adjacent to Lake Albert wetlands
Standing Water Level (m)
0
-2
-4
-6
Jan-96
Jun-96
Nov-96
Apr-97
Sep-97
Mar-98
Sep-98
Jun-99
Nov-99
Mar-00
Aug-00
Jan-01
Jun-01
Nov-01
Apr-02
Oct-02
Mar-03
Aug-03
Jan-04
Jun-04
Nov-04
Apr-05
Sep-05
Feb-06
Jul-06
Jan-07
Jun-07
Nov-07
Apr-08
Sep-08
Feb-09
Jul-09
Dec-09
May-10
Nov-10

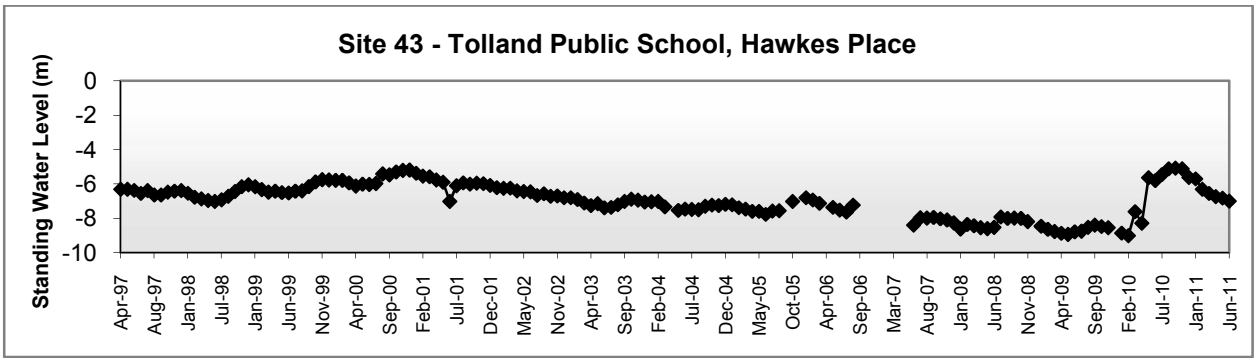

Site 37 - Kaldari Crescent, Glenfield (deep)
Standing Water Level (m)
0
-2
-4
-6
-8
-10
May-96
Oct-96
Apr-97
Aug-97
Jan-98
Jul-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Nov-02
Apr-03
Sep-03
Feb-04
Jul-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Jul-07
Dec-07
May-08
Oct-08
Mar-09
Aug-09
Jan-10
Jun-10
Nov-10
May-11

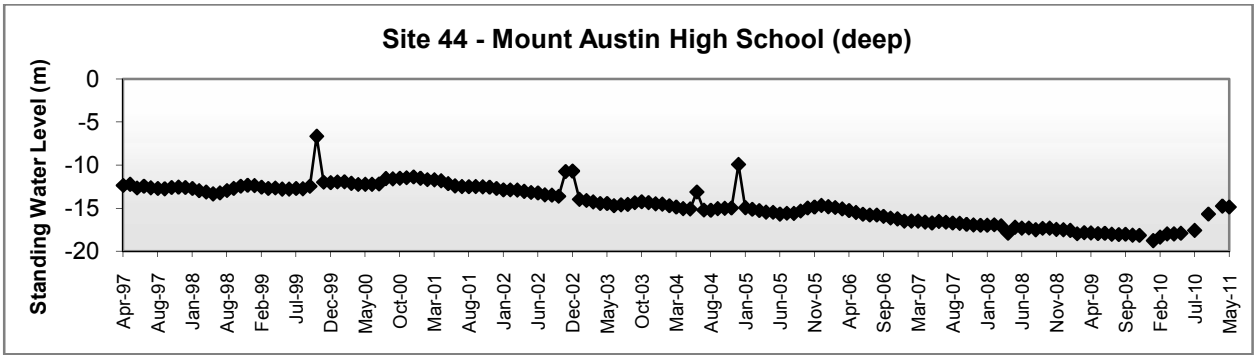

Site 38 - Kaldari Crescent, Glenfield (shallow)
Standing Water Level (m)
0
-2
-4
-6
-8
-10
May-96
Oct-96
Apr-97
Aug-97
Jan-98
Jul-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Nov-02
Apr-03
Sep-03
Feb-04
Jul-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Jul-07
Dec-07
May-08
Oct-08
Mar-09
Aug-09
Jan-10
Jun-10
Nov-10
May-11

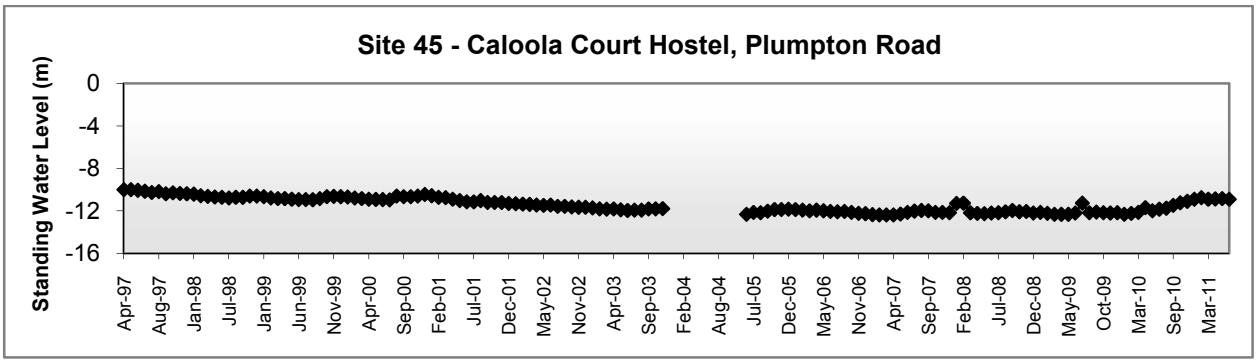

Site 39 - Wagga Wagga High School, Macleay Street
Standing Water Level (m)
0
-7
-14
-21
-28
-35
-42
May-96
Oct-96
Apr-97
Aug-97
Jan-98
Jul-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Nov-02
Apr-03
Sep-03
Feb-04
Jul-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Jul-07
Dec-07
May-08
Nov-08
May-09
Feb-10
Jan-11

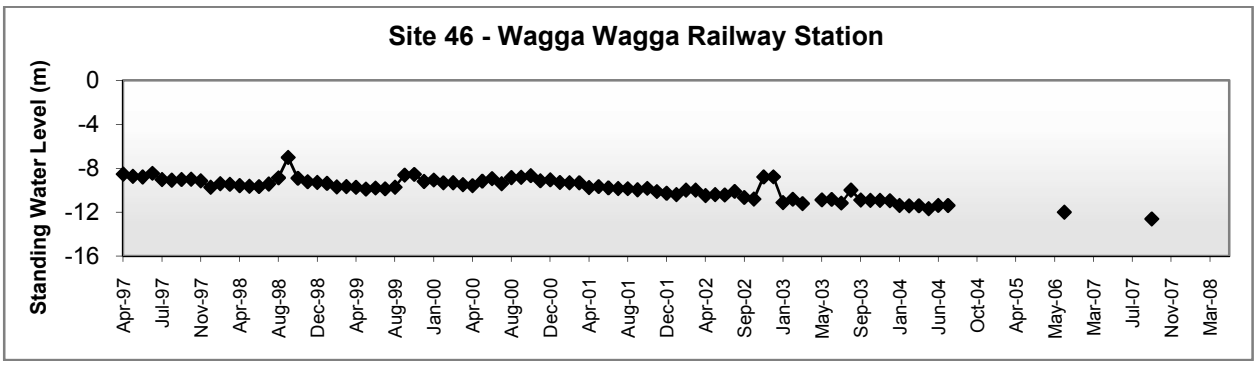

Site 40 - Holy Trinity Primary School, Ashmont
Standing Water Level (m)
0
-5
-10
-15
Apr-97
Aug-97
Jan-98
Jul-98
Jan-99
Jul-99
Dec-99
May-00
Oct-00
Mar-01
Aug-01
Jan-02
Jun-02
Dec-02
May-03
Oct-03
Mar-04
Aug-04
Jan-05
Jun-05
Nov-05
Apr-06
Sep-06
Mar-07
Aug-07
Jan-08
Jun-08
Nov-08
Apr-09
Oct-09
Mar-10
Aug-10
Mar-11

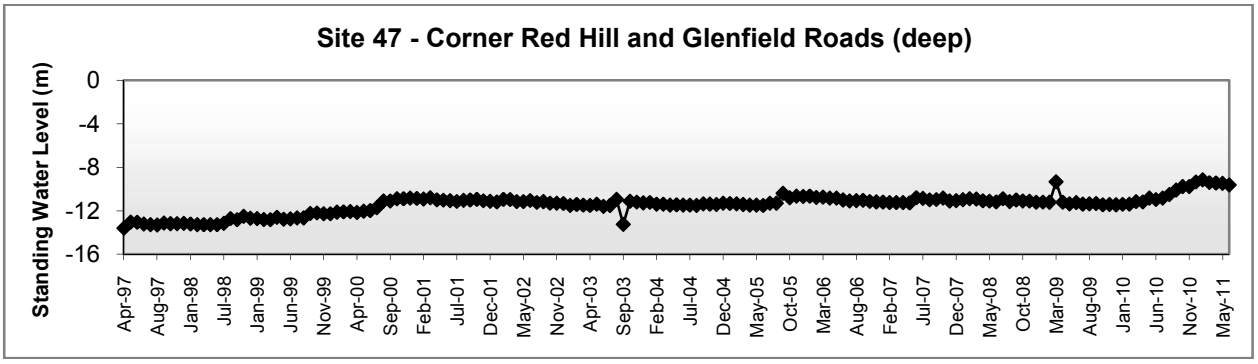

Site 42 - Karoom Drive detention basin, Glenfield
Standing Water Level (m)
0
-2
-4
-6
Apr-97
Aug-97
Jan-98
Jul-98
Jan-99
May-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Nov-02
Apr-03
Sep-03
Feb-04
Jul-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Jul-07
Dec-07
May-08
Oct-08
Mar-09
Aug-09
Jan-10
Jun-10
Nov-10
May-11

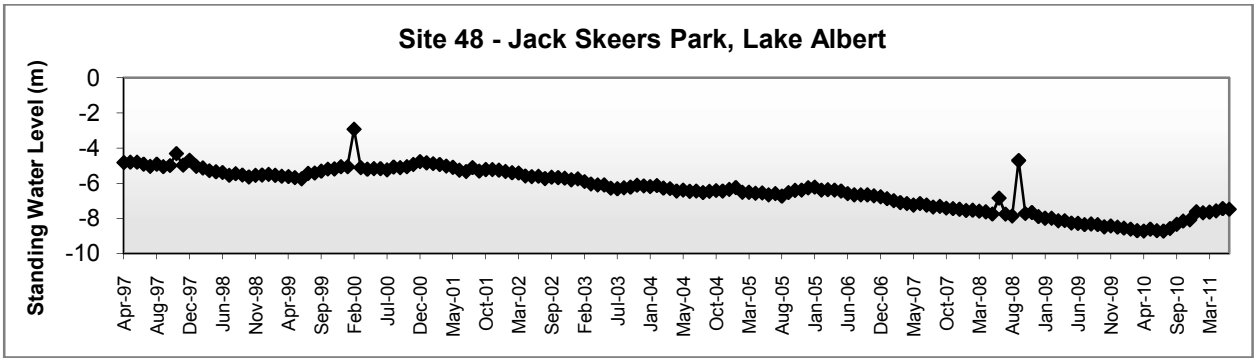

Site 43 - Tolland Public School, Hawkes Place
Standing Water Level (m)
0
-2
-4
-6
-8
-10
Apr-97
Aug-97
Jan-98
Jul-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Nov-02
Apr-03
Sep-03
Feb-04
Jul-04
Dec-04
May-05
Oct-05
Apr-06
Sep-06
Mar-07
Aug-07
Jan-08
Jun-08
Nov-08
Apr-09
Sep-09
Feb-10
Jul-10
Jan-11
Jun-11

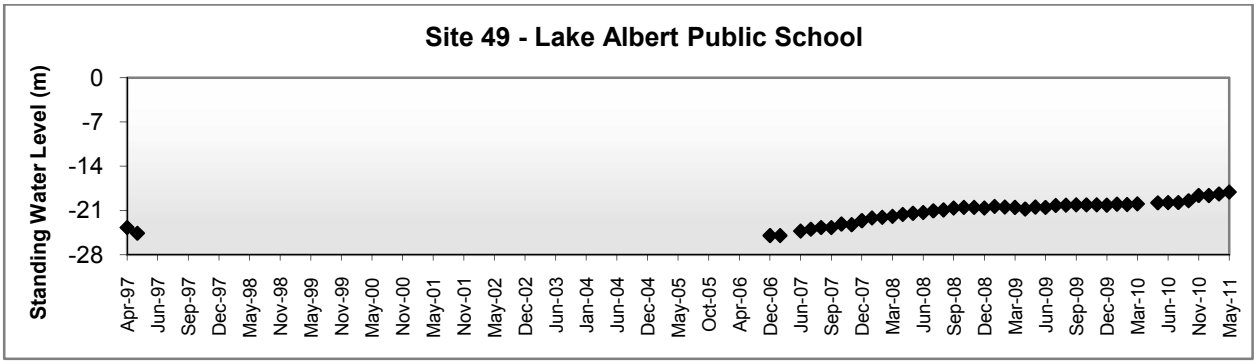

Site 44 - Mount Austin High School (deep)
Standing Water Level (m)
0
-5
-10
-15
-20
Apr-97
Aug-97
Jan-98
Aug-98
Feb-99
Jul-99
Dec-99
May-00
Oct-00
Mar-01
Aug-01
Jan-02
Jun-02
Dec-02
May-03
Oct-03
Mar-04
Aug-04
Jan-05
Jun-05
Nov-05
Apr-06
Sep-06
Mar-07
Aug-07
Jan-08
Jun-08
Nov-08
Apr-09
Sep-09
Feb-10
Jul-10
May-11


Site 45 - Caloola Court Hostel, Plumpton Road
Standing Water Level (m)
0
-4
-8
-12
-16
Apr-97
Aug-97
Jan-98
Jul-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Nov-02
Apr-03
Sep-03
Feb-04
Aug-04
Jul-05
Dec-05
May-06
Nov-06
Apr-07
Sep-07
Feb-08
Jul-08
Dec-08
May-09
Oct-09
Mar-10
Sep-10
Mar-11


Site 46 - Wagga Wagga Railway Station
Standing Water Level (m)
0
-4
-8
-12
-16
Apr-97
Jul-97
Nov-97
Apr-98
Aug-98
Dec-98
Apr-99
Aug-99
Jan-00
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Sep-02
Jan-03
May-03
Sep-03
Jan-04
Jun-04
Oct-04
Apr-05
May-06
Mar-07
Jul-07
Nov-07
Mar-08


Site 47 - Corner Red Hill and Glenfield Roads (deep)
Standing Water Level (m)
0
-4
-8
-12
-16
Apr-97
Aug-97
Jan-98
Jul-98
Jan-99
Jun-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Nov-02
Apr-03
Sep-03
Feb-04
Jul-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Jul-07
Dec-07
May-08
Oct-08
Mar-09
Aug-09
Jan-10
Jun-10
Nov-10
May-11


Site 48 - Jack Skeers Park, Lake Albert
Standing Water Level (m)
0
-2
-4
-6
-8
-10
Apr-97
Aug-97
Dec-97
Jun-98
Nov-98
Apr-99
Sep-99
Feb-00
Jul-00
Dec-00
May-01
Oct-01
Mar-02
Sep-02
Feb-03
Jul-03
Jan-04
May-04
Oct-04
Mar-05
Aug-05
Jan-05
Jun-06
Dec-06
May-07
Oct-07
Mar-08
Aug-08
Jan-09
Jun-09
Nov-09
Apr-10
Sep-10
Mar-11


Site 49 - Lake Albert Public School
Standing Water Level (m)
0
-7
-14
-21
-28
Apr-97
Jun-97
Sep-97
Dec-97
May-98
Nov-98
May-99
Nov-99
May-00
Nov-00
May-01
Nov-01
May-02
Dec-02
Jun-03
Jan-04
Jun-04
Dec-04
May-05
Oct-05
Apr-06
Dec-06
Jun-07
Sep-07
Dec-07
Mar-08
Jun-08
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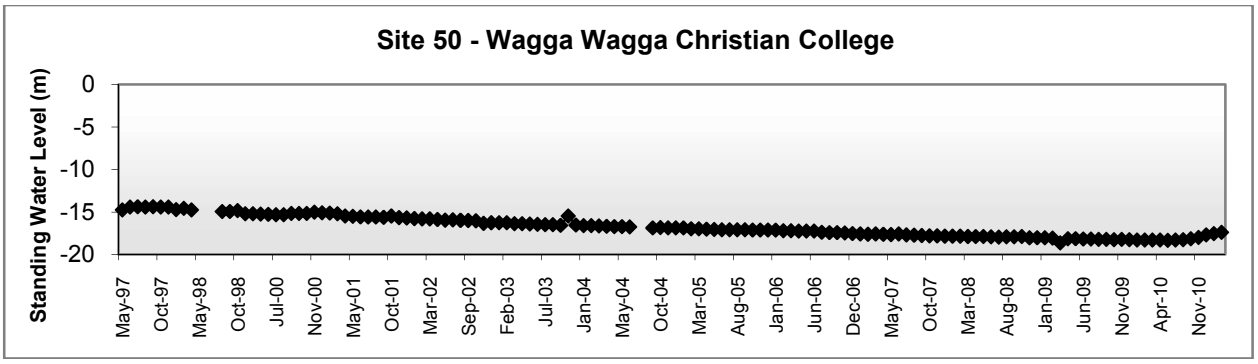
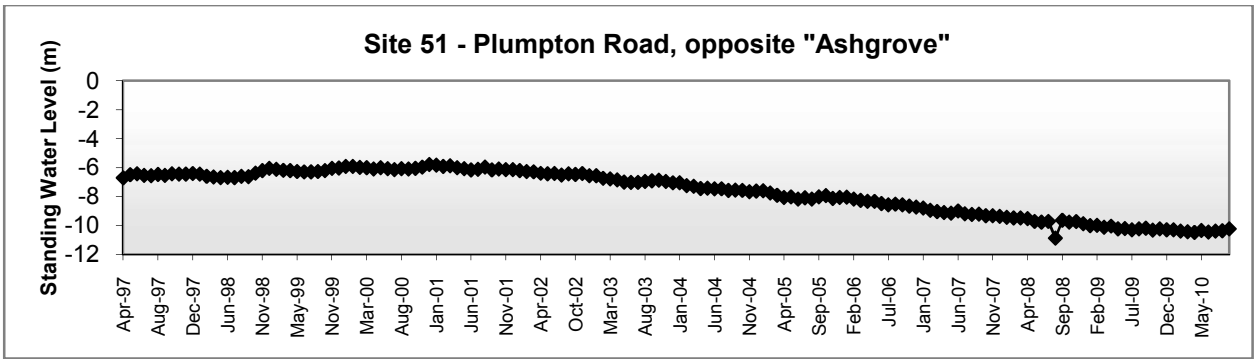
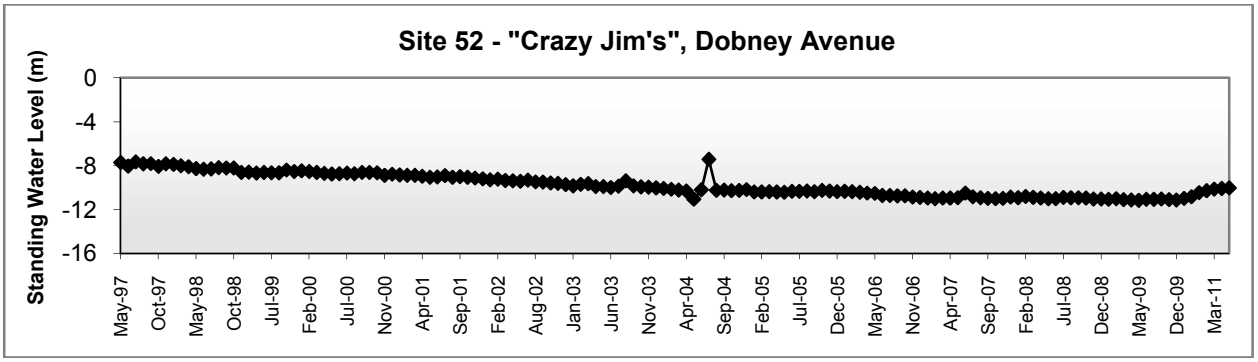
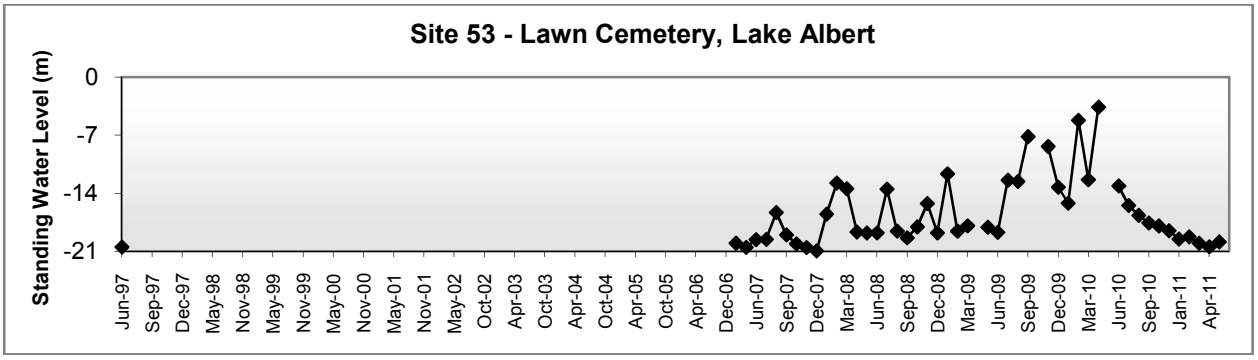
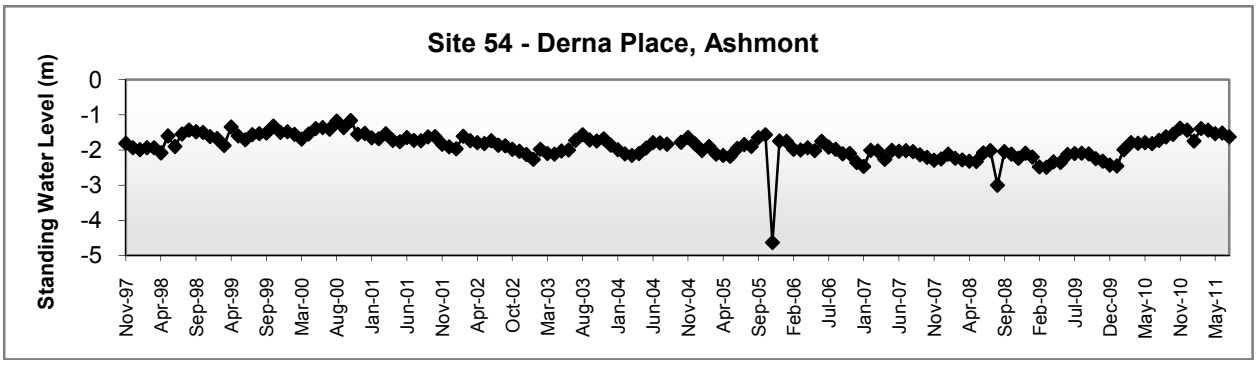
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Nov-10
May-11

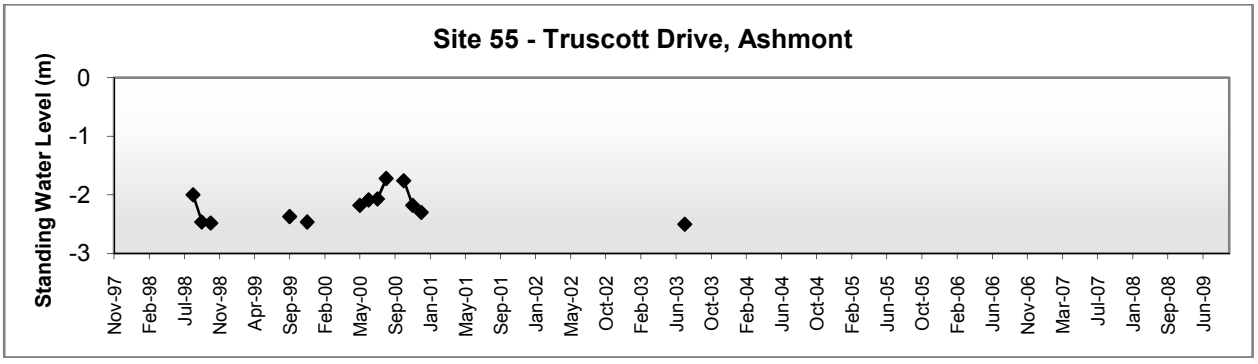

Site 50 - Wagga Wagga Christian College
Standing Water Level (m)
0
-5
-10
-15
-20
May-97
Oct-97
May-98
Oct-98
Jul-00
Nov-00
May-01
Oct-01
Mar-02
Sep-02
Feb-03
Jul-03
Jan-04
May-04
Oct-04
Mar-05
Aug-05
Jan-06
Jun-06
Dec-06
May-07
Oct-07
Mar-08
Aug-08
Jan-09
Jun-09
Nov-09
Apr-10
Nov-10

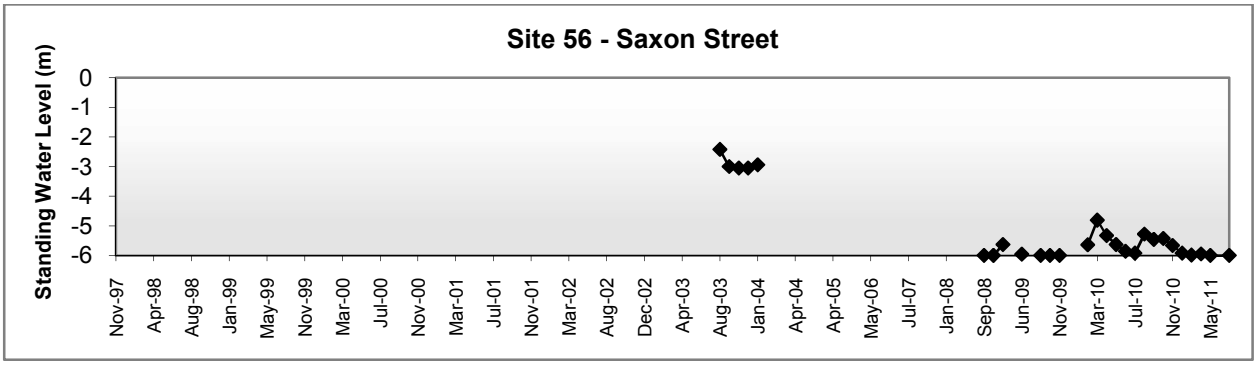

Site 51 - Plumpton Road, opposite "Ashgrove"
Standing Water Level (m)
0
-2
-4
-6
-8
-10
-12
Apr-97
Aug-97
Dec-97
Jun-98
Nov-98
May-99
Nov-99
Mar-00
Aug-00
Jan-01
Jun-01
Nov-01
Apr-02
Oct-02
Mar-03
Aug-03
Jan-04
Jun-04
Nov-04
Apr-05
Sep-05
Feb-06
Jul-06
Jan-07
Jun-07
Nov-07
Apr-08
Sep-08
Feb-09
Jul-09
Dec-09
May-10

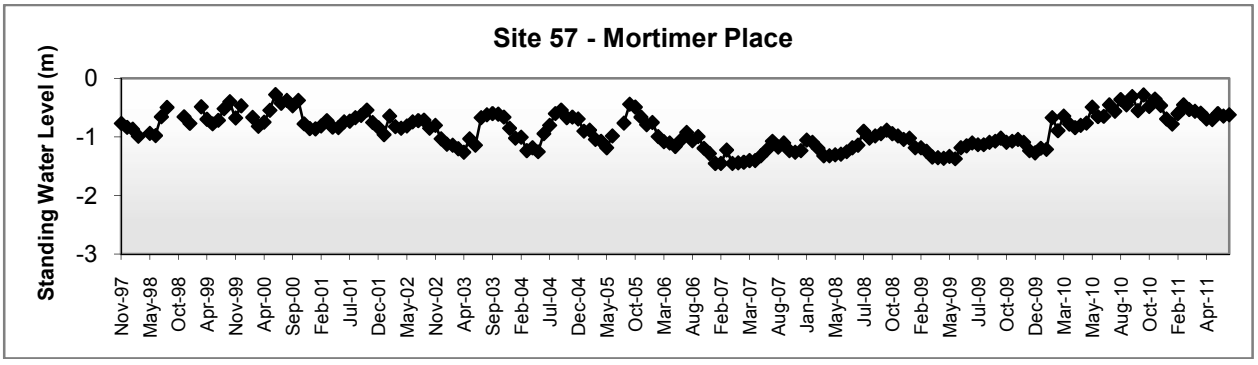

Site 52 - "Crazy Jim's", Dobney Avenue
Standing Water Level (m)
0
-4
-8
-12
-16
May-97
Oct-97
May-98
Oct-98
Jul-99
Feb-00
Jul-00
Nov-00
Apr-01
Sep-01
Feb-02
Aug-02
Jan-03
Jun-03
Nov-03
Apr-04
Sep-04
Feb-05
Jul-05
Dec-05
May-06
Nov-06
Apr-07
Sep-07
Feb-08
Jul-08
Dec-08
May-09
Dec-09
Mar-11

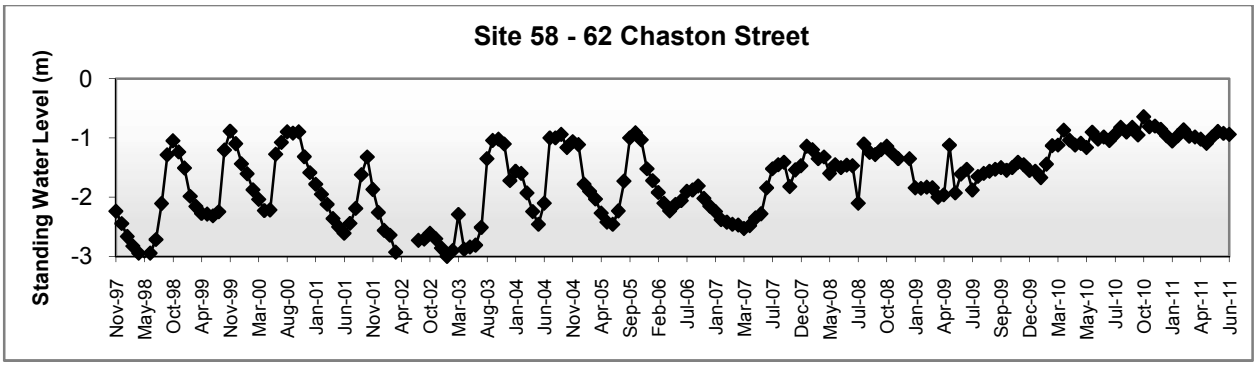

Site 53 - Lawn Cemetery, Lake Albert
Standing Water Level (m)
0
-7
-14
-21
Jun-97
Sep-97
Dec-97
May-98
Nov-98
May-99
Nov-99
May-00
Nov-00
May-01
Nov-01
May-02
Oct-02
Apr-03
Oct-03
Apr-04
Oct-04
Apr-05
Oct-05
Apr-06
Dec-06
Jun-07
Sep-07
Dec-07
Mar-08
Jun-08
Sep-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Jan-11
Apr-11


Site 54 - Derna Place, Ashmont
Standing Water Level (m)
0
-1
-2
-3
-4
-5
Nov-97
Apr-98
Sep-98
Apr-99
Sep-99
Mar-00
Aug-00
Jan-01
Jun-01
Nov-01
Apr-02
Oct-02
Mar-03
Aug-03
Jan-04
Jun-04
Nov-04
Apr-05
Sep-05
Feb-06
Jul-06
Jan-07
Jun-07
Nov-07
Apr-08
Sep-08
Feb-09
Jul-09
Dec-09
May-10
Nov-10
May-11


Site 55 - Truscott Drive, Ashmont
Standing Water Level (m)
0
-1
-2
-3
Nov-97
Feb-98
Jul-98
Nov-98
Apr-99
Sep-99
Feb-00
May-00
Sep-00
Jan-01
May-01
Sep-01
Jan-02
May-02
Oct-02
Feb-03
Jun-03
Oct-03
Feb-04
Jun-04
Oct-04
Feb-05
Jun-05
Oct-05
Feb-06
Jun-06
Nov-06
Mar-07
Jul-07
Jan-08
Sep-08
Jun-09


Site 56 - Saxon Street
Standing Water Level (m)
0
-1
-2
-3
-4
-5
-6
Nov-97
Apr-98
Aug-98
Jan-99
May-99
Nov-99
Mar-00
Jul-00
Nov-00
Mar-01
Jul-01
Nov-01
Mar-02
Aug-02
Dec-02
Apr-03
Aug-03
Jan-04
Apr-04
Apr-05
May-06
Jul-07
Jan-08
Sep-08
Jun-09
Nov-09
Mar-10
Jul-10
Nov-10
May-11


Site 57 - Mortimer Place
Standing Water Level (m)
0
-1
-2
-3
Nov-97
May-98
Oct-98
Apr-99
Nov-99
Apr-00
Sep-00
Feb-01
Jul-01
Dec-01
May-02
Nov-02
Apr-03
Sep-03
Feb-04
Jul-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Mar-07
Aug-07
Jan-08
May-08
Jul-08
Oct-08
Feb-09
May-09
Jul-09
Oct-09
Dec-09
Mar-10
May-10
Aug-10
Oct-10
Feb-11
Apr-11


Site 58 - 62 Chaston Street
Standing Water Level (m)
0
-1
-2
-3
Nov-97
May-98
Oct-98
Apr-99
Nov-99
Mar-00
Aug-00
Jan-01
Jun-01
Nov-01
Apr-02
Oct-02
Mar-03
Aug-03
Jan-04
Jun-04
Nov-04
Apr-05
Sep-05
Feb-06
Jul-06
Jan-07
Mar-07
Jul-07
Dec-07
May-08
Jul-08
Oct-08
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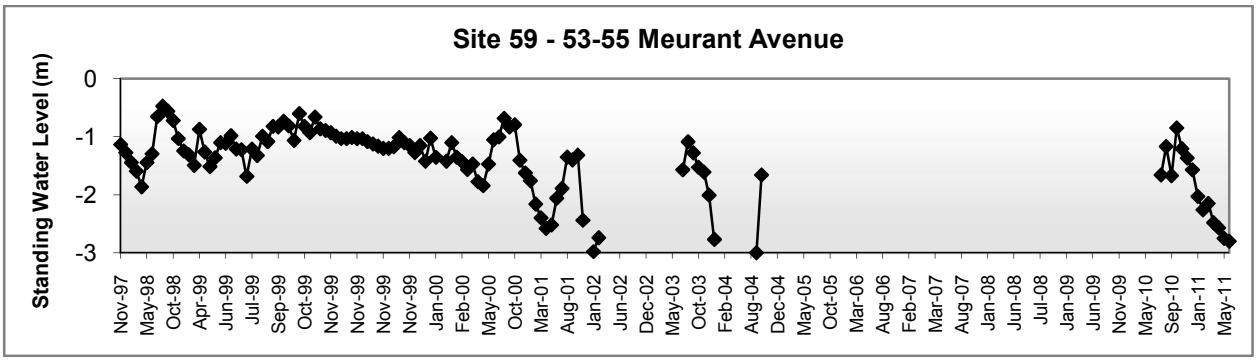
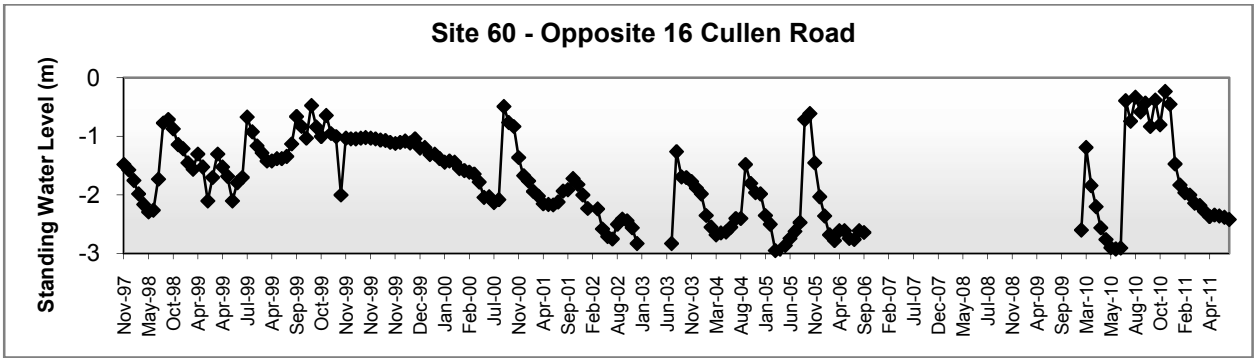
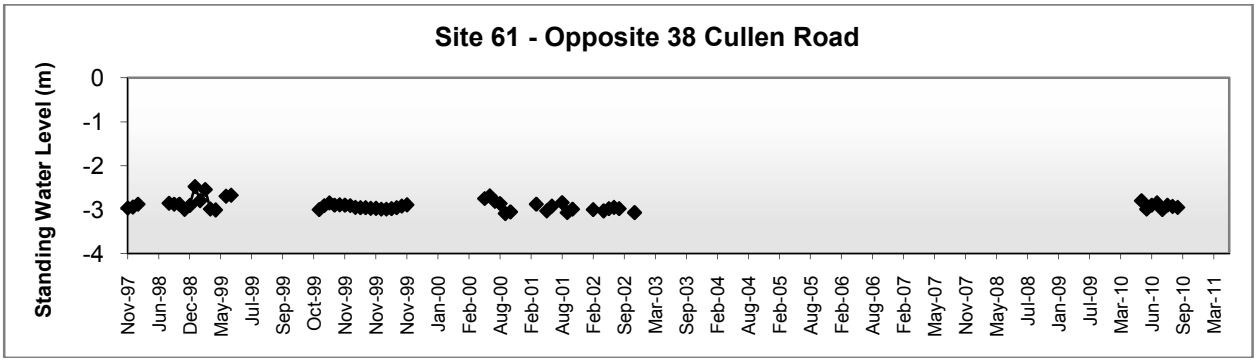
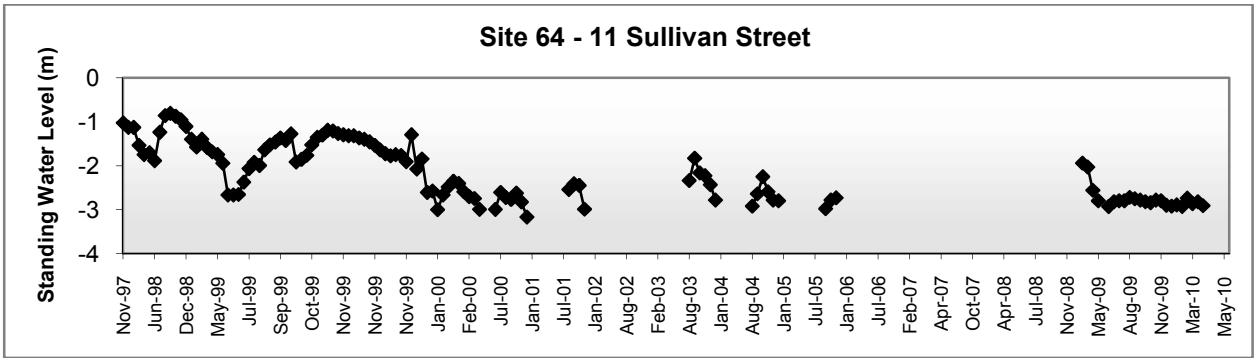
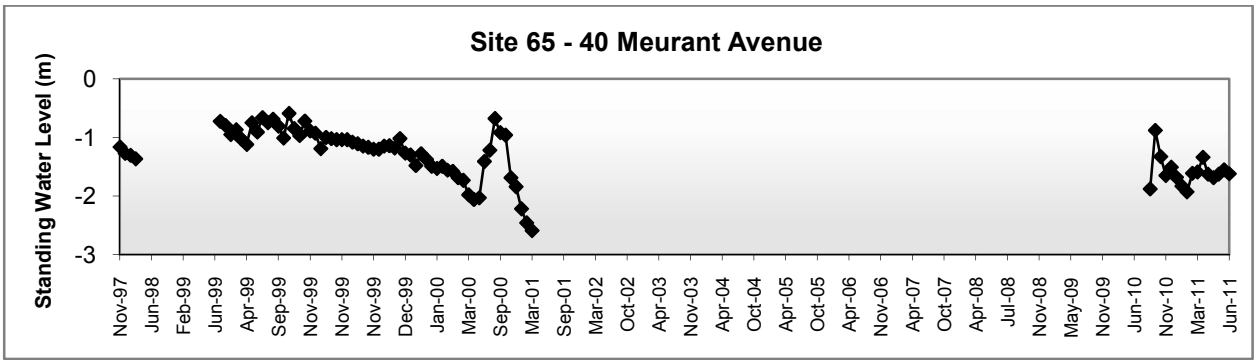
May-10
Jul-10
Oct-10
Jan-11
Apr-11
Jun-11


Site 59 - 53-55 Meurant Avenue
Standing Water Level (m)
0
-1
-2
-3
Nov-97
May-98
Oct-98
Apr-99
Jun-99
Jul-99
Sep-99
Oct-99
Nov-99
Nov-99
Nov-99
Nov-99
Jan-00
Feb-00
May-00
Oct-00
Mar-01
Aug-01
Jan-02
Jun-02
Dec-02
May-03
Oct-03
Feb-04
Aug-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Mar-07
Aug-07
Jan-08
Jun-08
Jul-08
Jan-09
Jun-09
Nov-09
May-10
Sep-10
Jan-11
May-11


Site 60 - Opposite 16 Cullen Road
Standing Water Level (m)
0
-1
-2
-3
Nov-97
May-98
Oct-98
Apr-99
Apr-99
Jul-99
Apr-99
Sep-99
Oct-99
Nov-99
Nov-99
Nov-99
Dec-99
Jan-00
Feb-00
Jul-00
Nov-00
Apr-01
Sep-01
Feb-02
Aug-02
Jan-03
Jun-03
Nov-03
Mar-04
Aug-04
Jan-05
Jun-05
Nov-05
Apr-06
Sep-06
Feb-07
Jul-07
Dec-07
May-08
Jul-08
Nov-08
Apr-09
Sep-09
Mar-10
May-10
Aug-10
Oct-10
Feb-11
Apr-11


Site 61 - Opposite 38 Cullen Road
Standing Water Level (m)
0
-1
-2
-3
-4
Nov-97
Jun-98
Dec-98
May-99
Jul-99
Sep-99
Oct-99
Nov-99
Nov-99
Nov-99
Jan-00
Feb-00
Aug-00
Feb-01
Aug-01
Feb-02
Sep-02
Mar-03
Sep-03
Feb-04
Aug-04
Feb-05
Aug-05
Feb-06
Aug-06
Feb-07
May-07
Nov-07
May-08
Jul-08
Jan-09
Jul-09
Mar-10
Jun-10
Sep-10
Mar-11


Site 64 - 11 Sullivan Street
Standing Water Level (m)
0
-1
-2
-3
-4
Nov-97
Jun-98
Dec-98
May-99
Jul-99
Sep-99
Oct-99
Nov-99
Nov-99
Nov-99
Jan-00
Feb-00
Jul-00
Jan-01
Jul-01
Jan-02
Aug-02
Feb-03
Aug-03
Jan-04
Aug-04
Jan-05
Jul-05
Jan-06
Jul-06
Feb-07
Apr-07
Oct-07
Apr-08
Jul-08
Nov-08
May-09
Aug-09
Nov-09
Mar-10
May-10


Site 65 - 40 Meurant Avenue
Standing Water Level (m)
0
-1
-2
-3
Nov-97
Jun-98
Feb-99
Jun-99
Apr-99
Sep-99
Nov-99
Nov-99
Nov-99
Dec-99
Jan-00
Mar-00
Sep-00
Mar-01
Sep-01
Mar-02
Oct-02
Apr-03
Nov-03
Apr-04
Oct-04
Apr-05
Oct-05
Apr-06
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Apr-07
Oct-07
Apr-08
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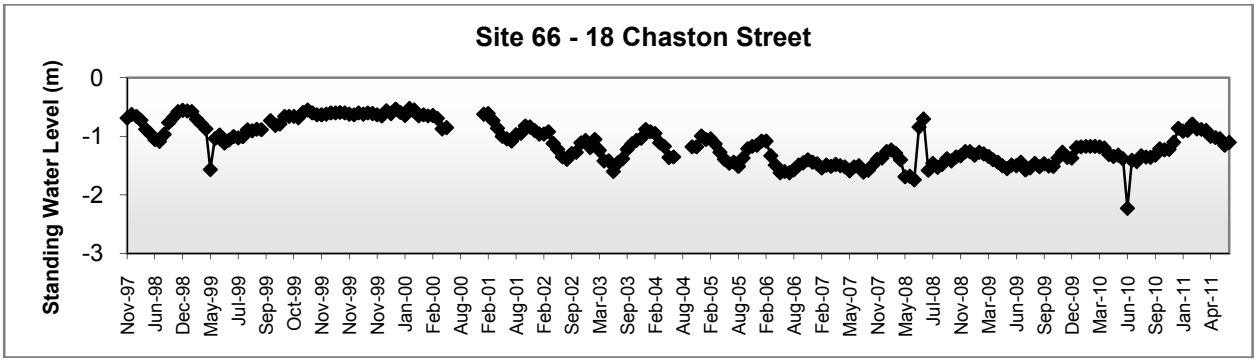
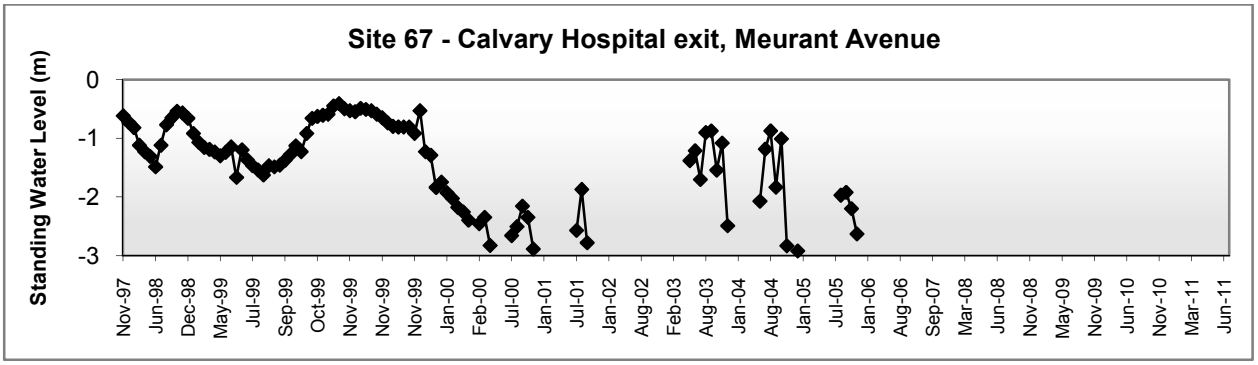
Nov-08
May-09
Nov-09
Jun-10
Nov-10
Mar-11
Jun-11


Site 66 - 18 Chaston Street
Standing Water Level (m)
0
-1
-2
-3
Nov-97
Jun-98
Dec-98
May-99
Jul-99
Sep-99
Oct-99
Nov-99
Nov-99
Nov-99
Jan-00
Feb-00
Aug-00
Feb-01
Aug-01
Feb-02
Sep-02
Mar-03
Sep-03
Feb-04
Aug-04
Feb-05
Aug-05
Feb-06
Aug-06
Feb-07
May-07
Nov-07
May-08
Jul-08
Nov-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Jan-11
Apr-11


Site 67 - Calvary Hospital exit, Meurant Avenue
Standing Water Level (m)
0
-1
-2
-3
Nov-97
Jun-98
Dec-98
May-99
Jul-99
Sep-99
Oct-99
Nov-99
Nov-99
Nov-99
Jan-00
Feb-00
Jul-00
Jan-01
Jul-01
Jan-02
Aug-02
Feb-03
Aug-03
Jan-04
Aug-04
Jan-05
Jul-05
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Mar-08
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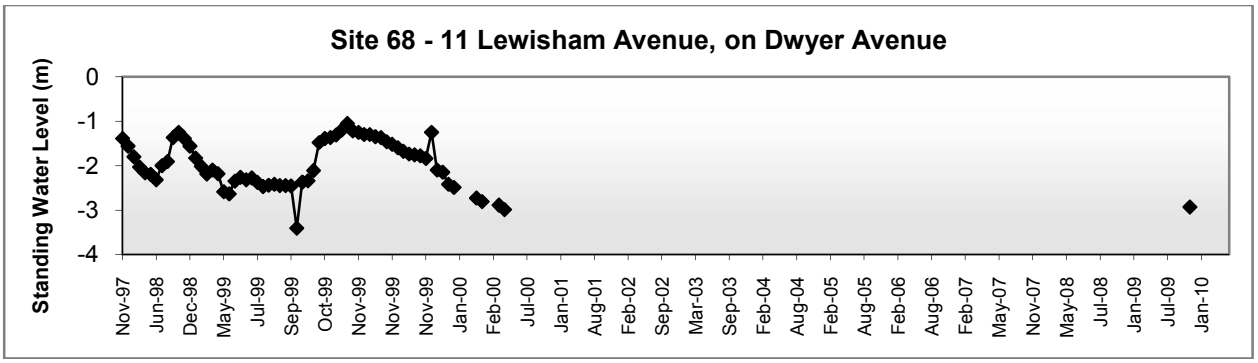
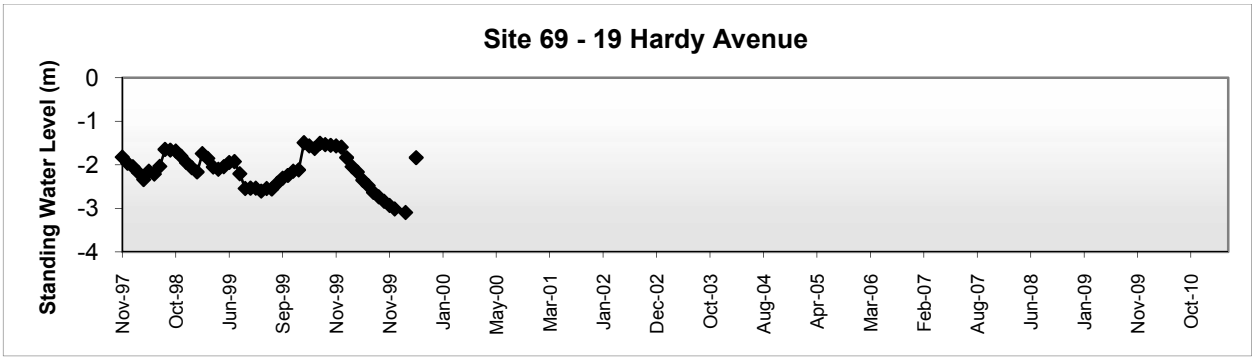
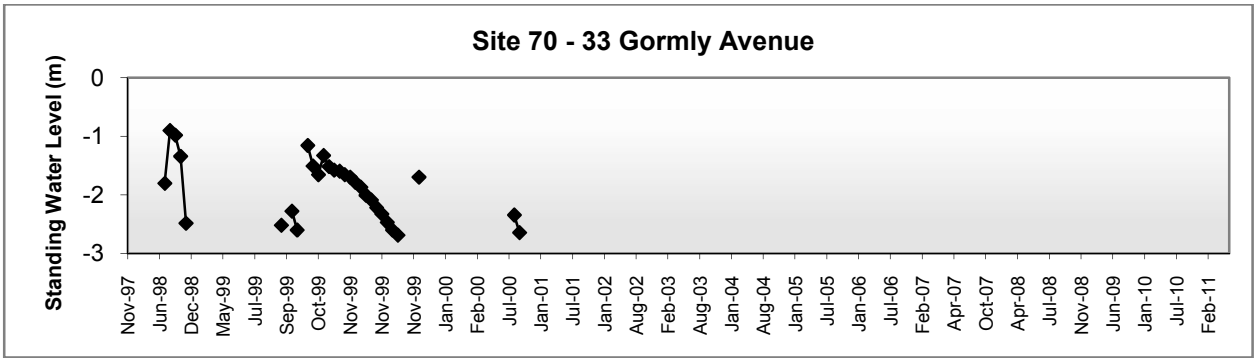
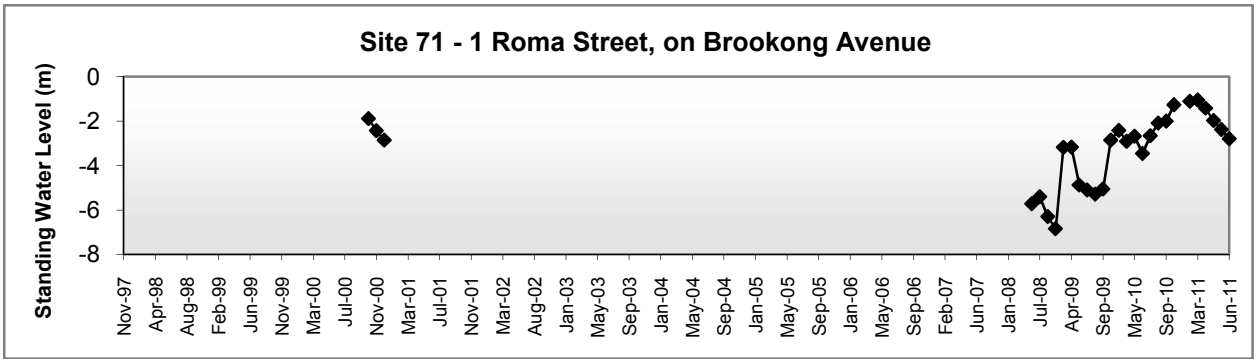
Nov-08
May-09
Nov-09
Jun-10
Nov-10
Mar-11
Jun-11


Site 68 - 11 Lewisham Avenue, on Dwyer Avenue
Standing Water Level (m)
0
-1
-2
-3
-4
Nov-97
Jun-98
Dec-98
May-99
Jul-99
Sep-99
Oct-99
Nov-99
Nov-99
Nov-99
Jan-00
Feb-00
Jul-00
Jan-01
Aug-01
Feb-02
Sep-02
Mar-03
Sep-03
Feb-04
Aug-04
Feb-05
Aug-05
Feb-06
Aug-06
Feb-07
May-07
Nov-07
May-08
Jul-08
Jan-09
Jul-09
Jan-10


Site 69 - 19 Hardy Avenue
Standing Water Level (m)
0
-1
-2
-3
-4
Nov-97
Oct-98
Jun-99
Sep-99
Nov-99
Nov-99
Jan-00
May-00
Mar-01
Jan-02
Dec-02
Oct-03
Aug-04
Apr-05
Mar-06
Feb-07
Aug-07
Jun-08
Jan-09
Nov-09
Oct-10


Site 70 - 33 Gormly Avenue
Standing Water Level (m)
0
-1
-2
-3
Nov-97
Jun-98
Dec-98
May-99
Jul-99
Sep-99
Oct-99
Nov-99
Nov-99
Nov-99
Jan-00
Feb-00
Jul-00
Jan-01
Jul-01
Jan-02
Aug-02
Feb-03
Aug-03
Jan-04
Aug-04
Jan-05
Jul-05
Jan-06
Jul-06
Feb-07
Apr-07
Oct-07
Apr-08
Jul-08
Nov-08
Jun-09
Jan-10
Jul-10
Feb-11


Site 71 - 1 Roma Street, on Brookong Avenue
Standing Water Level (m)
0
-2
-4
-6
-8
Nov-97
Apr-98
Aug-98
Feb-99
Jun-99
Nov-99
Mar-00
Jul-00
Nov-00
Mar-01
Jul-01
Nov-01
Mar-02
Aug-02
Jan-03
May-03
Sep-03
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Jan-06
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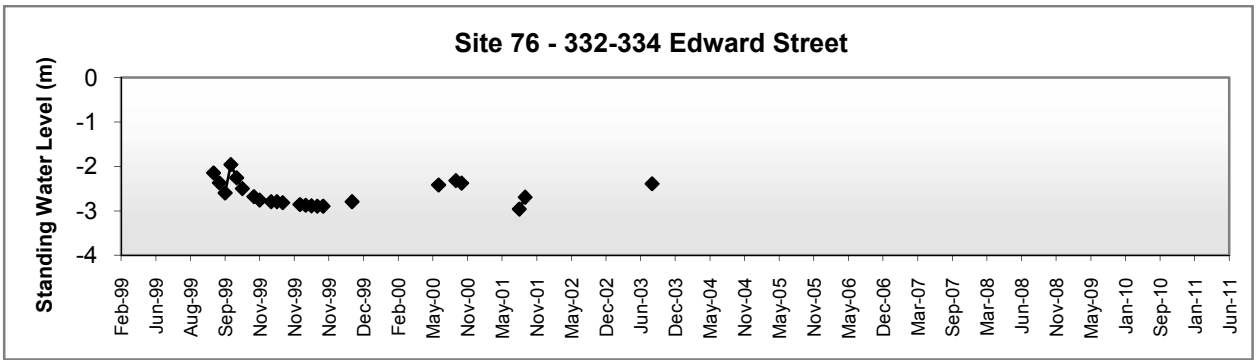
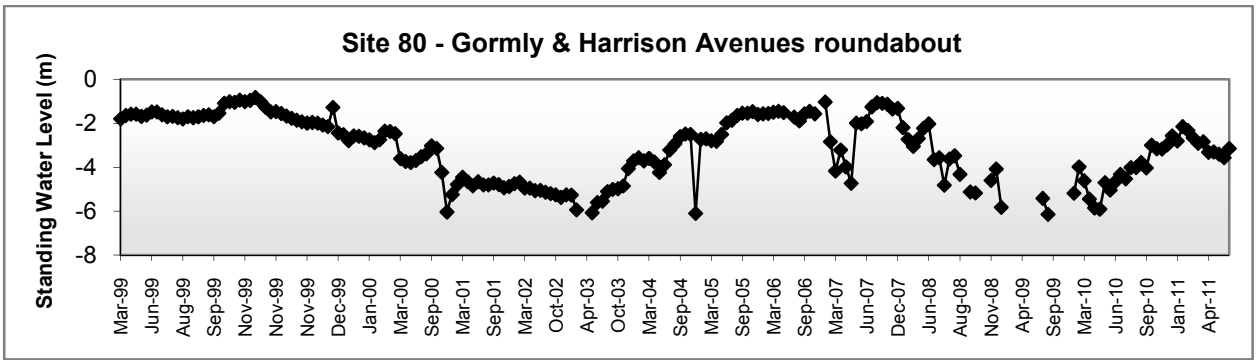
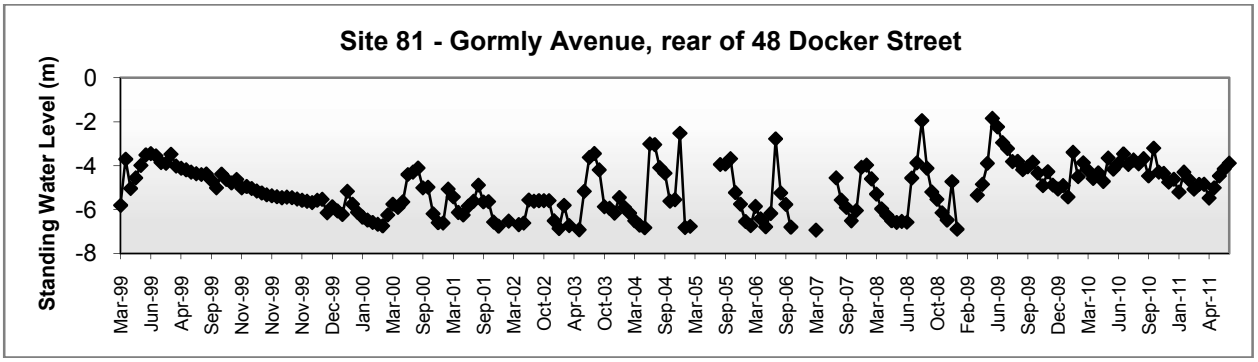
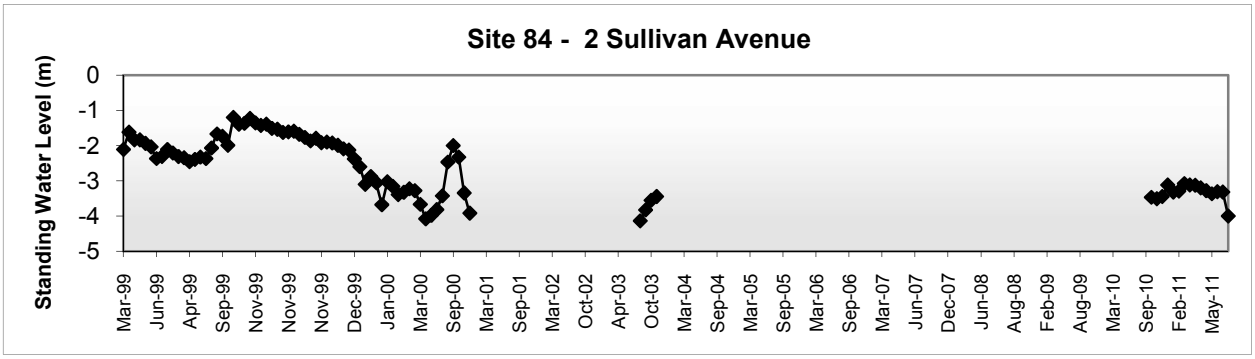
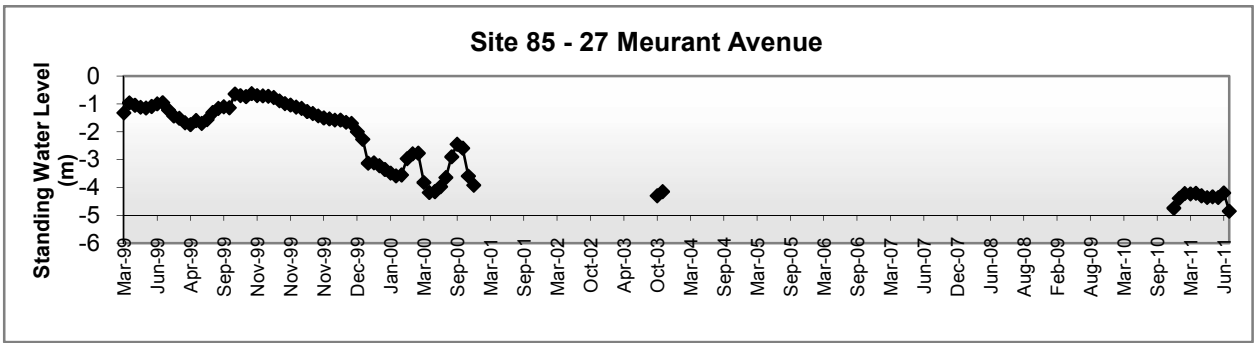
Apr-09
Sep-09
May-10
Sep-10
Mar-11
Jun-11

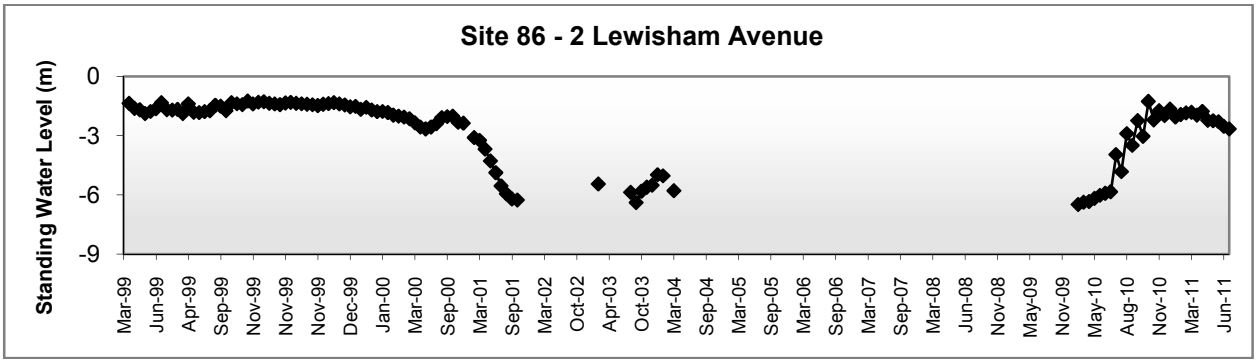

Site 76 - 332-334 Edward Street
Standing Water Level (m)
0
-1
-2
-3
-4
Feb-99
Jun-99
Aug-99
Sep-99
Nov-99
Nov-99
Nov-99
Dec-99
Feb-00
May-00
Nov-00
May-01
Nov-01
May-02
Dec-02
Jun-03
Dec-03
May-04
Nov-04
May-05
Nov-05
May-06
Dec-06
Mar-07
Sep-07
Mar-08
Jun-08
Nov-08
May-09
Jan-10
Sep-10
Jan-11
Jun-11

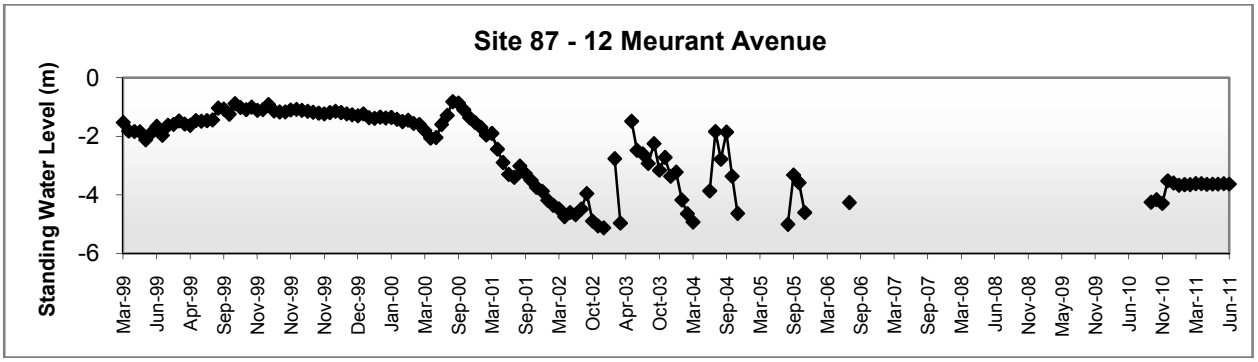

Site 80 - Gormly & Harrison Avenues roundabout
Standing Water Level (m)
0
-2
-4
-6
-8
Mar-99
Jun-99
Aug-99
Sep-99
Nov-99
Nov-99
Nov-99
Dec-99
Jan-00
Mar-00
Sep-00
Mar-01
Sep-01
Mar-02
Oct-02
Apr-03
Oct-03
Mar-04
Sep-04
Mar-05
Sep-05
Mar-06
Sep-06
Mar-07
Jun-07
Dec-07
Jun-08
Aug-08
Nov-08
Apr-09
Sep-09
Mar-10
Jun-10
Sep-10
Jan-11
Apr-11


Site 81 - Gormly Avenue, rear of 48 Docker Street
Standing Water Level (m)
0
-2
-4
-6
-8
Mar-99 Jun-99 Apr-99 Sep-99 Nov-99 Nov-99 Nov-99 Dec-99 Jan-00 Mar-00 Sep-00 Mar-01 Sep-01 Mar-02 Oct-02 Apr-03 Oct-03 Mar-04 Sep-04 Mar-05 Sep-05 Mar-06 Sep-06 Mar-07 Sep-07 Mar-08 Jun-08 Oct-08 Feb-09 Jun-09 Sep-09 Dec-09 Mar-10 Jun-10 Sep-10 Jan-11 Apr-11

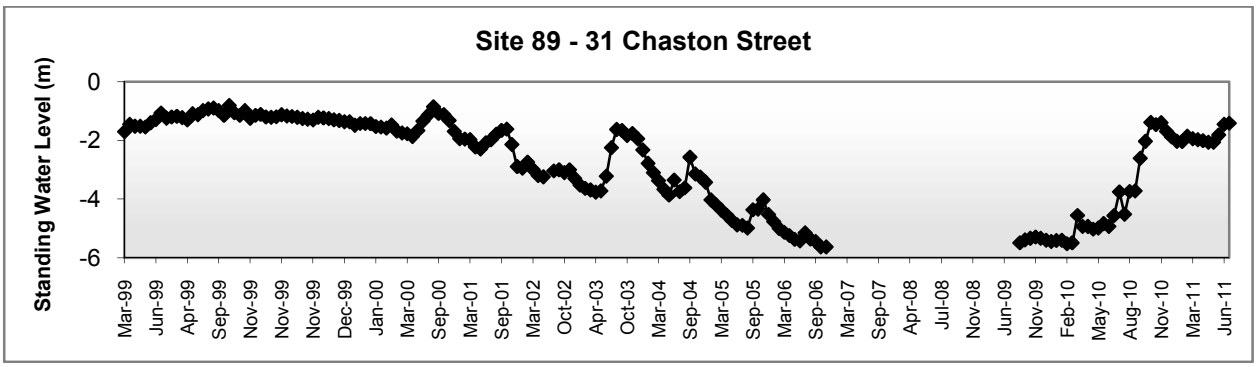

Site 84 - 2 Sullivan Avenue
Standing Water Level (m)
0
-1
-2
-3
-4
-5
Mar-99 Jun-99 Apr-99 Sep-99 Nov-99 Nov-99 Nov-99 Dec-99 Jan-00 Mar-00 Sep-00 Mar-01 Sep-01 Mar-02 Oct-02 Apr-03 Oct-03 Mar-04 Sep-04 Mar-05 Sep-05 Mar-06 Sep-06 Mar-07 Jun-07 Dec-07 Jun-08 Aug-08 Feb-09 Aug-09 Mar-10 Sep-10 Feb-11 May-11

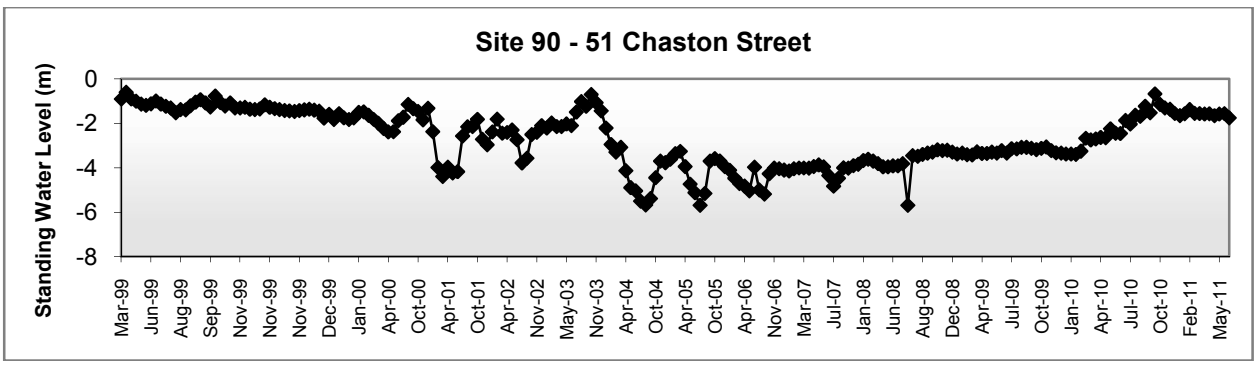

Site 85 - 27 Meurant Avenue
Standing Water Level (m)
0
-1
-2
-3
-4
-5
-6
Mar-99 Jun-99 Apr-99 Sep-99 Nov-99 Nov-99 Nov-99 Dec-99 Jan-00 Mar-00 Sep-00 Mar-01 Sep-01 Mar-02 Oct-02 Apr-03 Oct-03 Mar-04 Sep-04 Mar-05 Sep-05 Mar-06 Sep-06 Mar-07 Jun-07 Dec-07 Jun-08 Aug-08 Feb-09 Aug-09 Mar-10 Sep-10 Mar-11 Jun-11

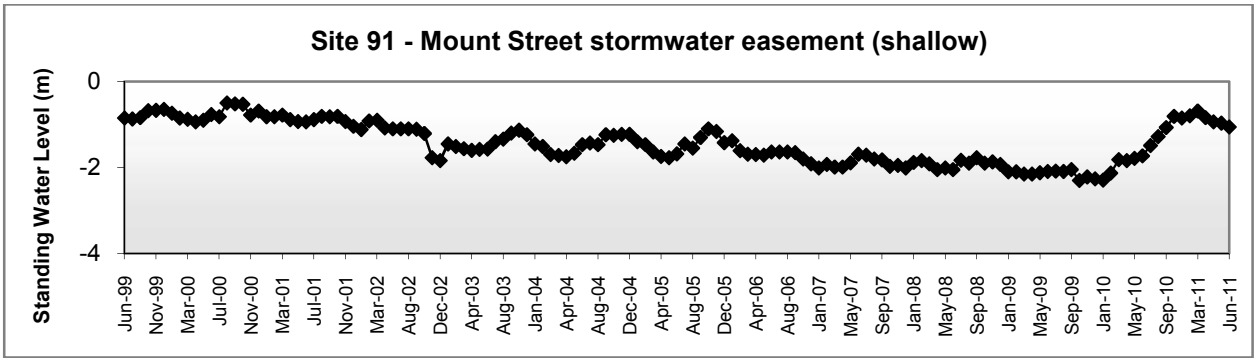

Site 86 - 2 Lewisham Avenue
Standing Water Level (m)
0
-3
-6
-9
Mar-99 Jun-99 Apr-99 Sep-99 Nov-99 Nov-99 Nov-99 Dec-99 Jan-00 Mar-00 Sep-00 Mar-01 Sep-01 Mar-02 Oct-02 Apr-03 Oct-03 Mar-04 Sep-04 Mar-05 Sep-05 Mar-06 Sep-06 Mar-07 Sep-07 Mar-08 Jun-08 Nov-08 May-09 Nov-09 May-10 Aug-10 Nov-10 Mar-11 Jun-11


Site 87 - 12 Meurant Avenue
Standing Water Level (m)
0
-2
-4
-6
Mar-99
Jun-99
Apr-99
Sep-99
Nov-99
Nov-99
Nov-99
Dec-99
Jan-00
Mar-00
Sep-00
Mar-01
Sep-01
Mar-02
Oct-02
Apr-03
Oct-03
Mar-04
Sep-04
Mar-05
Sep-05
Mar-06
Sep-06
Mar-07
Sep-07
Mar-08
Jun-08
Nov-08
May-09
Nov-09
Jun-10
Nov-10
Mar-11
Jun-11


Site 88 - 2 Chaston Street
Standing Water Level (m)
0
-2
-4
-6
-8
-10
Mar-99
Jun-99
Apr-99
Sep-99
Nov-99
Nov-99
Nov-99
Dec-99
Jan-00
Mar-00
Sep-00
Mar-01
Sep-01
Mar-02
Oct-02
Apr-03
Sep-03
Apr-05
Jul-07
Jan-08
Jun-08
Sep-08
Feb-09
Jun-09
Sep-09
Dec-09
Apr-10
Jul-10
Oct-10
Feb-11
May-11


Site 89 - 31 Chaston Street
Standing Water Level (m)
0
-2
-4
-6
Mar-99
Jun-99
Apr-99
Sep-99
Nov-99
Nov-99
Nov-99
Dec-99
Jan-00
Mar-00
Sep-00
Mar-01
Sep-01
Mar-02
Oct-02
Apr-03
Oct-03
Mar-04
Sep-04
Mar-05
Sep-05
Mar-06
Sep-06
Mar-07
Sep-07
Apr-08
Jul-08
Nov-08
Jun-09
Nov-09
Feb-10
May-10
Aug-10
Nov-10
Mar-11
Jun-11


Site 90 - 51 Chaston Street
Standing Water Level (m)
0
-2
-4
-6
-8
Mar-99
Jun-99
Aug-99
Sep-99
Nov-99
Nov-99
Nov-99
Dec-99
Jan-00
Apr-00
Oct-00
Apr-01
Oct-01
Apr-02
Nov-02
May-03
Nov-03
Apr-04
Oct-04
Apr-05
Oct-05
Apr-06
Nov-06
Mar-07
Jul-07
Jan-08
Jun-08
Aug-08
Dec-08
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Feb-11
May-11


Site 91 - Mount Street stormwater easement (shallow)
Standing Water Level (m)
0
-2
-4
Jun-99
Nov-99
Mar-00
Jul-00
Nov-00
Mar-01
Jul-01
Nov-01
Mar-02
Aug-02
Dec-02
Apr-03
Aug-03
Jan-04
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Jan-07
May-07
Sep-07
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May-08
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Jan-09
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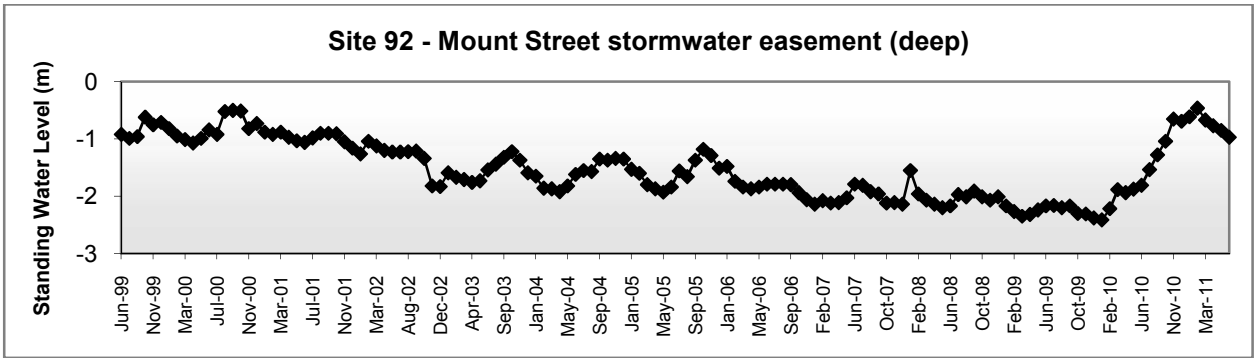
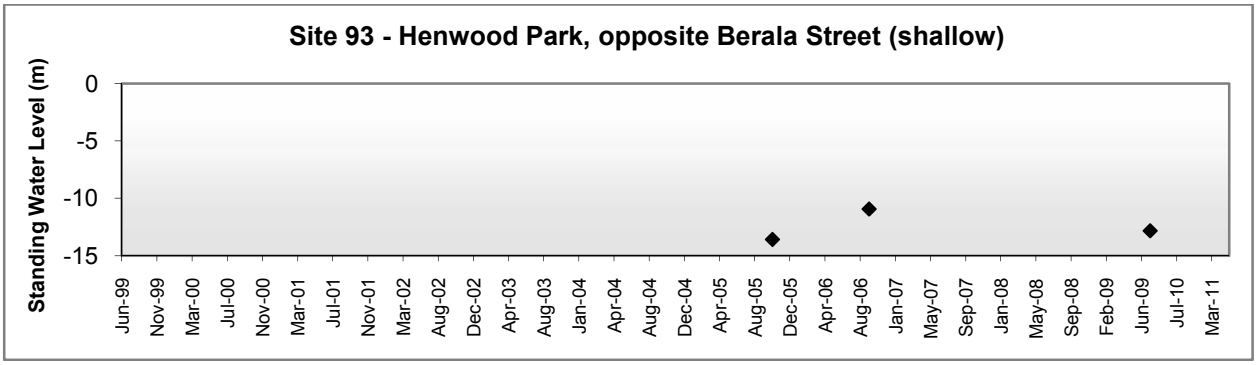
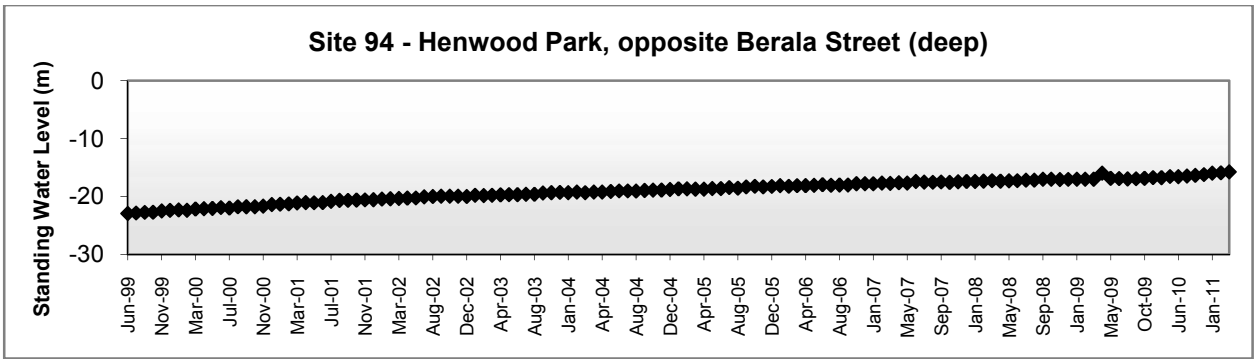
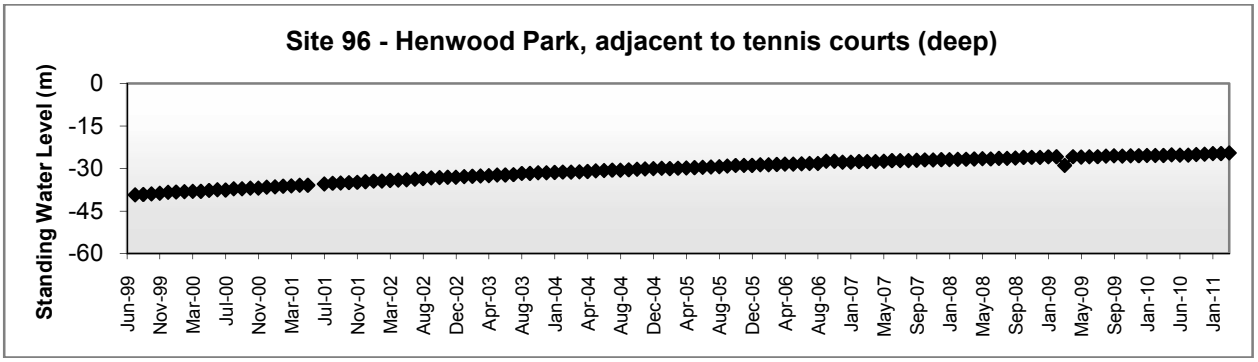
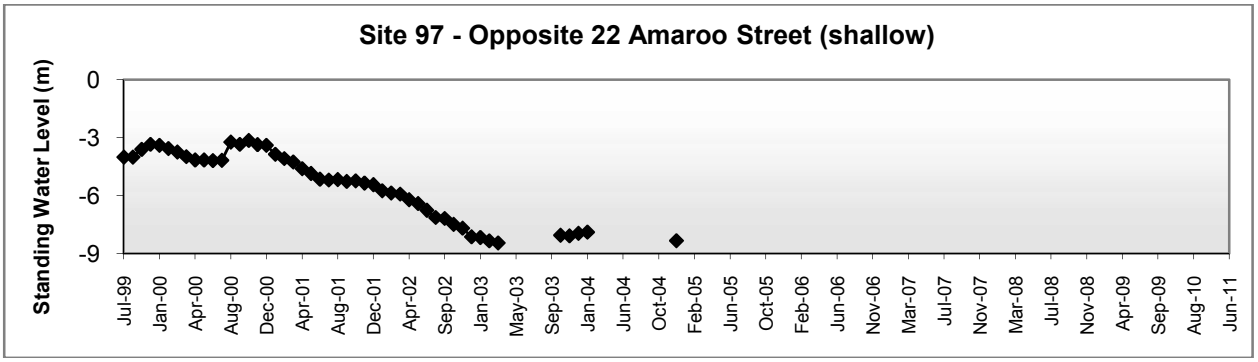
Sep-09
Jan-10
May-10
Sep-10
Mar-11
Jun-11

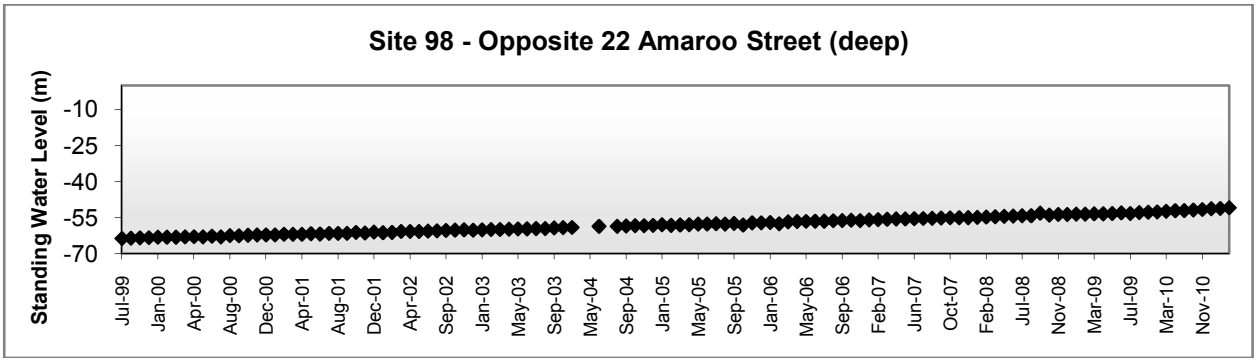

Site 92 - Mount Street stormwater easement (deep)
Standing Water Level (m)
0
-1
-2
-3
Jun-99
Nov-99
Mar-00
Jul-00
Nov-00
Mar-01
Jul-01
Nov-01
Mar-02
Aug-02
Dec-02
Apr-03
Sep-03
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Jan-06
May-06
Sep-06
Feb-07
Jun-07
Oct-07
Feb-08
Jun-08
Oct-08
Feb-09
Jun-09
Oct-09
Feb-10
Jun-10
Nov-10
Mar-11

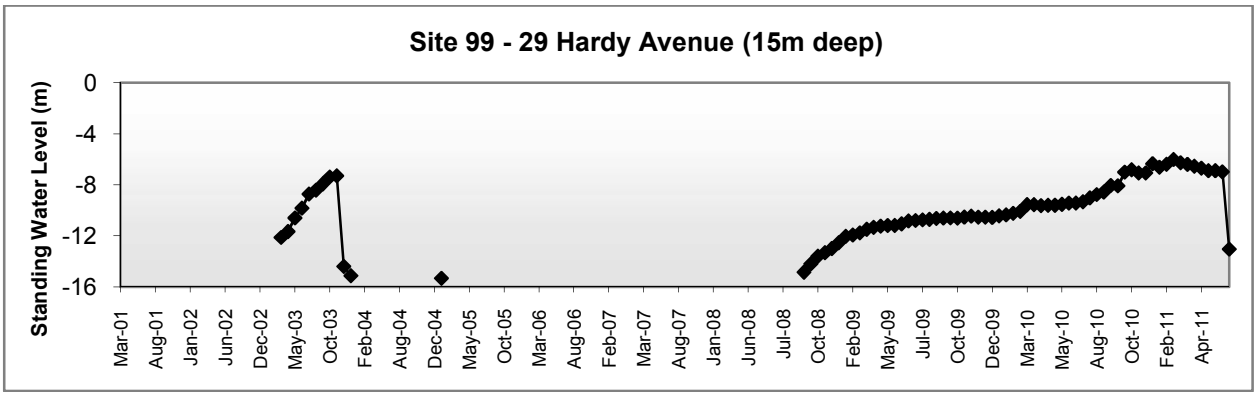

Site 93 - Henwood Park, opposite Berala Street (shallow)
Standing Water Level (m)
0
-5
-10
-15
Jun-99
Nov-99
Mar-00
Jul-00
Nov-00
Mar-01
Jul-01
Nov-01
Mar-02
Aug-02
Dec-02
Apr-03
Aug-03
Jan-04
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Jan-07
May-07
Sep-07
Jan-08
May-08
Sep-08
Feb-09
Jun-09
Jul-10
Mar-11

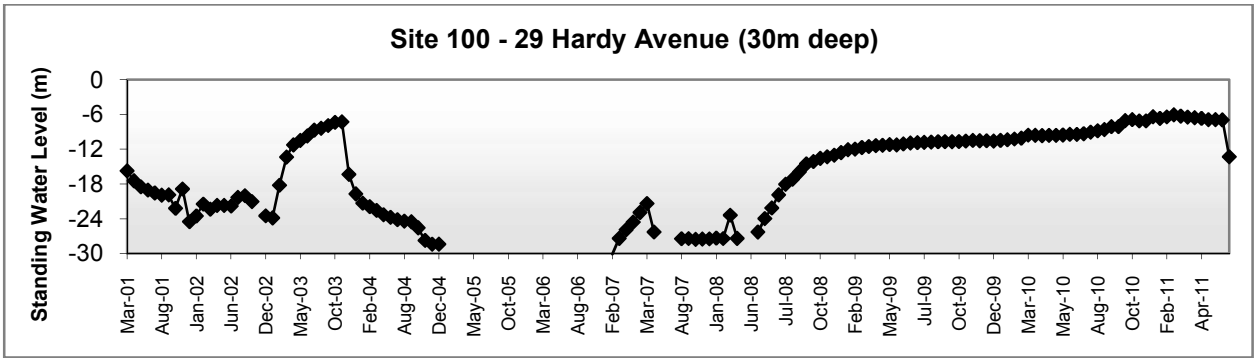

Site 94 - Henwood Park, opposite Berala Street (deep)
Standing Water Level (m)
0
-10
-20
-30
Jun-99
Nov-99
Mar-00
Jul-00
Nov-00
Mar-01
Jul-01
Nov-01
Mar-02
Aug-02
Dec-02
Apr-03
Aug-03
Jan-04
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Jan-07
May-07
Sep-07
Jan-08
May-08
Sep-08
Jan-09
May-09
Oct-09
Jun-10
Jan-11

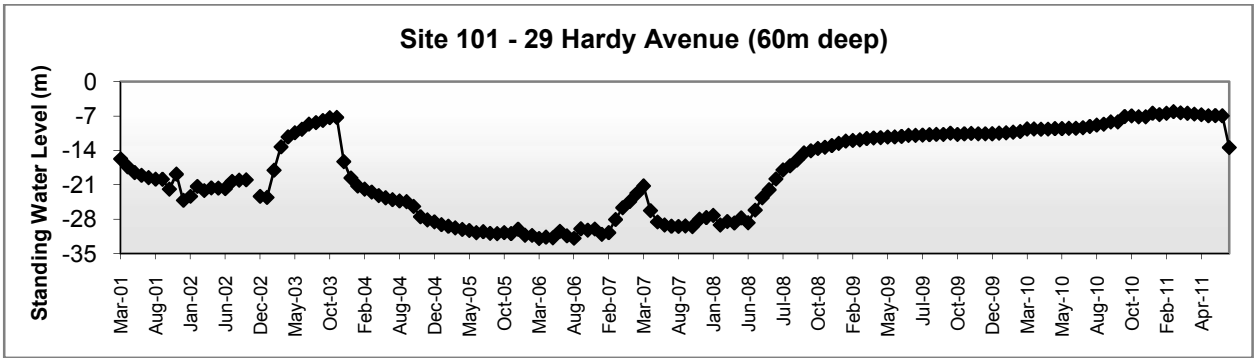

Site 96 - Henwood Park, adjacent to tennis courts (deep)
Standing Water Level (m)
0
-15
-30
-45
-60
Jun-99
Nov-99
Mar-00
Jul-00
Nov-00
Mar-01
Jul-01
Nov-01
Mar-02
Aug-02
Dec-02
Apr-03
Aug-03
Jan-04
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Jan-07
May-07
Sep-07
Jan-08
May-08
Sep-08
Jan-09
May-09
Sep-09
Jan-10
Jun-10
Jan-11

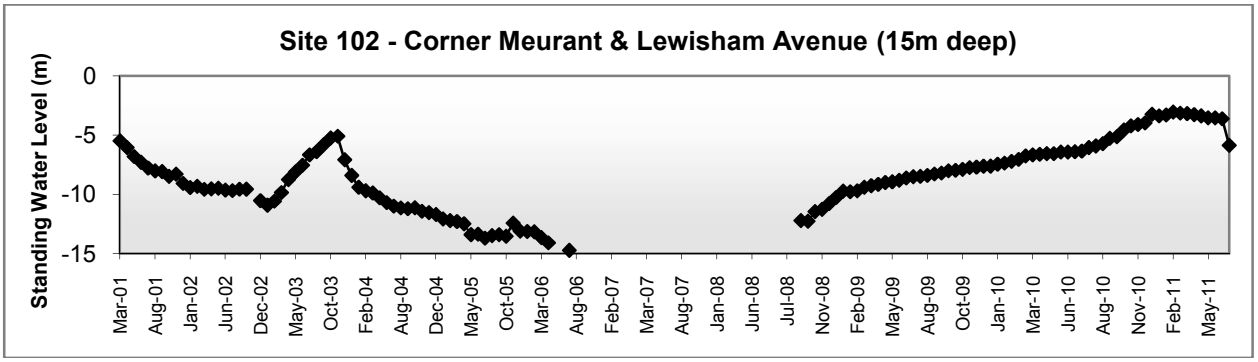

Site 97 - Opposite 22 Amaroo Street (shallow)
Standing Water Level (m)
0
-3
-6
-9
Jul-99
Jan-00
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Sep-02
Jan-03
May-03
Sep-03
Jan-04
Jun-04
Oct-04
Feb-05
Jun-05
Oct-05
Feb-06
Jun-06
Nov-06
Mar-07
Jul-07
Nov-07
Mar-08
Jul-08
Nov-08
Apr-09
Sep-09
Aug-10
Jun-11

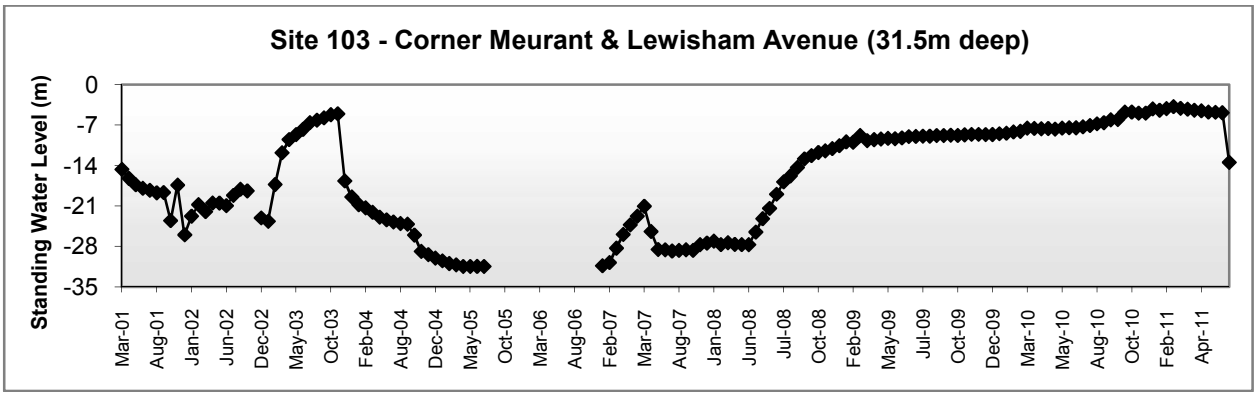

Site 98 - Opposite 22 Amaroo Street (deep)
Standing Water Level (m)
-10
-25
-40
-55
-70
Jul-99
Jan-00
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Sep-02
Jan-03
May-03
Sep-03
May-04
Sep-04
Jan-05
May-05
Sep-05
Jan-06
May-06
Sep-06
Feb-07
Jun-07
Oct-07
Feb-08
Jul-08
Nov-08
Mar-09
Jul-09
Mar-10
Nov-10

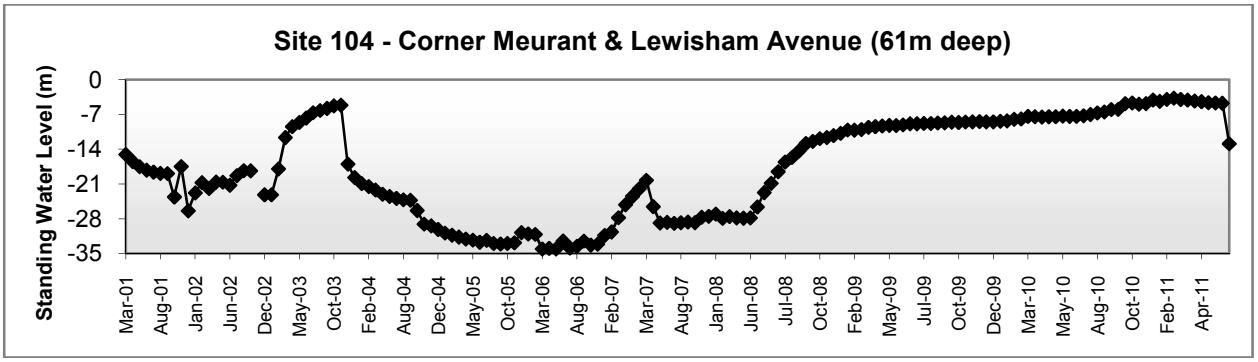

Site 99 - 29 Hardy Avenue (15m deep)
Standing Water Level (m)
0
-4
-8
-12
-16
Mar-01
Aug-01
Jan-02
Jun-02
Dec-02
May-03
Oct-03
Feb-04
Aug-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Mar-07
Aug-07
Jan-08
Jun-08
Jul-08
Oct-08
Feb-09
May-09
Jul-09
Oct-09
Dec-09
Mar-10
May-10
Aug-10
Oct-10
Feb-11
Apr-11

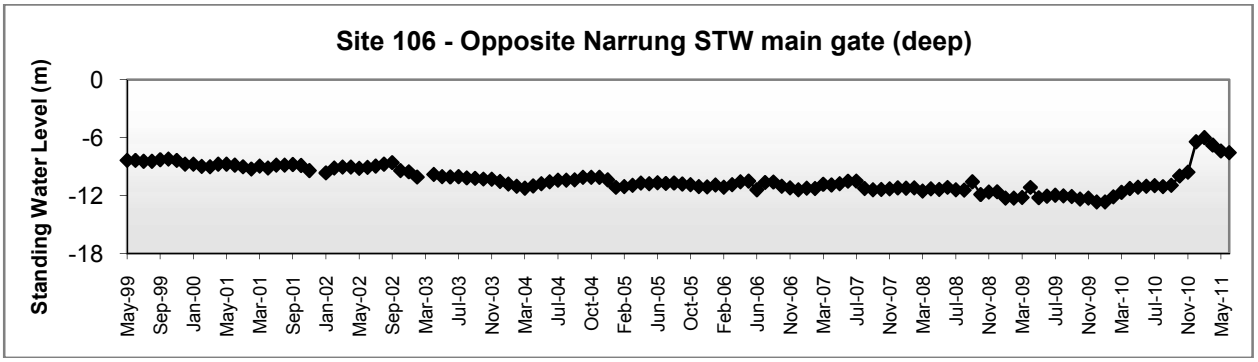

Site 100 - 29 Hardy Avenue (30m deep)
Standing Water Level (m)
0
-6
-12
-18
-24
-30
Mar-01
Aug-01
Jan-02
Jun-02
Dec-02
May-03
Oct-03
Feb-04
Aug-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Mar-07
Aug-07
Jan-08
Jun-08
Jul-08
Oct-08
Feb-09
May-09
Jul-09
Oct-09
Dec-09
Mar-10
May-10
Aug-10
Oct-10
Feb-11
Apr-11

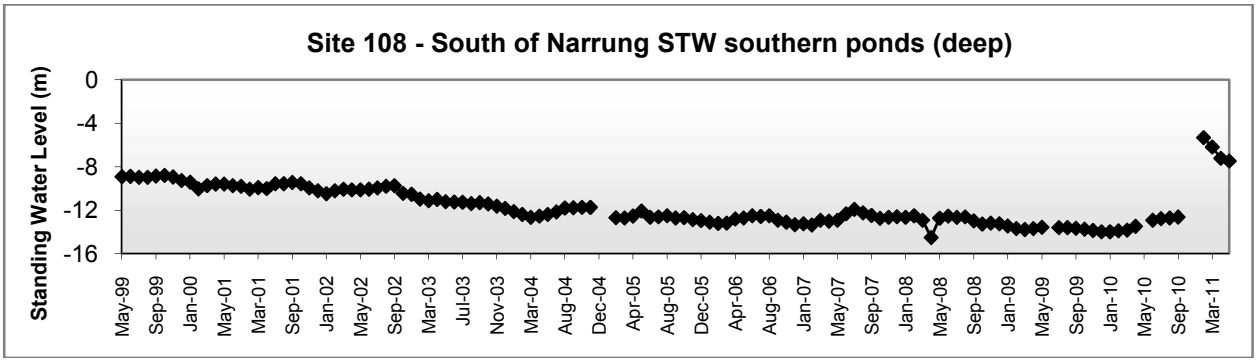

Site 101 - 29 Hardy Avenue (60m deep)
Standing Water Level (m)
0
-7
-14
-21
-28
-35
Mar-01
Aug-01
Jan-02
Jun-02
Dec-02
May-03
Oct-03
Feb-04
Aug-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Mar-07
Aug-07
Jan-08
Jun-08
Jul-08
Oct-08
Feb-09
May-09
Jul-09
Oct-09
Dec-09
Mar-10
May-10
Aug-10
Oct-10
Feb-11
Apr-11

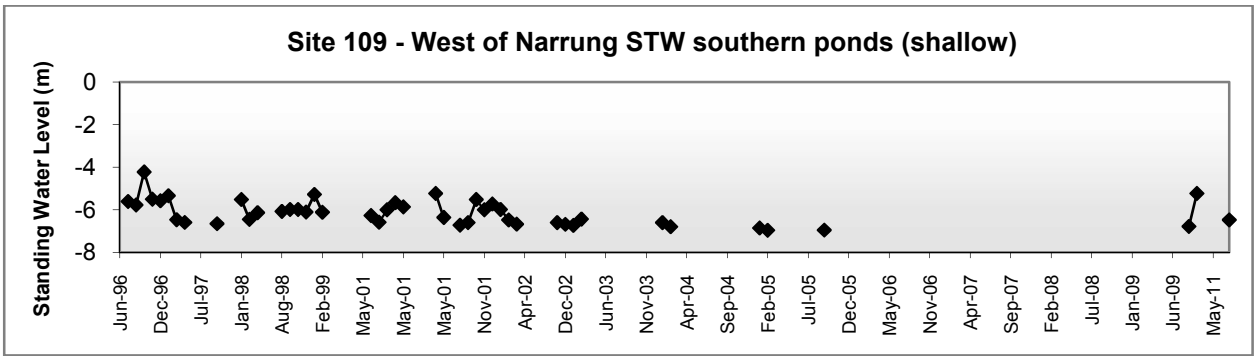

Site 102 - Corner Meurant & Lewisham Avenue (15m deep)
Standing Water Level (m)
0
-5
-10
-15
Mar-01
Aug-01
Jan-02
Jun-02
Dec-02
May-03
Oct-03
Feb-04
Aug-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Mar-07
Aug-07
Jan-08
Jun-08
Jul-08
Nov-08
Feb-09
May-09
Aug-09
Oct-09
Jan-10
Mar-10
Jun-10
Aug-10
Nov-10
Feb-11
May-11

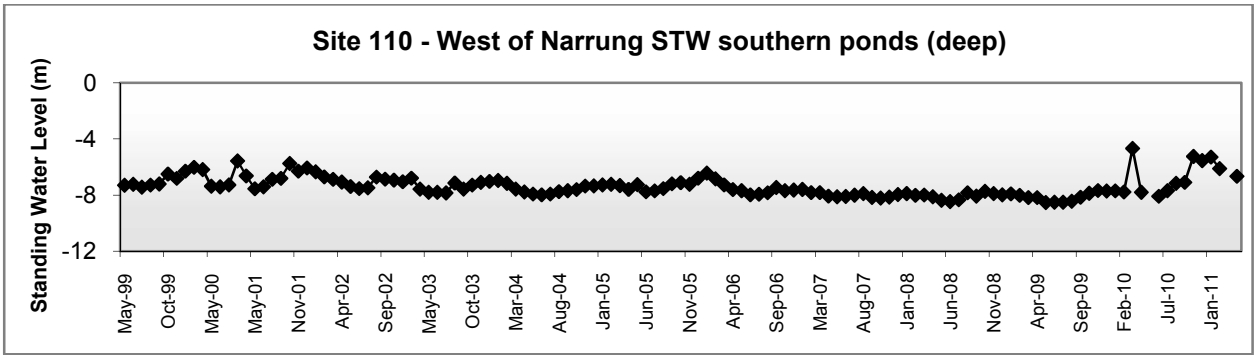

Site 103 - Corner Meurant & Lewisham Avenue (31.5m deep)
Standing Water Level (m)
0
-7
-14
-21
-28
-35
Mar-01
Aug-01
Jan-02
Jun-02
Dec-02
May-03
Oct-03
Feb-04
Aug-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Mar-07
Aug-07
Jan-08
Jun-08
Jul-08
Oct-08
Feb-09
May-09
Jul-09
Oct-09
Dec-09
Mar-10
May-10
Aug-10
Oct-10
Feb-11
Apr-11

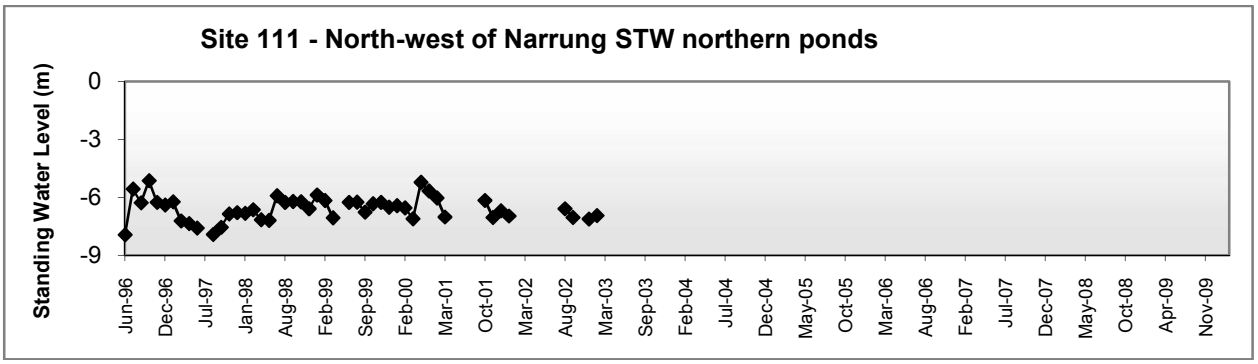

Site 104 - Corner Meurant & Lewisham Avenue (61m deep)
Standing Water Level (m)
0
-7
-14
-21
-28
-35
Mar-01
Aug-01
Jan-02
Jun-02
Dec-02
May-03
Oct-03
Feb-04
Aug-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Mar-07
Aug-07
Jan-08
Jun-08
Jul-08
Oct-08
Feb-09
May-09
Jul-09
Oct-09
Dec-09
Mar-10
May-10
Aug-10
Oct-10
Feb-11
Apr-11

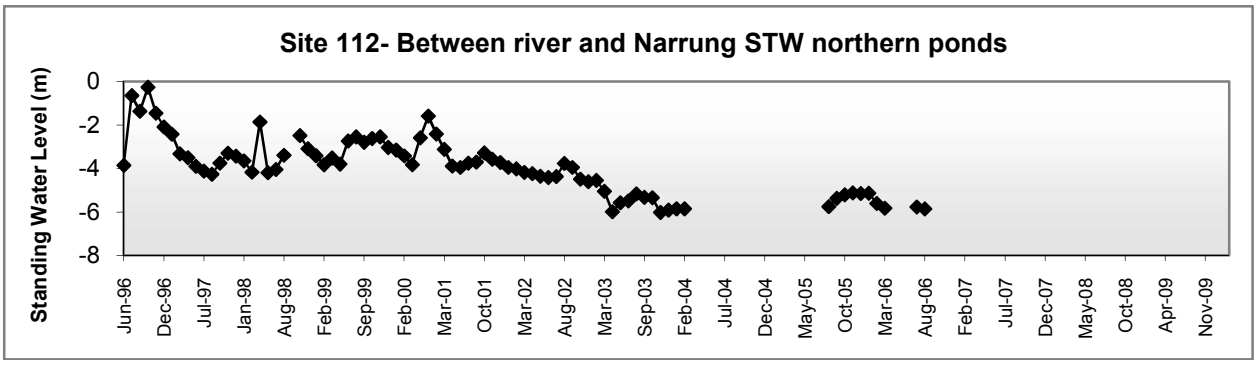

Site 106 - Opposite Narrung STW main gate (deep)
Standing Water Level (m)
0
-6
-12
-18
May-99
Sep-99
Jan-00
May-01
Mar-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Jul-03
Nov-03
Mar-04
Jul-04
Oct-04
Feb-05
Jun-05
Oct-05
Feb-06
Jun-06
Nov-06
Mar-07
Jul-07
Nov-07
Mar-08
Jul-08
Nov-08
Mar-09
Jul-09
Nov-09
Mar-10
Jul-10
Nov-10
May-11

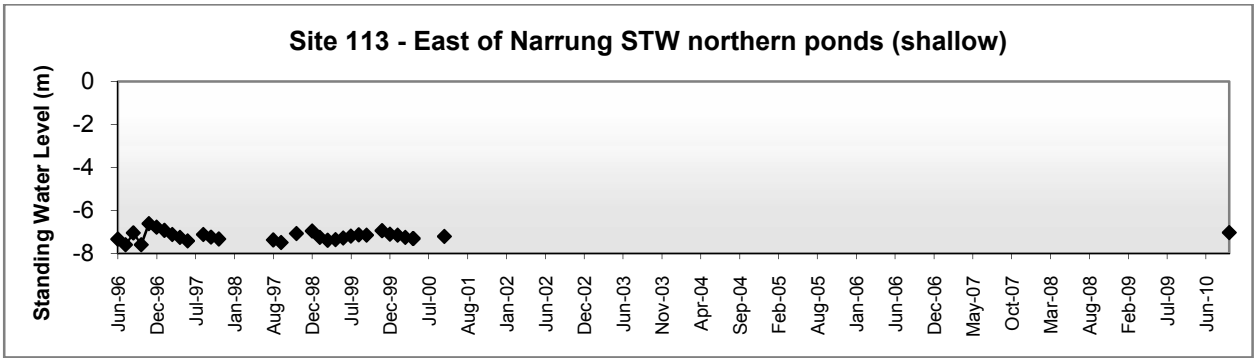

Site 108 - South of Narrung STW southern ponds (deep)
Standing Water Level (m)
0
-4
-8
-12
-16
May-99
Sep-99
Jan-00
May-01
Mar-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Jul-03
Nov-03
Mar-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Jan-07
May-07
Sep-07
Jan-08
May-08
Sep-08
Jan-09
May-09
Sep-09
Jan-10
May-10
Sep-10
Mar-11

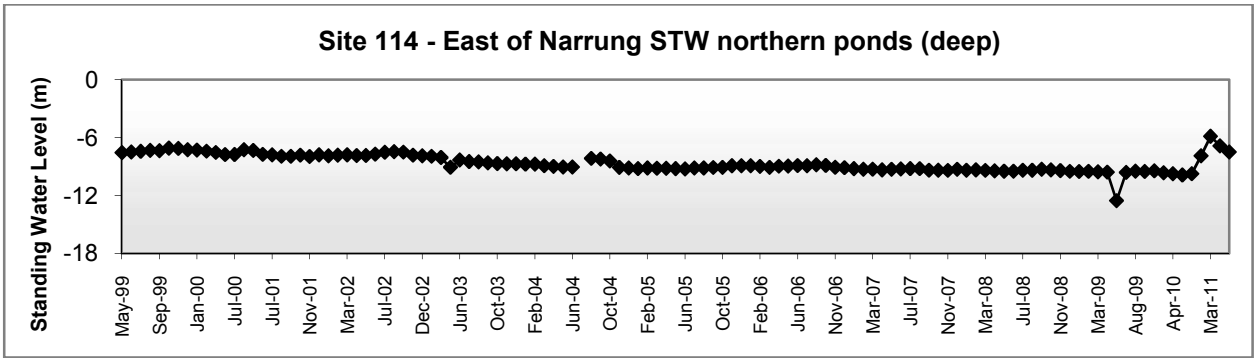

Site 109 - West of Narrung STW southern ponds (shallow)
Standing Water Level (m)
0
-2
-4
-6
-8
Jun-96
Dec-96
Jul-97
Jan-98
Aug-98
Feb-99
May-01
May-01
May-01
Nov-01
Apr-02
Dec-02
Jun-03
Nov-03
Apr-04
Sep-04
Feb-05
Jul-05
Dec-05
May-06
Nov-06
Apr-07
Sep-07
Feb-08
Jul-08
Jan-09
Jun-09
May-11

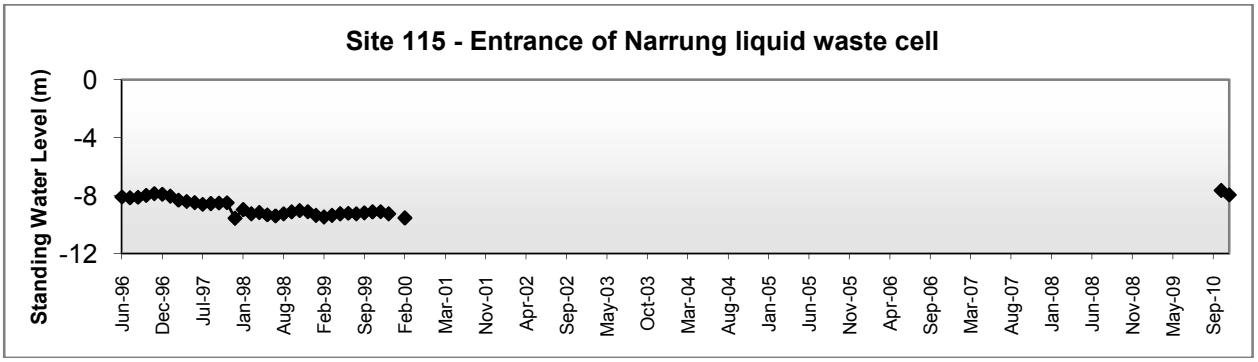

Site 110 - West of Narrung STW southern ponds (deep)
Standing Water Level (m)
0
-4
-8
-12
May-99
Oct-99
May-00
May-01
Nov-01
Apr-02
Sep-02
May-03
Oct-03
Mar-04
Aug-04
Jan-05
Jun-05
Nov-05
Apr-06
Sep-06
Mar-07
Aug-07
Jan-08
Jun-08
Nov-08
Apr-09
Sep-09
Feb-10
Jul-10
Jan-11

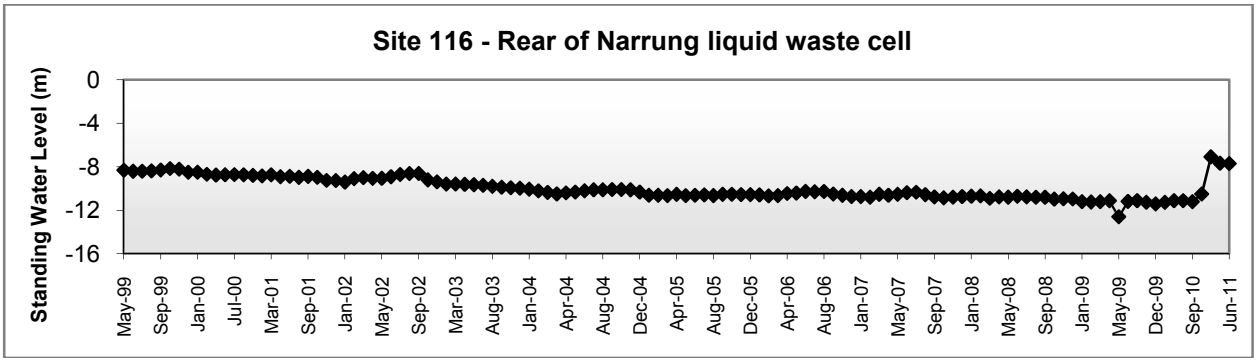

Site 111 - North-west of Narrung STW northern ponds
Standing Water Level (m)
0
-3
-6
-9
Jun-96
Dec-96
Jul-97
Jan-98
Aug-98
Feb-99
Sep-99
Feb-00
Mar-01
Oct-01
Mar-02
Aug-02
Mar-03
Sep-03
Feb-04
Jul-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Jul-07
Dec-07
May-08
Oct-08
Apr-09
Nov-09

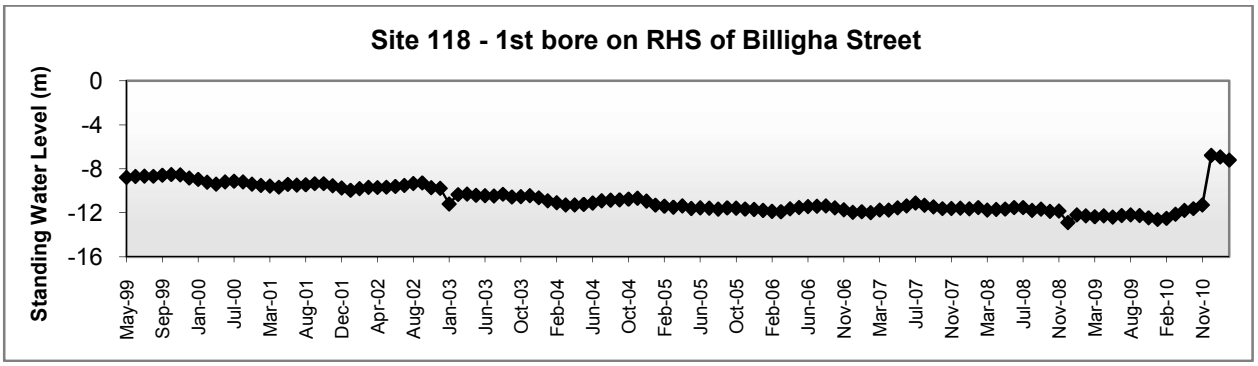

Site 112- Between river and Narrung STW northern ponds
Standing Water Level (m)
0
-2
-4
-6
-8
Jun-96
Dec-96
Jul-97
Jan-98
Aug-98
Feb-99
Sep-99
Feb-00
Mar-01
Oct-01
Mar-02
Aug-02
Mar-03
Sep-03
Feb-04
Jul-04
Dec-04
May-05
Oct-05
Mar-06
Aug-06
Feb-07
Jul-07
Dec-07
May-08
Oct-08
Apr-09
Nov-09

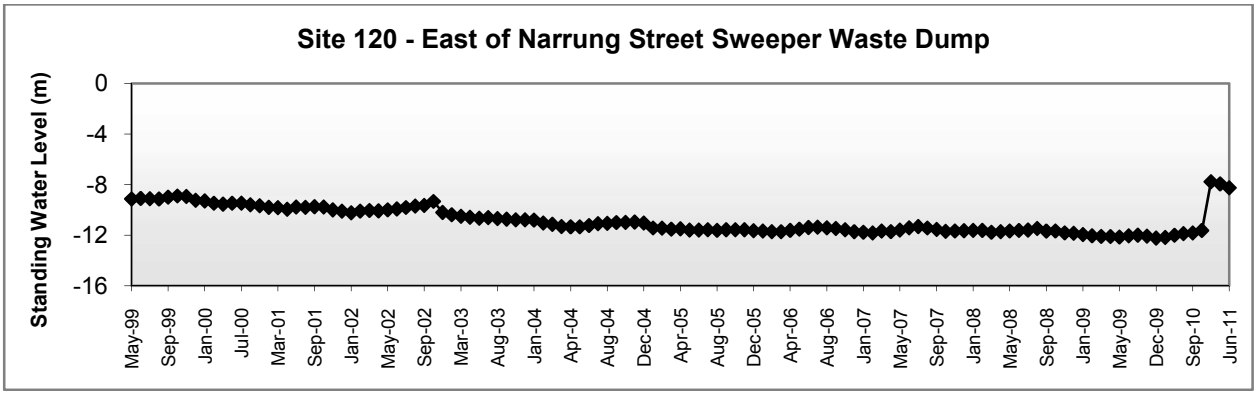

Site 113 - East of Narrung STW northern ponds (shallow)
Standing Water Level (m)
0
-2
-4
-6
-8
Jun-96
Dec-96
Jul-97
Jan-98
Aug-97
Dec-98
Jul-99
Dec-99
Jul-00
Aug-01
Jan-02
Jun-02
Dec-02
Jun-03
Nov-03
Apr-04
Sep-04
Feb-05
Aug-05
Jan-06
Jun-06
Dec-06
May-07
Oct-07
Mar-08
Aug-08
Feb-09
Jul-09
Jun-10

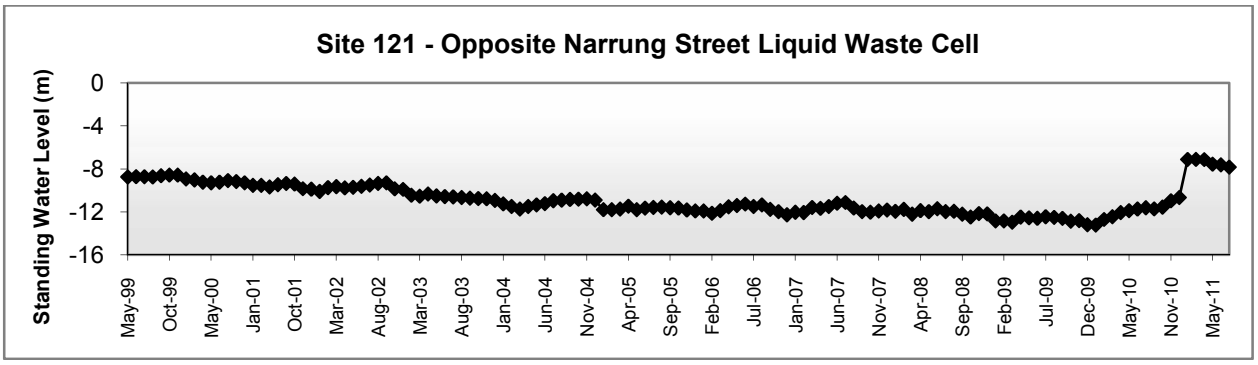

Site 114 - East of Narrung STW northern ponds (deep)
Standing Water Level (m)
0
-6
-12
-18
May-99
Sep-99
Jan-00
Jul-00
Jul-01
Nov-01
Mar-02
Jul-02
Dec-02
Jun-03
Oct-03
Feb-04
Jun-04
Oct-04
Feb-05
Jun-05
Oct-05
Feb-06
Jun-06
Nov-06
Mar-07
Jul-07
Nov-07
Mar-08
Jul-08
Nov-08
Mar-09
Aug-09
Apr-10
Mar-11

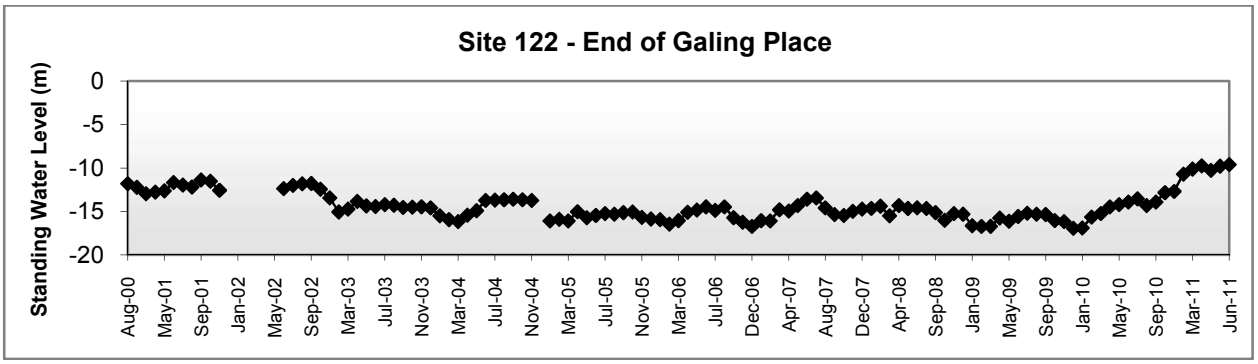

Site 115 - Entrance of Narrung liquid waste cell
Standing Water Level (m)
0
-4
-8
-12
Jun-96
Dec-96
Jul-97
Jan-98
Aug-98
Feb-99
Sep-99
Feb-00
Mar-01
Nov-01
Apr-02
Sep-02
May-03
Oct-03
Mar-04
Aug-04
Jan-05
Jun-05
Nov-05
Apr-06
Sep-06
Mar-07
Aug-07
Jan-08
Jun-08
Nov-08
May-09
Sep-10

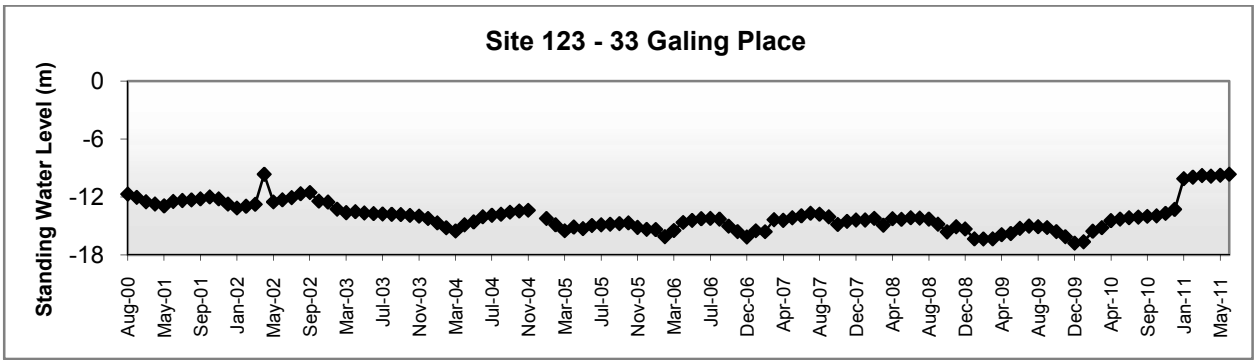

Site 116 - Rear of Narrung liquid waste cell
Standing Water Level (m)
0
-4
-8
-12
-16
May-99
Sep-99
Jan-00
Jul-00
Mar-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Aug-03
Jan-04
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Jan-07
May-07
Sep-07
Jan-08
May-08
Sep-08
Jan-09
May-09
Dec-09
Sep-10
Jun-11

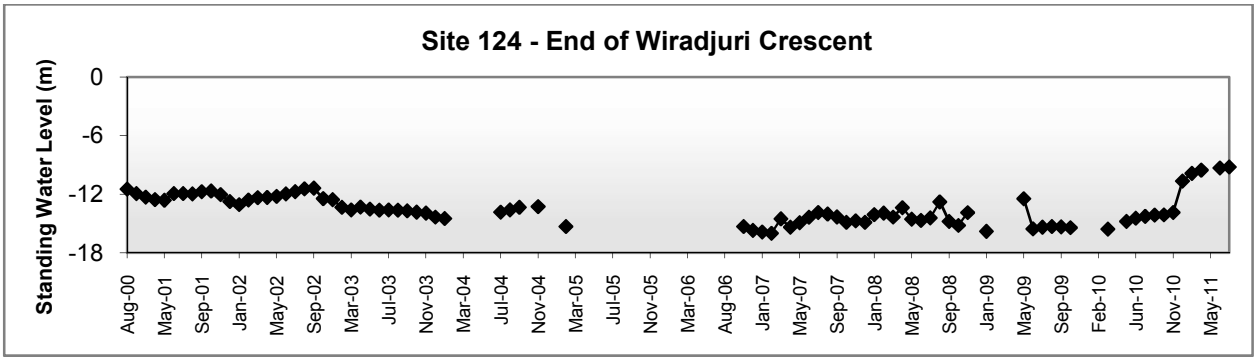

Site 118 - 1st bore on RHS of Billigha Street
Standing Water Level (m)
0
-4
-8
-12
-16
May-99
Sep-99
Jan-00
Jul-00
Mar-01
Aug-01
Dec-01
Apr-02
Aug-02
Jan-03
Jun-03
Oct-03
Feb-04
Jun-04
Oct-04
Feb-05
Jun-05
Oct-05
Feb-06
Jun-06
Nov-06
Mar-07
Jul-07
Nov-07
Mar-08
Jul-08
Nov-08
Mar-09
Aug-09
Feb-10
Nov-10

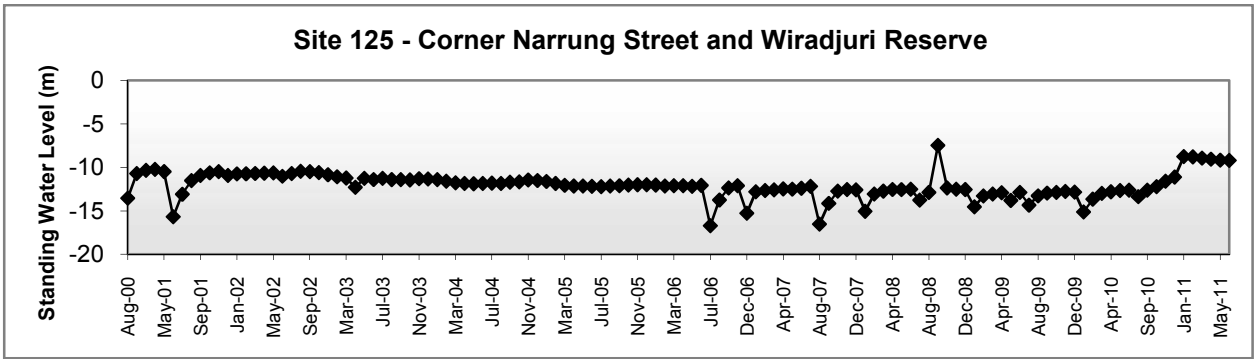

Site 120 - East of Narrung Street Sweeper Waste Dump
Standing Water Level (m)
0
-4
-8
-12
-16
May-99
Sep-99
Jan-00
Jul-00
Mar-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Aug-03
Jan-04
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Jan-07
May-07
Sep-07
Jan-08
May-08
Sep-08
Jan-09
May-09
Dec-09
Sep-10
Jun-11

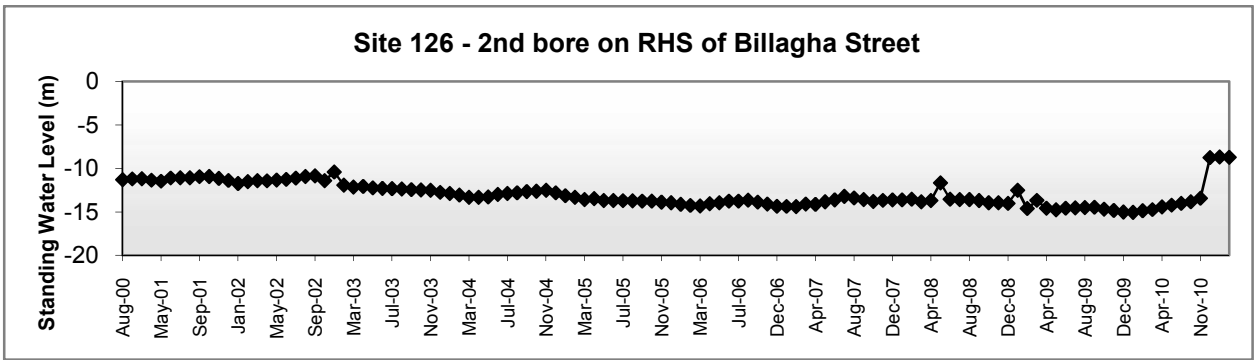

Site 121 - Opposite Narrung Street Liquid Waste Cell
Standing Water Level (m)
0
-4
-8
-12
-16
May-99
Oct-99
May-00
Jan-01
Oct-01
Mar-02
Aug-02
Mar-03
Aug-03
Jan-04
Jun-04
Nov-04
Apr-05
Sep-05
Feb-06
Jul-06
Jan-07
Jun-07
Nov-07
Apr-08
Sep-08
Feb-09
Jul-09
Dec-09
May-10
Nov-10
May-11

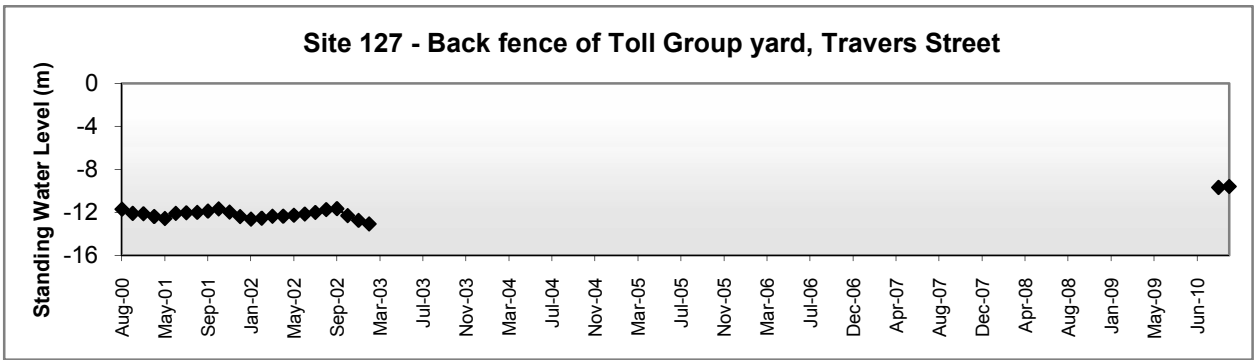

Site 122 - End of Galing Place
Standing Water Level (m)
0
-5
-10
-15
-20
Aug-00
May-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Jul-03
Nov-03
Mar-04
Jul-04
Nov-04
Mar-05
Jul-05
Nov-05
Mar-06
Jul-06
Dec-06
Apr-07
Aug-07
Dec-07
Apr-08
Sep-08
Jan-09
May-09
Sep-09
Jan-10
May-10
Sep-10
Mar-11
Jun-11

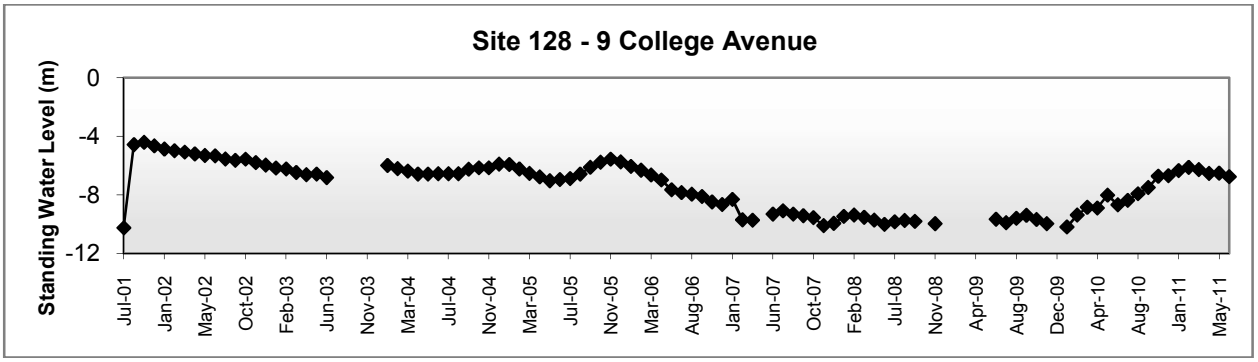

Site 123 - 33 Galing Place
Standing Water Level (m)
0
-6
-12
-18
Aug-00
May-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Jul-03
Nov-03
Mar-04
Jul-04
Nov-04
Mar-05
Jul-05
Nov-05
Mar-06
Jul-06
Dec-06
Apr-07
Aug-07
Dec-07
Apr-08
Aug-08
Dec-08
Apr-09
Aug-09
Dec-09
Apr-10
Sep-10
Jan-11
May-11

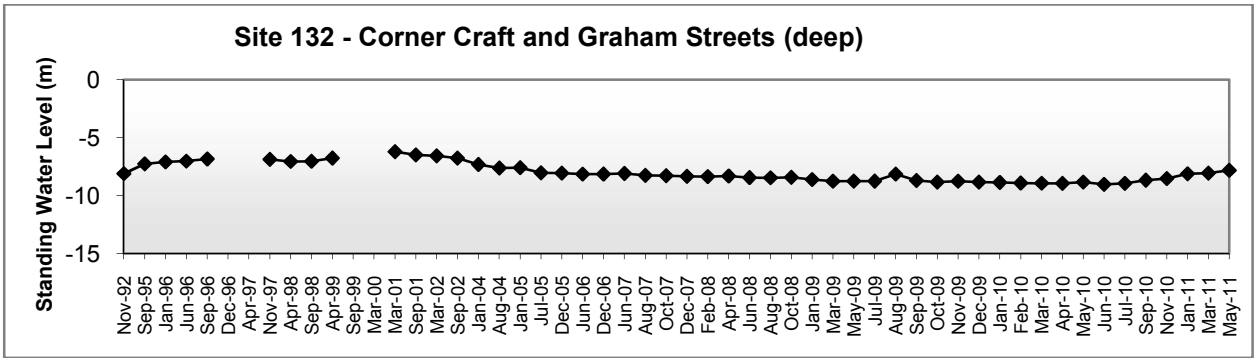

Site 124 - End of Wiradjuri Crescent
Standing Water Level (m)
0
-6
-12
-18
Aug-00
May-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Jul-03
Nov-03
Mar-04
Jul-04
Nov-04
Mar-05
Jul-05
Nov-05
Mar-06
Aug-06
Jan-07
May-07
Sep-07
Jan-08
May-08
Sep-08
Jan-09
May-09
Sep-09
Feb-10
Jun-10
Nov-10
May-11

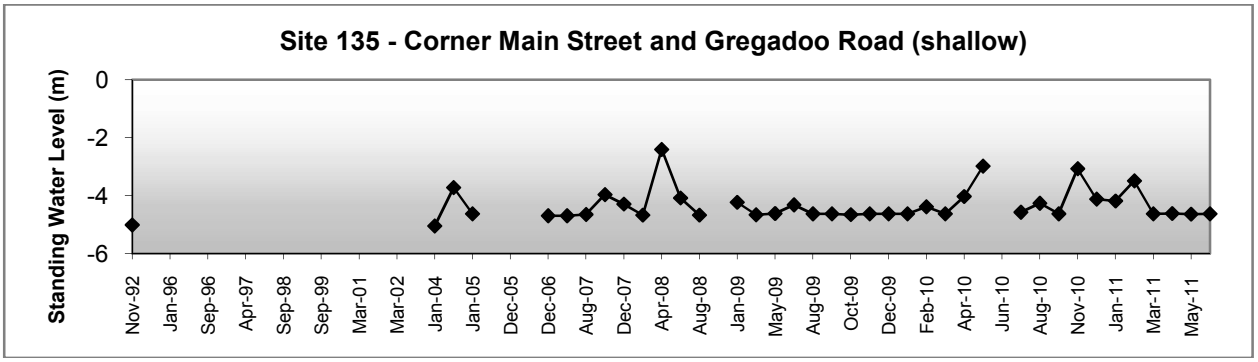

Site 125 - Corner Narrung Street and Wiradjuri Reserve
Standing Water Level (m)
0
-5
-10
-15
-20
Aug-00
May-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Jul-03
Nov-03
Mar-04
Jul-04
Nov-04
Mar-05
Jul-05
Nov-05
Mar-06
Jul-06
Dec-06
Apr-07
Aug-07
Dec-07
Apr-08
Aug-08
Dec-08
Apr-09
Aug-09
Dec-09
Apr-10
Sep-10
Jan-11
May-11

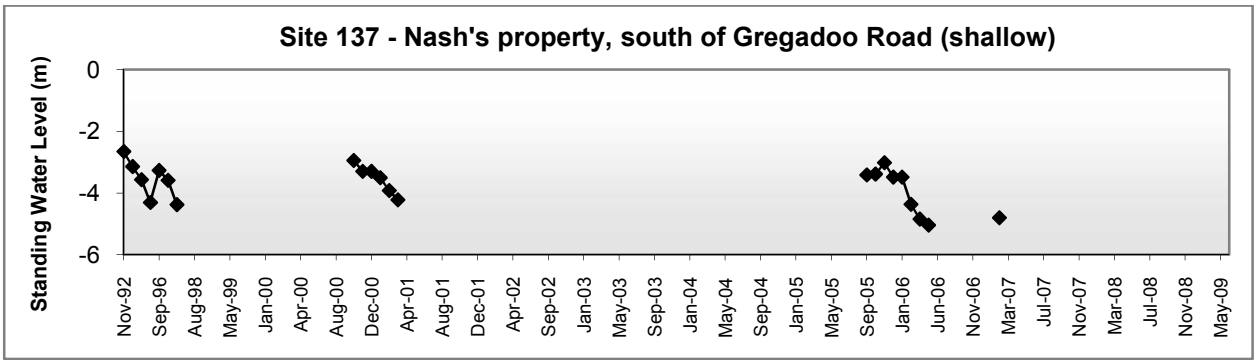

Site 126 - 2nd bore on RHS of Billagha Street
Standing Water Level (m)
0
-5
-10
-15
-20
Aug-00
May-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Jul-03
Nov-03
Mar-04
Jul-04
Nov-04
Mar-05
Jul-05
Nov-05
Mar-06
Jul-06
Dec-06
Apr-07
Aug-07
Dec-07
Apr-08
Aug-08
Dec-08
Apr-09
Aug-09
Dec-09
Apr-10
Nov-10

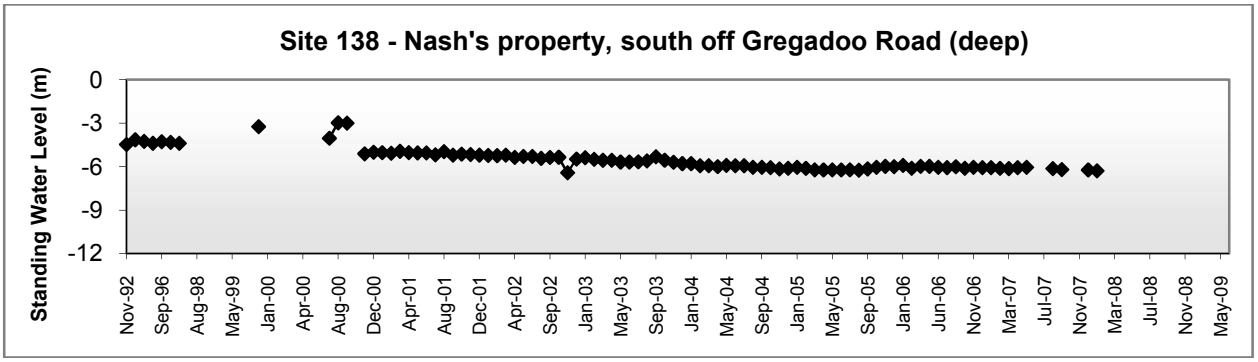

Site 127 - Back fence of Toll Group yard, Travers Street
Standing Water Level (m)
0
-4
-8
-12
-16
Aug-00
May-01
Sep-01
Jan-02
May-02
Sep-02
Mar-03
Jul-03
Nov-03
Mar-04
Jul-04
Nov-04
Mar-05
Jul-05
Nov-05
Mar-06
Jul-06
Dec-06
Apr-07
Aug-07
Dec-07
Apr-08
Aug-08
Jan-09
May-09
Jun-10

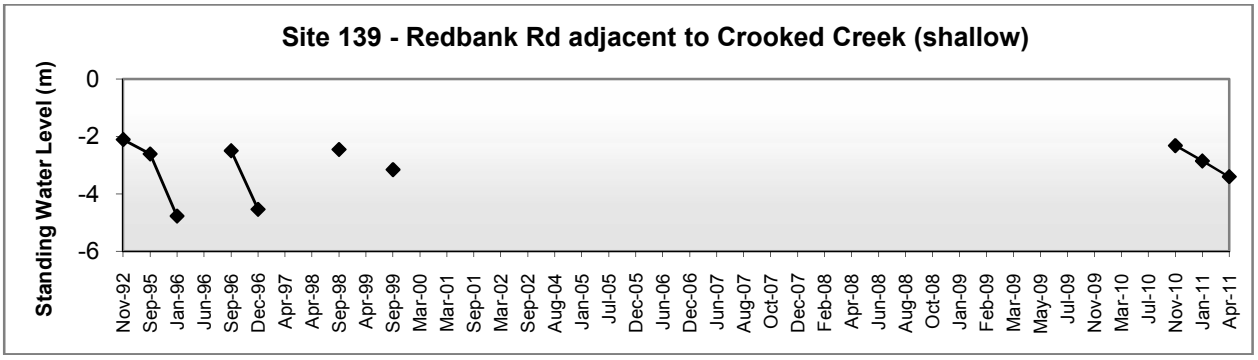

Site 128 - 9 College Avenue
Standing Water Level (m)
0
-4
-8
-12
Jul-01
Jan-02
May-02
Oct-02
Feb-03
Jun-03
Nov-03
Mar-04
Jul-04
Nov-04
Mar-05
Jul-05
Nov-05
Mar-06
Aug-06
Jan-07
Jun-07
Oct-07
Feb-08
Jul-08
Nov-08
Apr-09
Aug-09
Dec-09
Apr-10
Aug-10
Jan-11
May-11

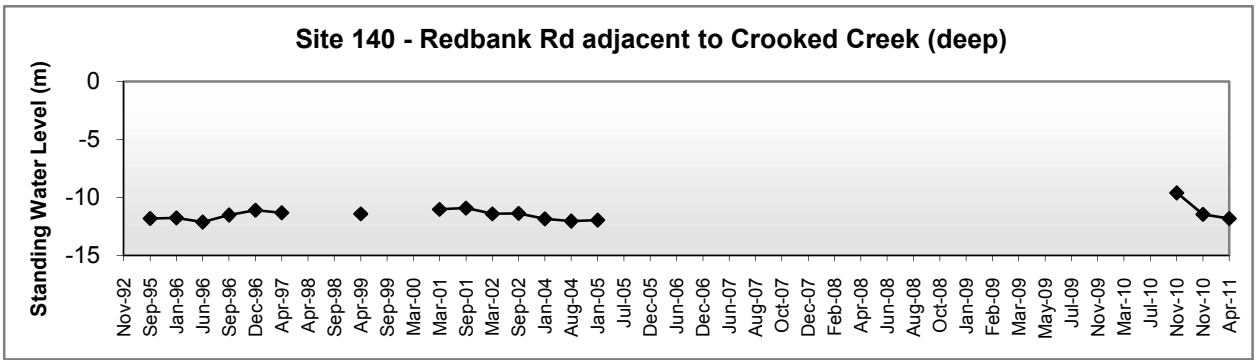

Site 132 - Corner Craft and Graham Streets (deep)
Standing Water Level (m)
0
-5
-10
-15
Nov-92
Sep-95
Jan-96
Jun-96
Sep-96
Dec-96
Apr-97
Nov-97
Apr-98
Sep-98
Apr-99
Sep-99
Mar-00
Mar-01
Sep-01
Mar-02
Sep-02
Jan-04
Aug-04
Jan-05
Jul-05
Dec-05
Jun-06
Dec-06
Jun-07
Aug-07
Oct-07
Dec-07
Feb-08
Apr-08
Jun-08
Aug-08
Oct-08
Jan-09
Mar-09
May-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Sep-10
Nov-10
Jan-11
Mar-11
May-11

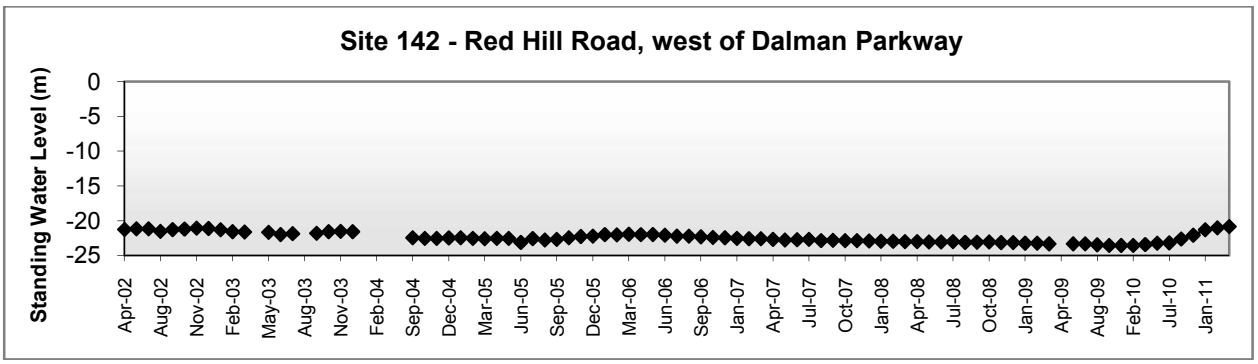

Site 135 - Corner Main Street and Gregadoo Road (shallow)
Standing Water Level (m)
0
-2
-4
-6
Nov-92
Jan-96
Sep-96
Apr-97
Sep-98
Sep-99
Mar-01
Mar-02
Jan-04
Jan-05
Dec-05
Dec-06
Aug-07
Dec-07
Apr-08
Aug-08
Jan-09
May-09
Aug-09
Oct-09
Dec-09
Feb-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Mar-11
May-11

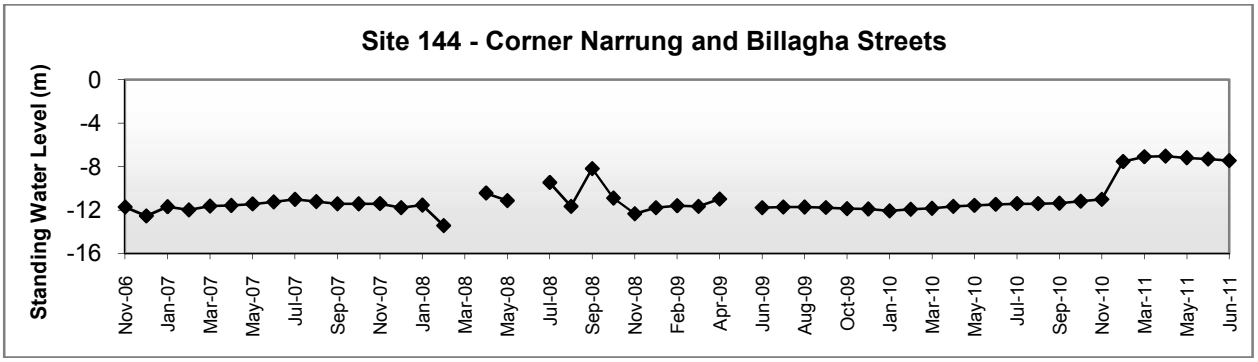

Site 137 - Nash's property, south of Gregadoo Road (shallow)
Standing Water Level (m)
0
-2
-4
-6
Nov-92
Sep-96
Aug-98
May-99
Jan-00
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Sep-02
Jan-03
May-03
Sep-03
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Jan-06
Jun-06
Nov-06
Mar-07
Jul-07
Nov-07
Mar-08
Jul-08
Nov-08
May-09

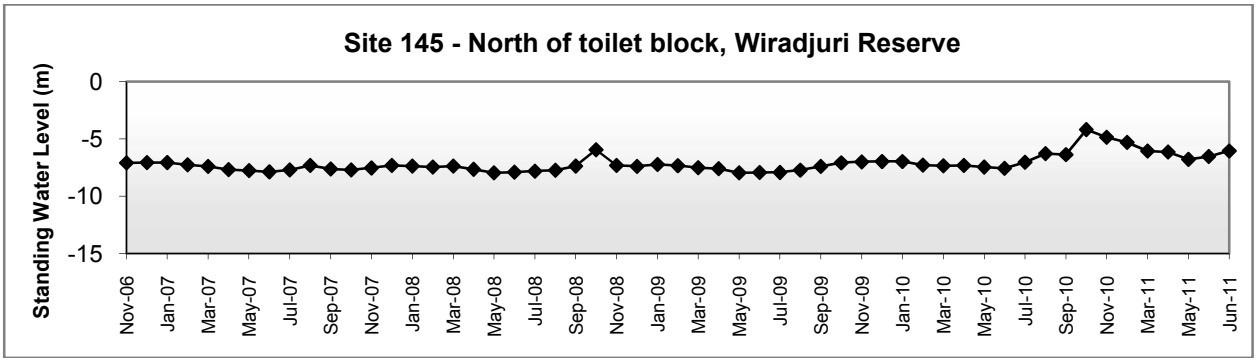

Site 138 - Nash's property, south off Gregadoo Road (deep)
Standing Water Level (m)
0
-3
-6
-9
-12
Nov-92
Sep-96
Aug-98
May-99
Jan-00
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Sep-02
Jan-03
May-03
Sep-03
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Jan-06
Jun-06
Nov-06
Mar-07
Jul-07
Nov-07
Mar-08
Jul-08
Nov-08
May-09


Site 139 - Redbank Rd adjacent to Crooked Creek (shallow)
Standing Water Level (m)
0
-2
-4
-6
Nov-92
Sep-95
Jan-96
Jun-96
Sep-96
Dec-96
Apr-97
Apr-98
Sep-98
Apr-99
Sep-99
Mar-00
Mar-01
Sep-01
Mar-02
Sep-02
Aug-04
Jan-05
Jul-05
Dec-05
Jun-06
Dec-06
Jun-07
Aug-07
Oct-07
Dec-07
Feb-08
Apr-08
Jun-08
Aug-08
Oct-08
Jan-09
Feb-09
Mar-09
May-09
Jul-09
Nov-09
Mar-10
Jul-10
Nov-10
Jan-11
Apr-11


Site 140 - Redbank Rd adjacent to Crooked Creek (deep)
Standing Water Level (m)
0
-5
-10
-15
Nov-92
Sep-95
Jan-96
Jun-96
Sep-96
Dec-96
Apr-97
Apr-98
Sep-98
Apr-99
Sep-99
Mar-00
Mar-01
Sep-01
Mar-02
Sep-02
Jan-04
Aug-04
Jan-05
Jul-05
Dec-05
Jun-06
Dec-06
Jun-07
Aug-07
Oct-07
Dec-07
Feb-08
Apr-08
Jun-08
Aug-08
Oct-08
Jan-09
Feb-09
Mar-09
May-09
Jul-09
Nov-09
Mar-10
Jul-10
Nov-10
Nov-10
Apr-11


Site 142 - Red Hill Road, west of Dalman Parkway
Standing Water Level (m)
0
-5
-10
-15
-20
-25
Apr-02
Aug-02
Nov-02
Feb-03
May-03
Aug-03
Nov-03
Feb-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Mar-06
Jun-06
Sep-06
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
Oct-08
Jan-09
Apr-09
Aug-09
Feb-10
Jul-10
Jan-11


Site 144 - Corner Narrung and Billagha Streets
Standing Water Level (m)
0
-4
-8
-12
-16
Nov-06
Jan-07
Mar-07
May-07
Jul-07
Sep-07
Nov-07
Jan-08
Mar-08
May-08
Jul-08
Sep-08
Nov-08
Feb-09
Apr-09
Jun-09
Aug-09
Oct-09
Jan-10
Mar-10
May-10
Jul-10
Sep-10
Nov-10
Mar-11
May-11
Jun-11


Site 145 - North of toilet block, Wiradjuri Reserve
Standing Water Level (m)
0
-5
-10
-15
Nov-06
Jan-07
Mar-07
May-07
Jul-07
Sep-07
Nov-07
Jan-08
Mar-08
May-08
Jul-08
Sep-08
Nov-08
Jan-09
Mar-09
May-09
Jul-09
Sep-09
Nov-09
Jan-10
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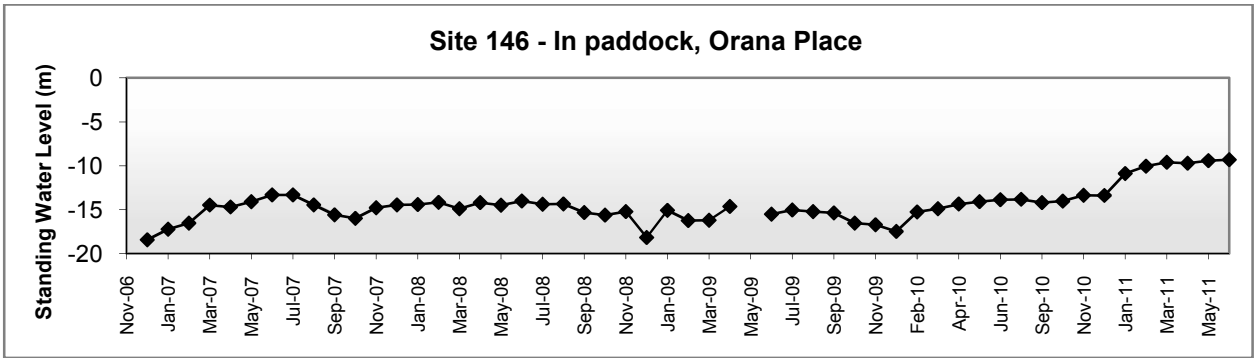
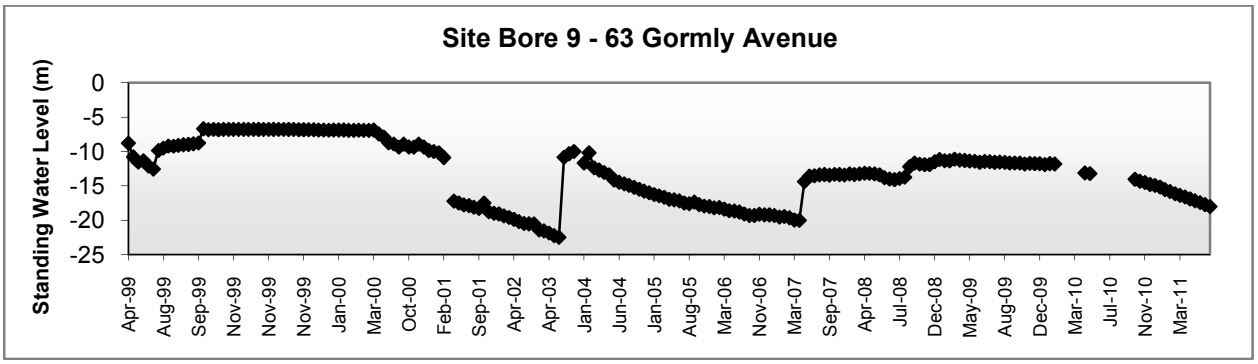
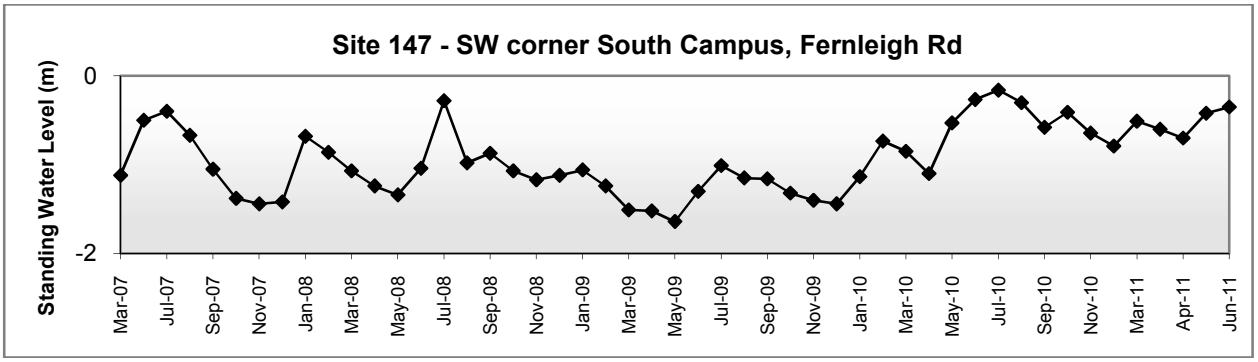
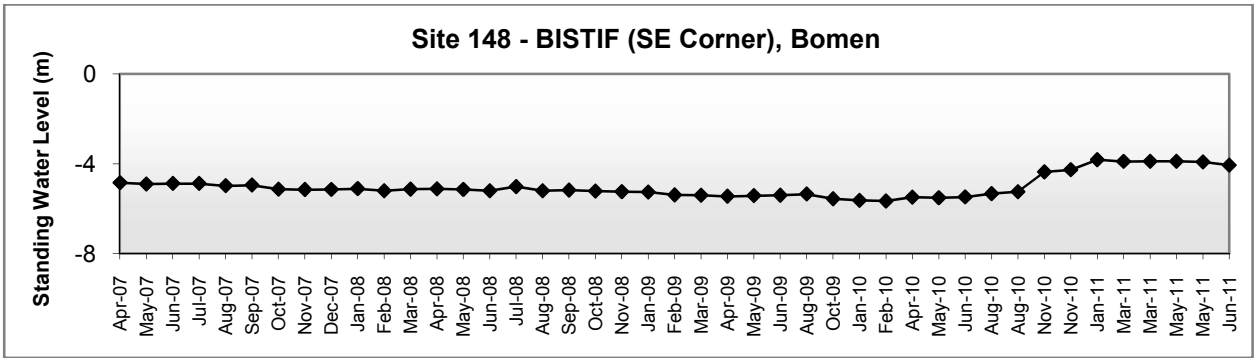
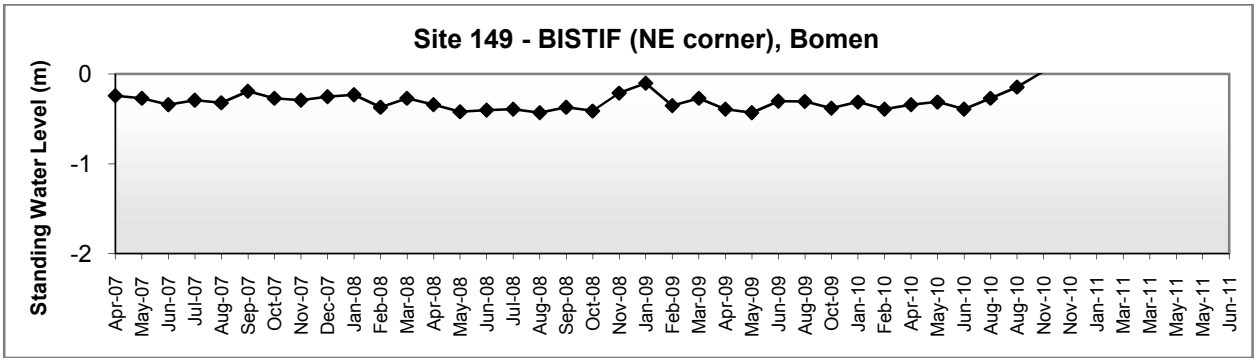
May-10
Jul-10
Sep-10
Nov-10
Mar-11
May-11
Jun-11

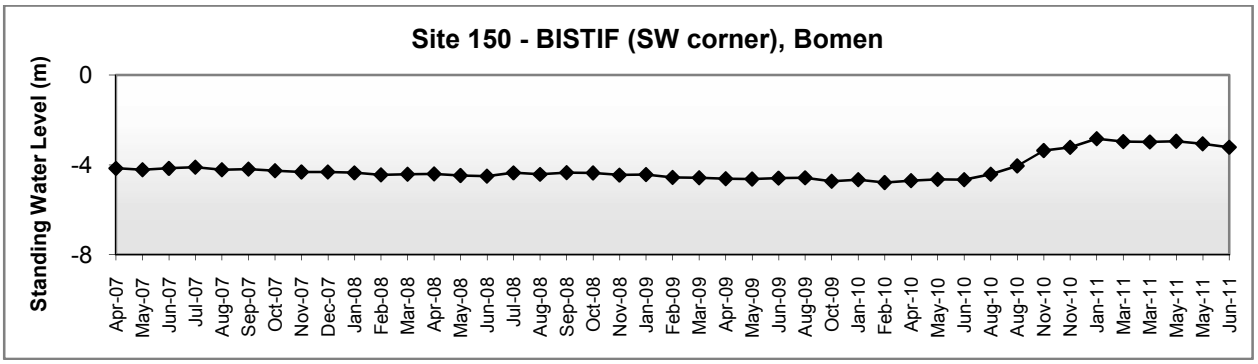

Site 146 - In paddock, Orana Place
Standing Water Level (m)
0
-5
-10
-15
-20
Nov-06
Jan-07
Mar-07
May-07
Jul-07
Sep-07
Nov-07
Jan-08
Mar-08
May-08
Jul-08
Sep-08
Nov-08
Jan-09
Mar-09
May-09
Jul-09
Sep-09
Nov-09
Feb-10
Apr-10
Jun-10
Sep-10
Nov-10
Jan-11
Mar-11
May-11

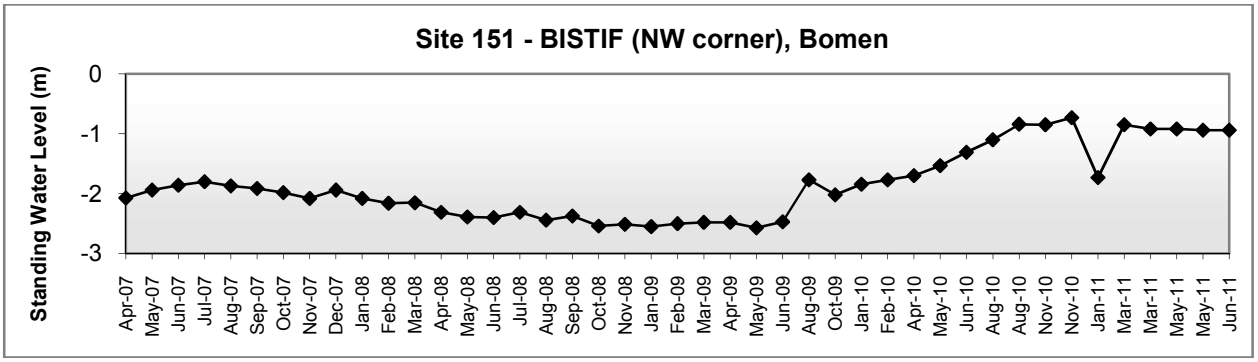

Site Bore 9 - 63 Gormly Avenue
Standing Water Level (m)
0
-5
-10
-15
-20
-25
Apr-99
Aug-99
Sep-99
Nov-99
Nov-99
Nov-99
Jan-00
Mar-00
Oct-00
Feb-01
Sep-01
Apr-02
Apr-03
Jan-04
Jun-04
Jan-05
Aug-05
Mar-06
Nov-06
Mar-07
Sep-07
Apr-08
Jul-08
Dec-08
May-09
Aug-09
Dec-09
Mar-10
Jul-10
Nov-10
Mar-11

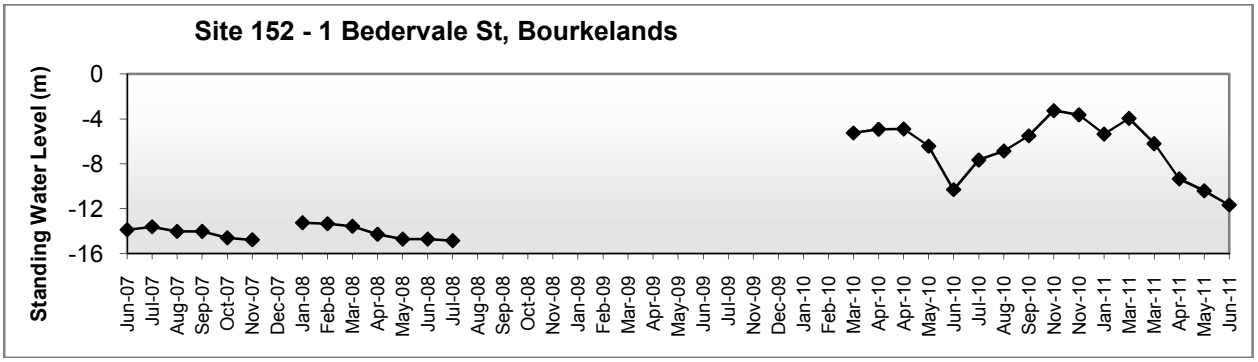

Site 147 - SW corner South Campus, Fernleigh Rd
Standing Water Level (m)
0
-2
Mar-07
Jul-07
Sep-07
Nov-07
Jan-08
Mar-08
May-08
Jul-08
Sep-08
Nov-08
Jan-09
Mar-09
May-09
Jul-09
Sep-09
Nov-09
Jan-10
Mar-10
May-10
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

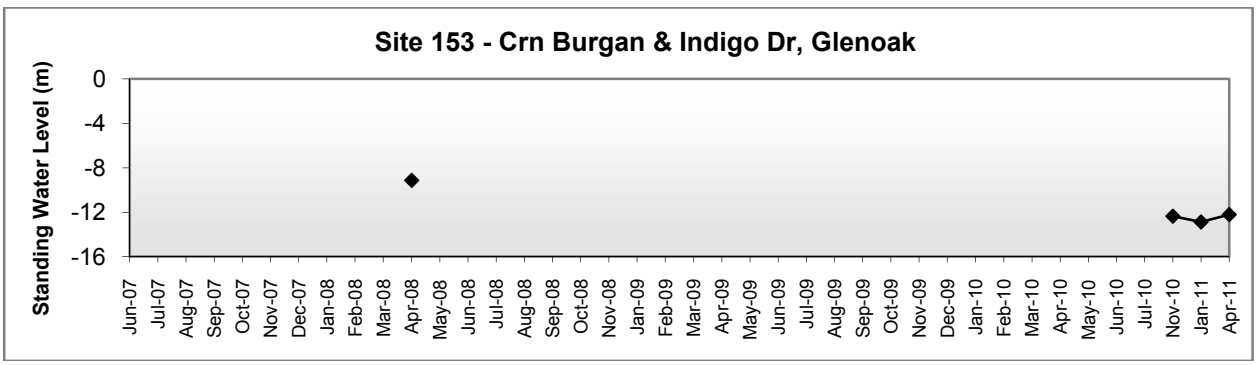

Site 148 - BISTIF (SE Corner), Bomen
Standing Water Level (m)
0
-4
-8
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Aug-09
Oct-09
Jan-10
Feb-10
Apr-10
May-10
Jun-10
Aug-10
Aug-10
Nov-10
Nov-10
Jan-11
Mar-11
Mar-11
May-11
May-11
Jun-11

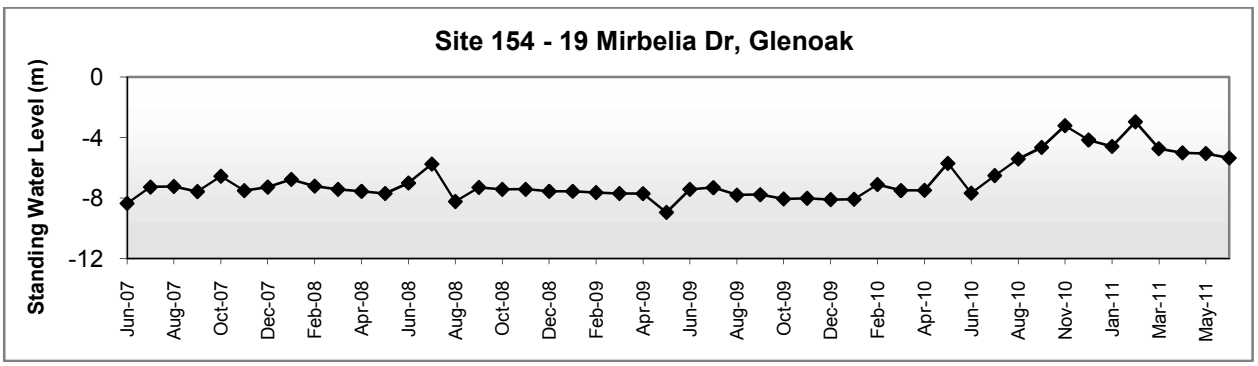

Site 149 - BISTIF (NE corner), Bomen
Standing Water Level (m)
0
-1
-2
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Aug-09
Oct-09
Jan-10
Feb-10
Apr-10
May-10
Jun-10
Aug-10
Aug-10
Nov-10
Nov-10
Jan-11
Mar-11
Mar-11
May-11
May-11
Jun-11

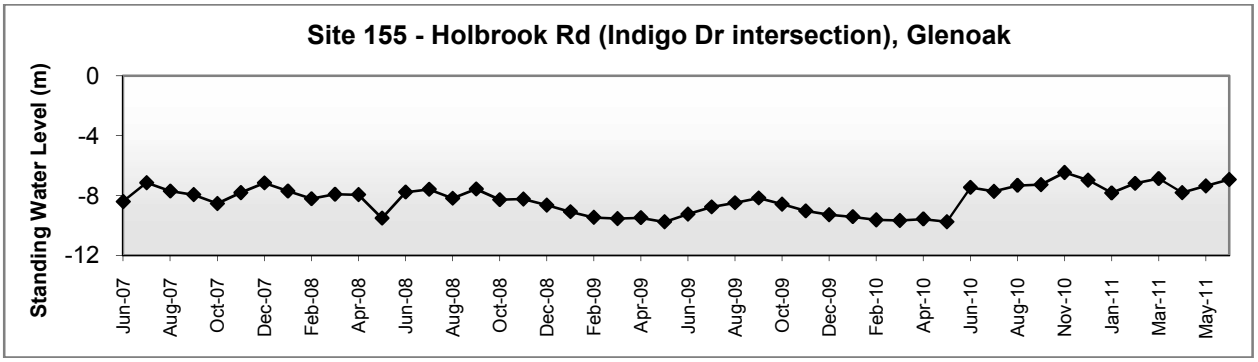

Site 150 - BISTIF (SW corner), Bomen
Standing Water Level (m)
0
-4
-8
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Aug-09
Oct-09
Jan-10
Feb-10
Apr-10
May-10
Jun-10
Aug-10
Aug-10
Nov-10
Nov-10
Jan-11
Mar-11
Mar-11
May-11
May-11
Jun-11

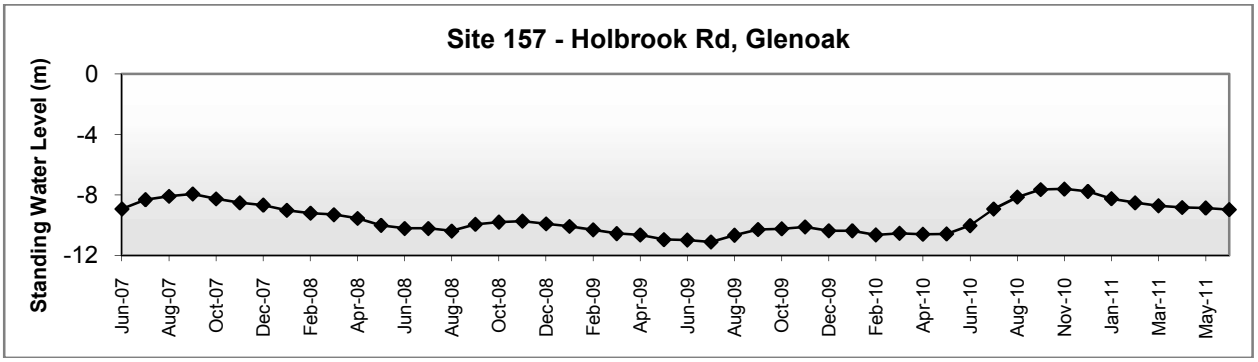

Site 151 - BISTIF (NW corner), Bomen
Standing Water Level (m)
0
-1
-2
-3
Apr-07 May-07 Jun-07 Jul-07 Aug-07 Sep-07 Oct-07 Nov-07 Dec-07 Jan-08 Feb-08 Mar-08 Apr-08 May-08 Jun-08 Jul-08 Aug-08 Sep-08 Oct-08 Nov-08 Jan-09 Feb-09 Mar-09 Apr-09 May-09 Jun-09 Aug-09 Oct-09 Jan-10 Feb-10 Apr-10 May-10 Jun-10 Aug-10 Aug-10 Nov-10 Nov-10 Jan-11 Mar-11 Mar-11 May-11 May-11 Jun-11

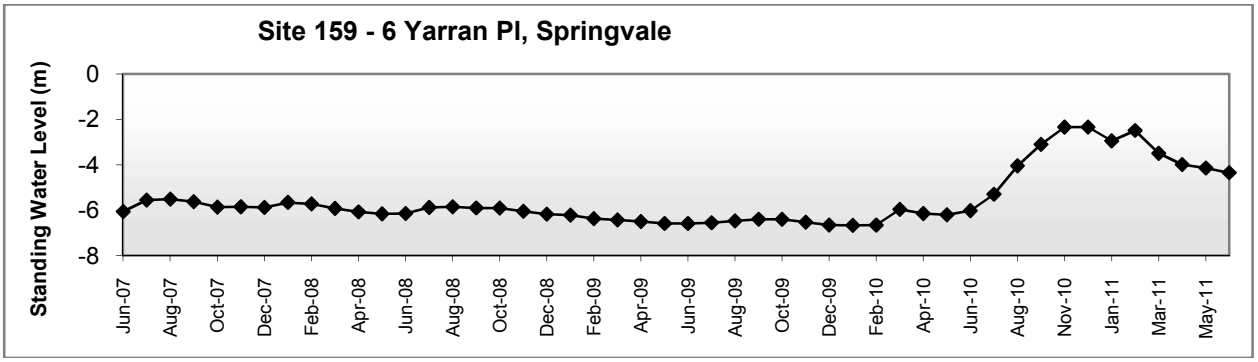

Site 152 - 1 Bedervale St, Bourkelands
Standing Water Level (m)
0
-4
-8
-12
-16
Jun-07 Jul-07 Aug-07 Sep-07 Oct-07 Nov-07 Dec-07 Jan-08 Feb-08 Mar-08 Apr-08 May-08 Jun-08 Jul-08 Aug-08 Sep-08 Oct-08 Nov-08 Jan-09 Feb-09 Mar-09 Apr-09 May-09 Jun-09 Jul-09 Nov-09 Dec-09 Jan-10 Feb-10 Mar-10 Apr-10 Apr-10 May-10 Jun-10 Jul-10 Aug-10 Sep-10 Nov-10 Nov-10 Jan-11 Mar-11 Mar-11 Apr-11 May-11 Jun-11

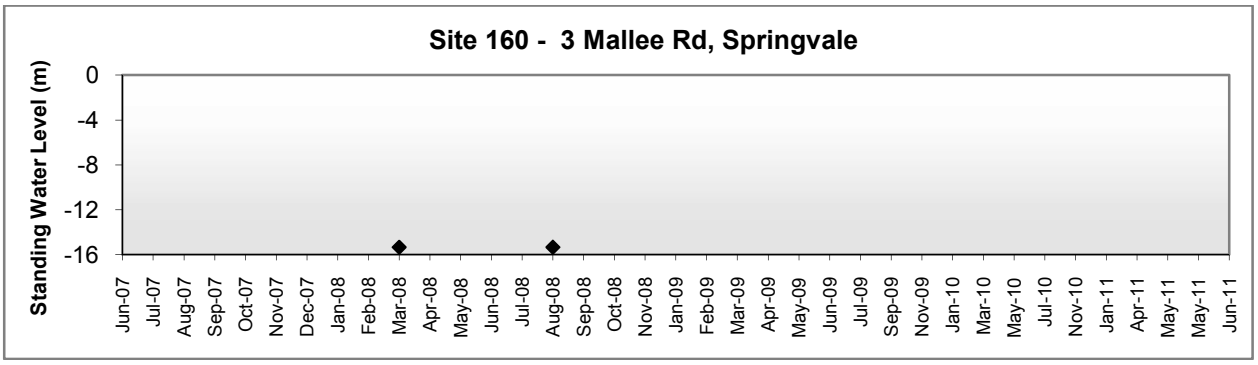

Site 153 - Crn Burgan & Indigo Dr, Glenoak
Standing Water Level (m)
0
-4
-8
-12
-16
Jun-07 Jul-07 Aug-07 Sep-07 Oct-07 Nov-07 Dec-07 Jan-08 Feb-08 Mar-08 Apr-08 May-08 Jun-08 Jul-08 Aug-08 Sep-08 Oct-08 Nov-08 Jan-09 Feb-09 Mar-09 Apr-09 May-09 Jun-09 Jul-09 Aug-09 Sep-09 Oct-09 Nov-09 Dec-09 Jan-10 Feb-10 Mar-10 Apr-10 May-10 Jun-10 Jul-10 Nov-10 Jan-11 Apr-11

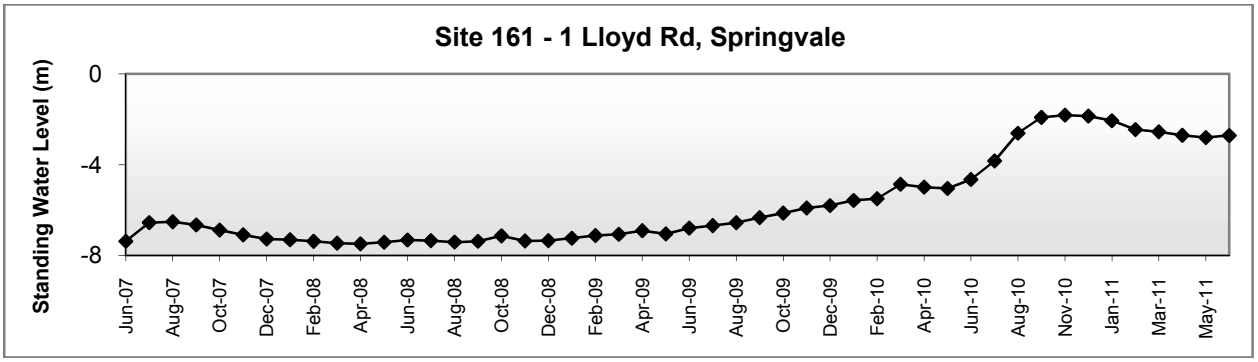

Site 154 - 19 Mirbelia Dr, Glenoak
Standing Water Level (m)
0
-4
-8
-12
Jun-07 Aug-07 Oct-07 Dec-07 Feb-08 Apr-08 Jun-08 Aug-08 Oct-08 Dec-08 Feb-09 Apr-09 Jun-09 Aug-09 Oct-09 Dec-09 Feb-10 Apr-10 Jun-10 Aug-10 Nov-10 Jan-11 Mar-11 May-11

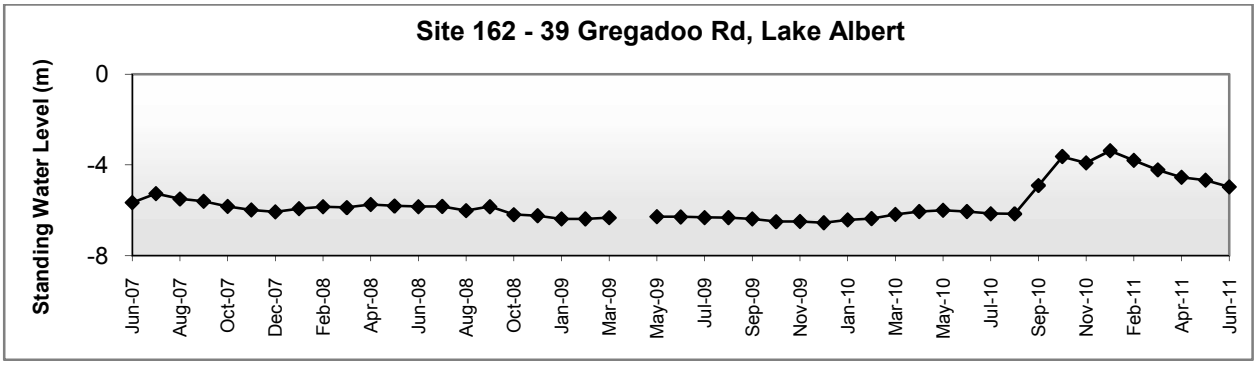

Site 155 - Holbrook Rd (Indigo Dr intersection), Glenoak
Standing Water Level (m)
0
-4
-8
-12
Jun-07
Aug-07
Oct-07
Dec-07
Feb-08
Apr-08
Jun-08
Aug-08
Oct-08
Dec-08
Feb-09
Apr-09
Jun-09
Aug-09
Oct-09
Dec-09
Feb-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Mar-11
May-11

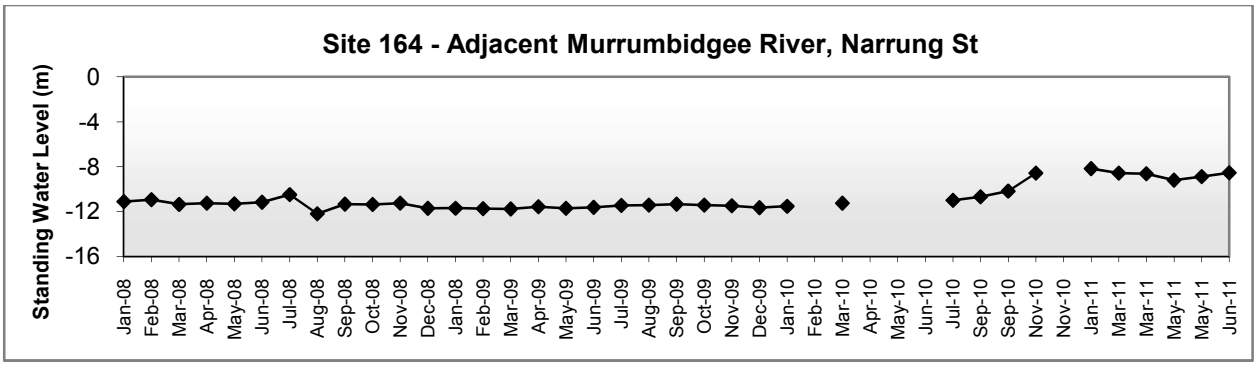

Site 157 - Holbrook Rd, Glenoak
Standing Water Level (m)
0
-4
-8
-12
Jun-07
Aug-07
Oct-07
Dec-07
Feb-08
Apr-08
Jun-08
Aug-08
Oct-08
Dec-08
Feb-09
Apr-09
Jun-09
Aug-09
Oct-09
Dec-09
Feb-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Mar-11
May-11


Site 159 - 6 Yarran Pl, Springvale
Standing Water Level (m)
0
-2
-4
-6
-8
Jun-07
Aug-07
Oct-07
Dec-07
Feb-08
Apr-08
Jun-08
Aug-08
Oct-08
Dec-08
Feb-09
Apr-09
Jun-09
Aug-09
Oct-09
Dec-09
Feb-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Mar-11
May-11


Site 160 - 3 Mallee Rd, Springvale
Standing Water Level (m)
0
-4
-8
-12
-16
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Sep-09
Nov-09
Jan-10
Mar-10
May-10
Jul-10
Nov-10
Jan-11
Apr-11
May-11
May-11
Jun-11


Site 161 - 1 Lloyd Rd, Springvale
Standing Water Level (m)
0
-4
-8
Jun-07
Aug-07
Oct-07
Dec-07
Feb-08
Apr-08
Jun-08
Aug-08
Oct-08
Dec-08
Feb-09
Apr-09
Jun-09
Aug-09
Oct-09
Dec-09
Feb-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Mar-11
May-11


Site 162 - 39 Gregadoo Rd, Lake Albert
Standing Water Level (m)
0
-4
-8
Jun-07
Aug-07
Oct-07
Dec-07
Feb-08
Apr-08
Jun-08
Aug-08
Oct-08
Jan-09
Mar-09
May-09
Jul-09
Sep-09
Nov-09
Jan-10
Mar-10
May-10
Jul-10
Sep-10
Nov-10
Feb-11
Apr-11
Jun-11


Site 164 - Adjacent Murrumbidgee River, Narrung St
Standing Water Level (m)
0
-4
-8
-12
-16
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-08
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
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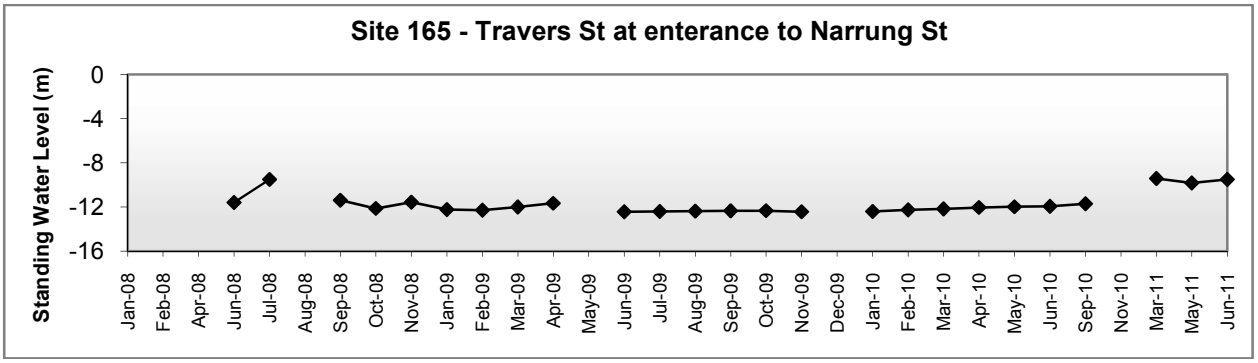
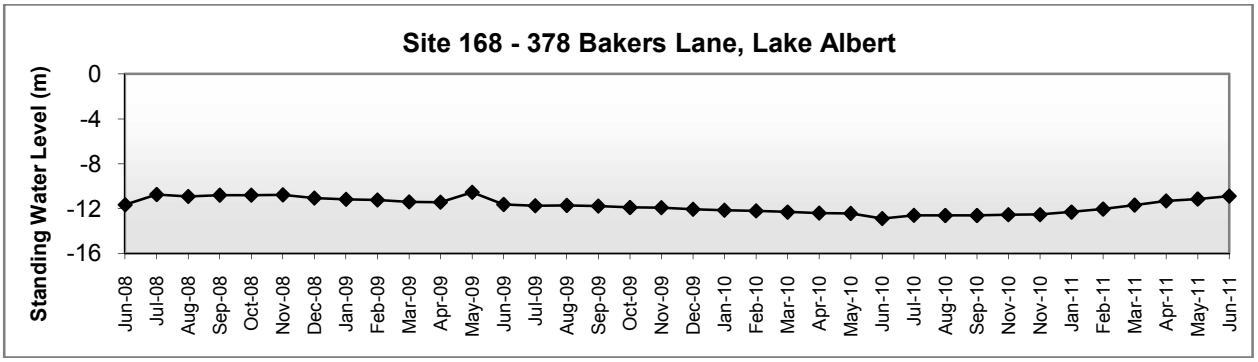
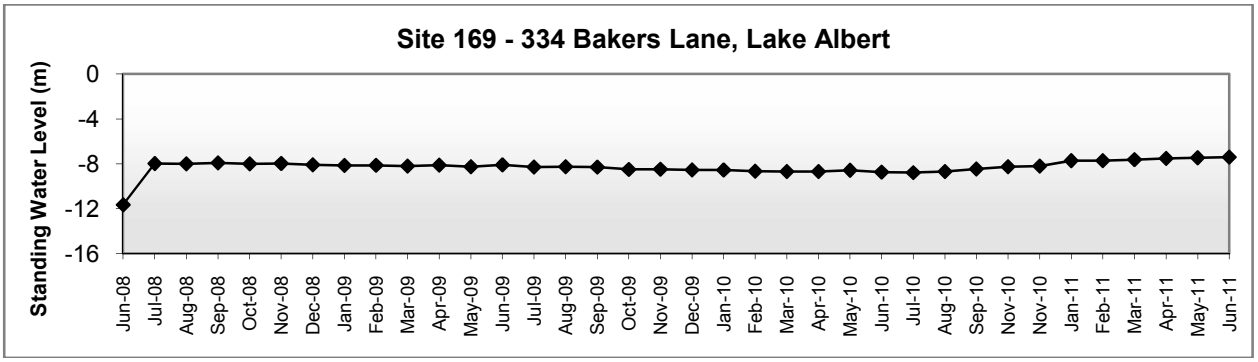
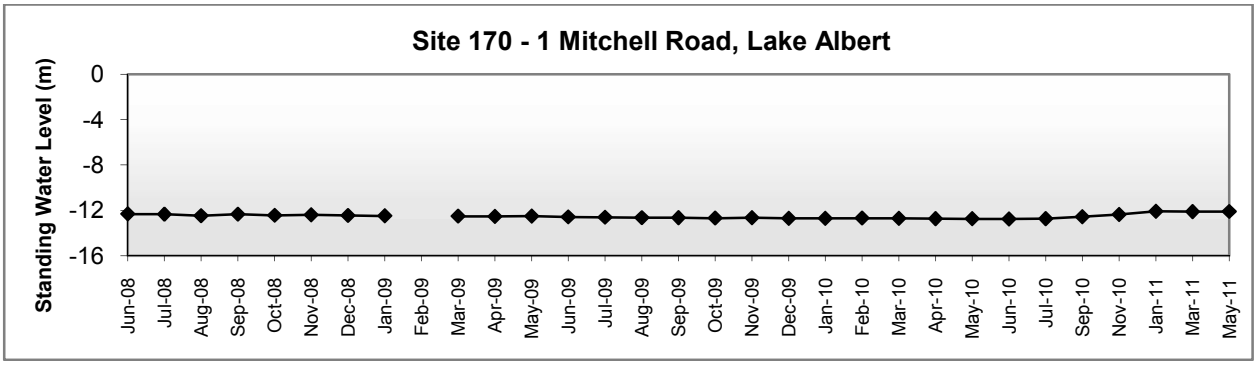
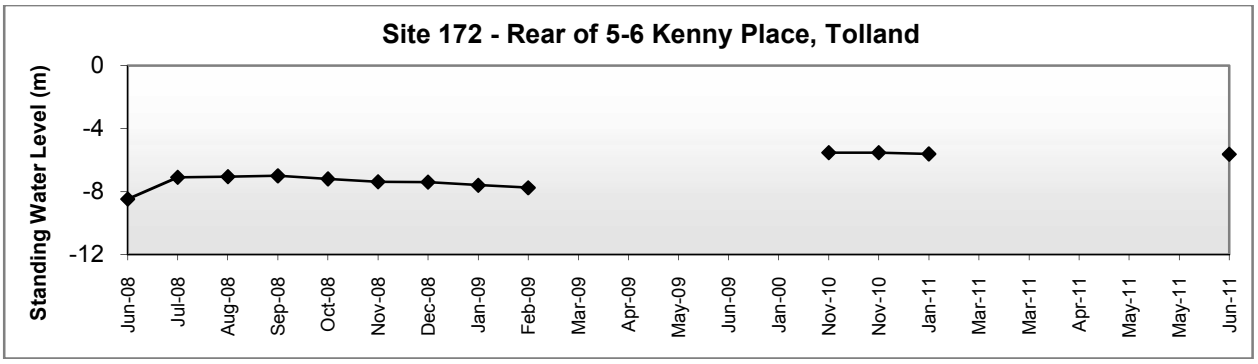
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Sep-10
Sep-10
Nov-10
Nov-10
Jan-11
Mar-11
Mar-11
May-11
May-11
Jun-11

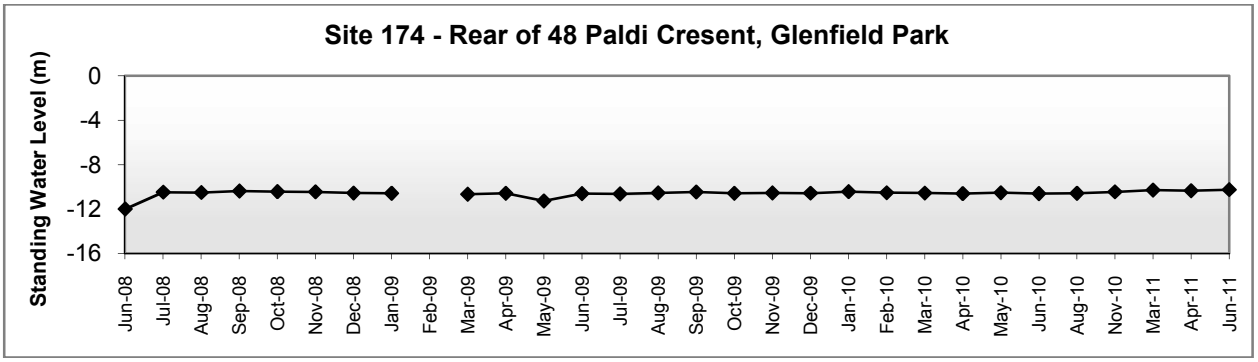

Site 165 - Travers St at enterance to Narrung St
Standing Water Level (m)
0
-4
-8
-12
-16
Jan-08
Feb-08
Apr-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Sep-10
Nov-10
Mar-11
May-11
Jun-11

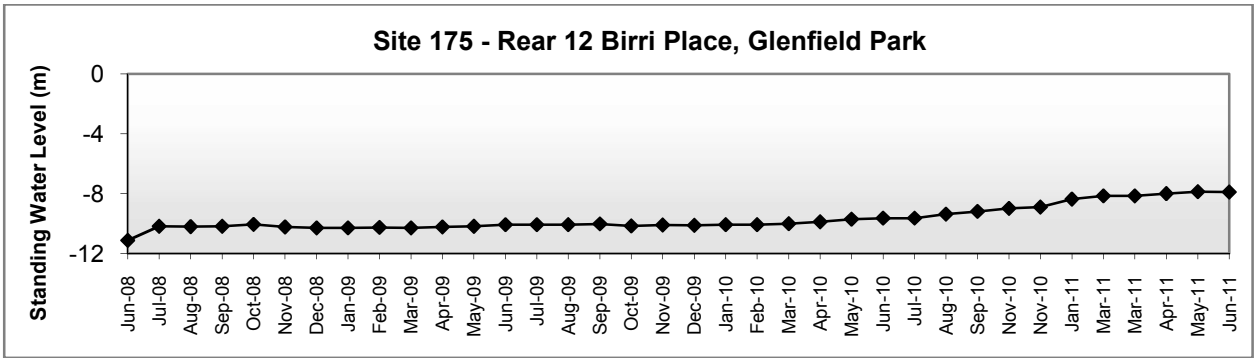

Site 168 - 378 Bakers Lane, Lake Albert
Standing Water Level (m)
0
-4
-8
-12
-16
Jun-08 Jul-08 Aug-08 Sep-08 Oct-08 Nov-08 Dec-08 Jan-09 Feb-09 Mar-09 Apr-09 May-09 Jun-09 Jul-09 Aug-09 Sep-09 Oct-09 Nov-09 Dec-09 Jan-10 Feb-10 Mar-10 Apr-10 May-10 Jun-10 Jul-10 Aug-10 Sep-10 Nov-10 Nov-10 Jan-11 Feb-11 Mar-11 Apr-11 May-11 Jun-11

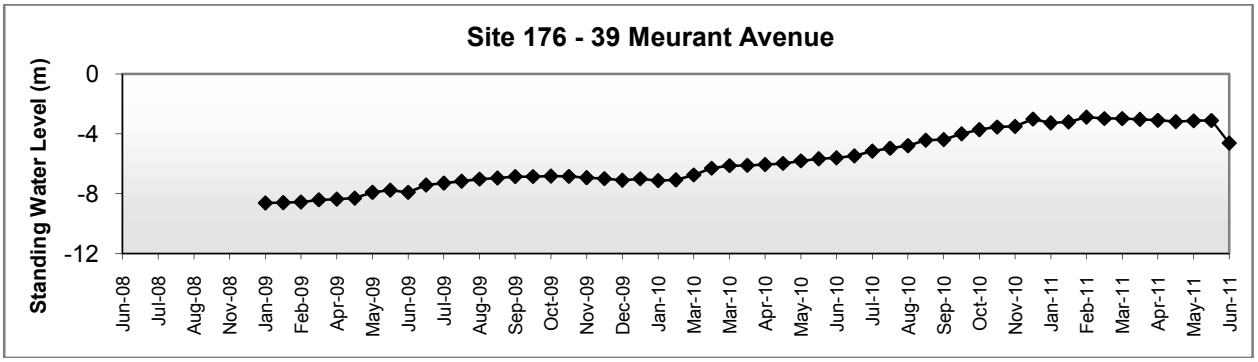

Site 169 - 334 Bakers Lane, Lake Albert
Standing Water Level (m)
0
-4
-8
-12
-16
Jun-08 Jul-08 Aug-08 Sep-08 Oct-08 Nov-08 Dec-08 Jan-09 Feb-09 Mar-09 Apr-09 May-09 Jun-09 Jul-09 Aug-09 Sep-09 Oct-09 Nov-09 Dec-09 Jan-10 Feb-10 Mar-10 Apr-10 May-10 Jun-10 Jul-10 Aug-10 Sep-10 Nov-10 Nov-10 Jan-11 Feb-11 Mar-11 Apr-11 May-11 Jun-11

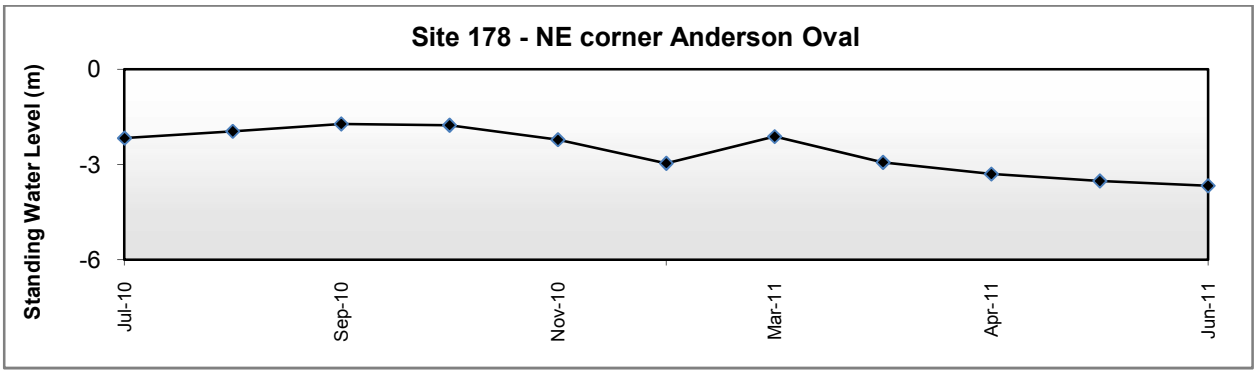

Site 170 - 1 Mitchell Road, Lake Albert
Standing Water Level (m)
0
-4
-8
-12
-16
Jun-08 Jul-08 Aug-08 Sep-08 Oct-08 Nov-08 Dec-08 Jan-09 Feb-09 Mar-09 Apr-09 May-09 Jun-09 Jul-09 Aug-09 Sep-09 Oct-09 Nov-09 Dec-09 Jan-10 Feb-10 Mar-10 Apr-10 May-10 Jun-10 Jul-10 Sep-10 Nov-10 Jan-11 Mar-11 May-11

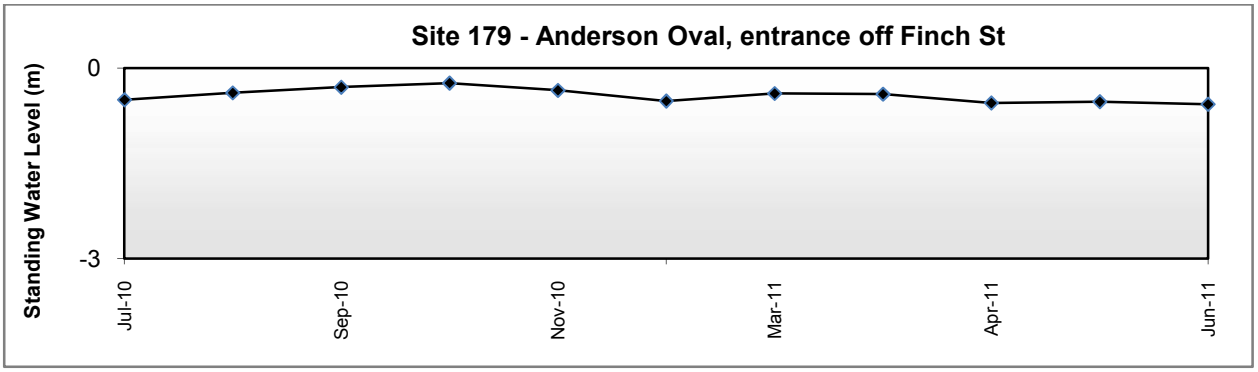

Site 172 - Rear of 5-6 Kenny Place, Tolland
Standing Water Level (m)
0
-4
-8
-12
Jun-08 Jul-08 Aug-08 Sep-08 Oct-08 Nov-08 Dec-08 Jan-09 Feb-09 Mar-09 Apr-09 May-09 Jun-09 Jan-00 Nov-10 Nov-10 Jan-11 Mar-11 Mar-11 Apr-11 May-11 May-11 Jun-11

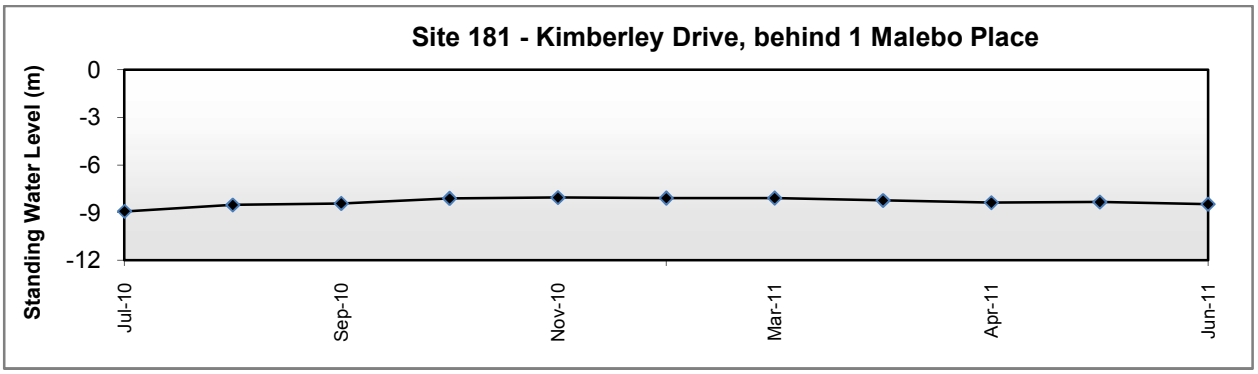

Site 174 - Rear of 48 Paldi Cresent, Glenfield Park
Standing Water Level (m)
0
-4
-8
-12
-16
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Aug-10
Nov-10
Mar-11
Apr-11
Jun-11

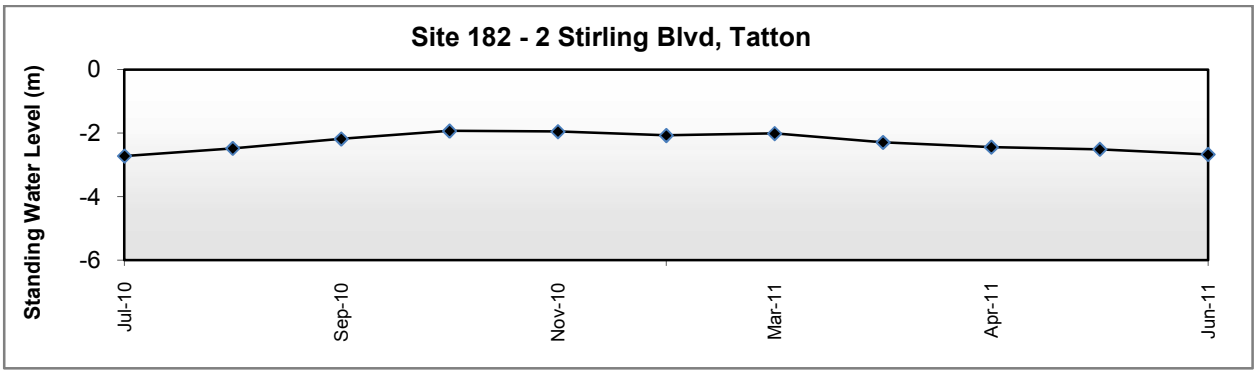

Site 175 - Rear 12 Birri Place, Glenfield Park
Standing Water Level (m)
0
-4
-8
-12
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Aug-10
Sep-10
Nov-10
Nov-10
Jan-11
Mar-11
Mar-11
Apr-11
May-11
Jun-11

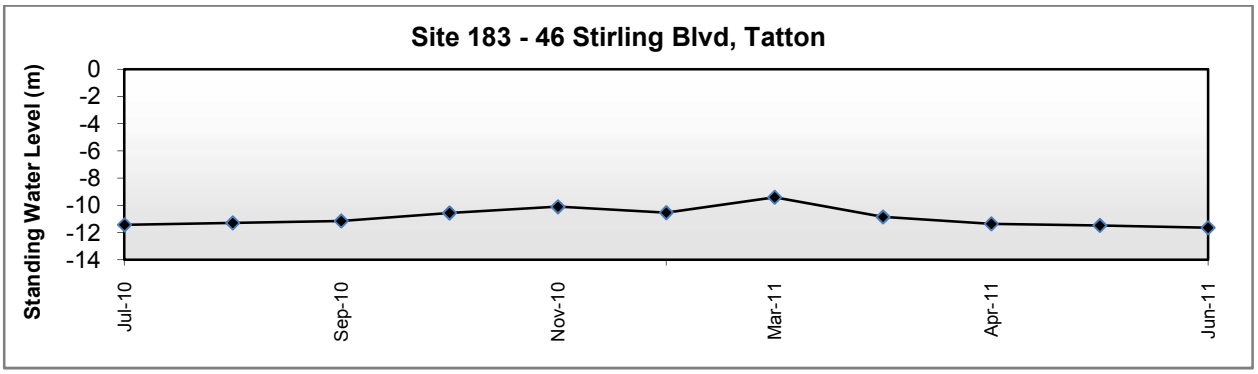

Site 176 - 39 Meurant Avenue
Standing Water Level (m)
0
-4
-8
-12
Jun-08
Jul-08
Aug-08
Nov-08
Jan-09
Feb-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Mar-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Aug-10
Sep-10
Oct-10
Nov-10
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11

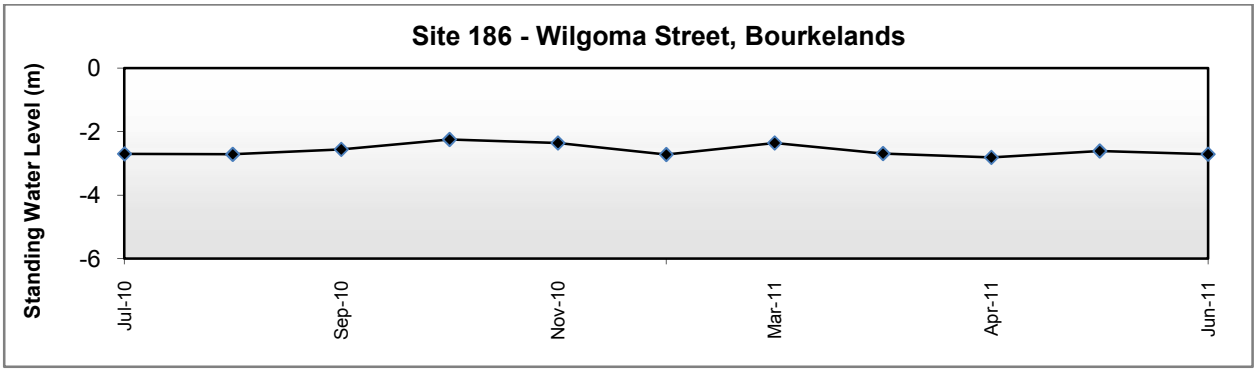

Site 178 - NE corner Anderson Oval
Standing Water Level (m)
0
-3
-6
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

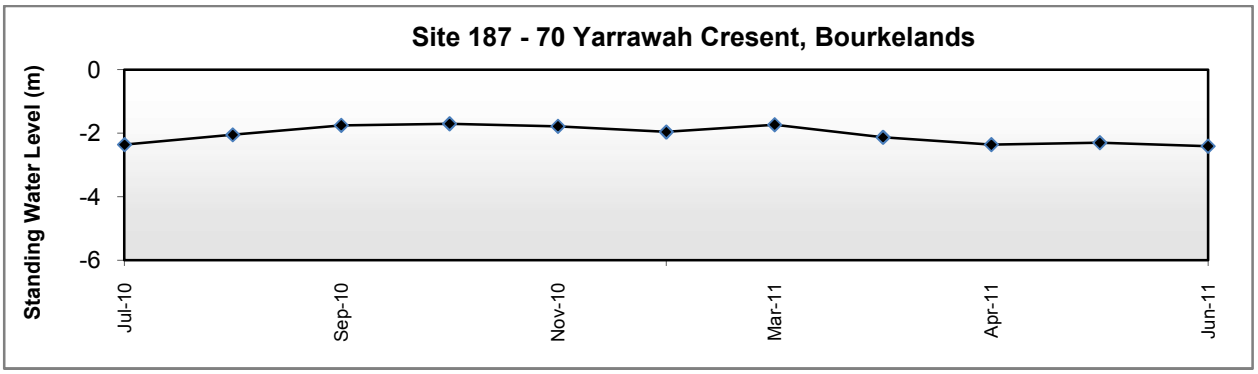

Site 179 - Anderson Oval, entrance off Finch St
Standing Water Level (m)
0
-3
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

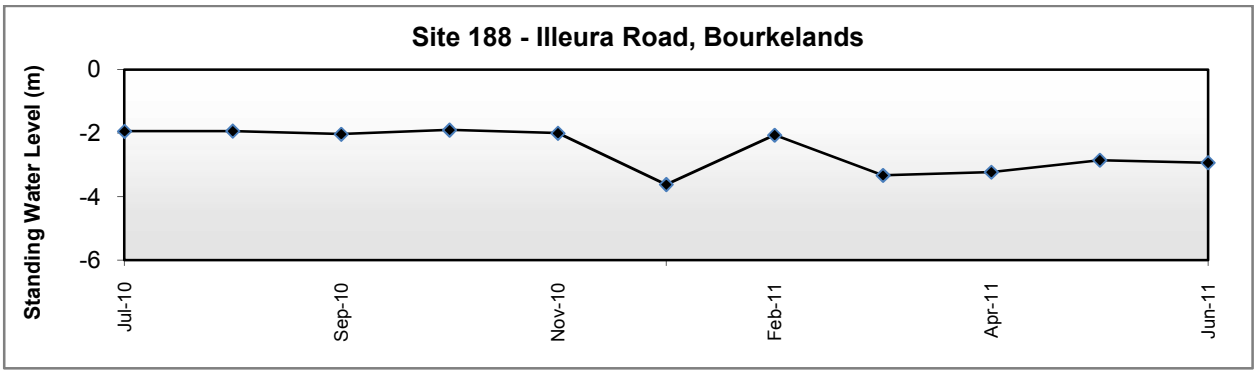

Site 181 - Kimberley Drive, behind 1 Malebo Place
Standing Water Level (m)
0
-3
-6
-9
-12
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

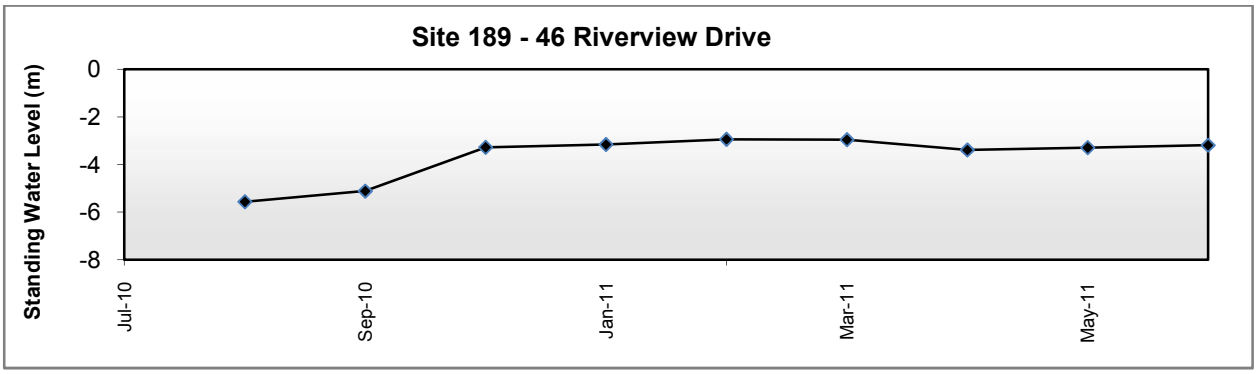

Site 182 - 2 Stirling Blvd, Tatton
Standing Water Level (m)
0
-2
-4
-6
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

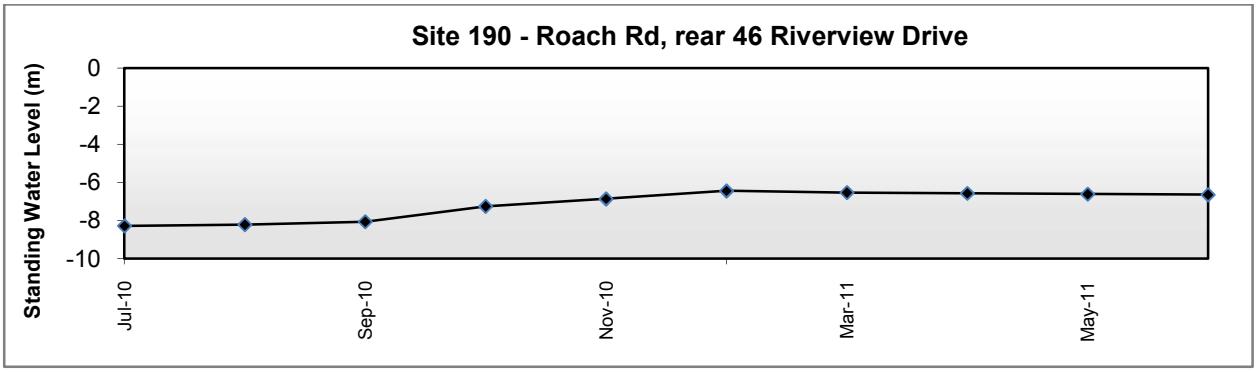

Site 183 - 46 Stirling Blvd, Tatton
Standing Water Level (m)
0
-2
-4
-6
-8
-10
-12
-14
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

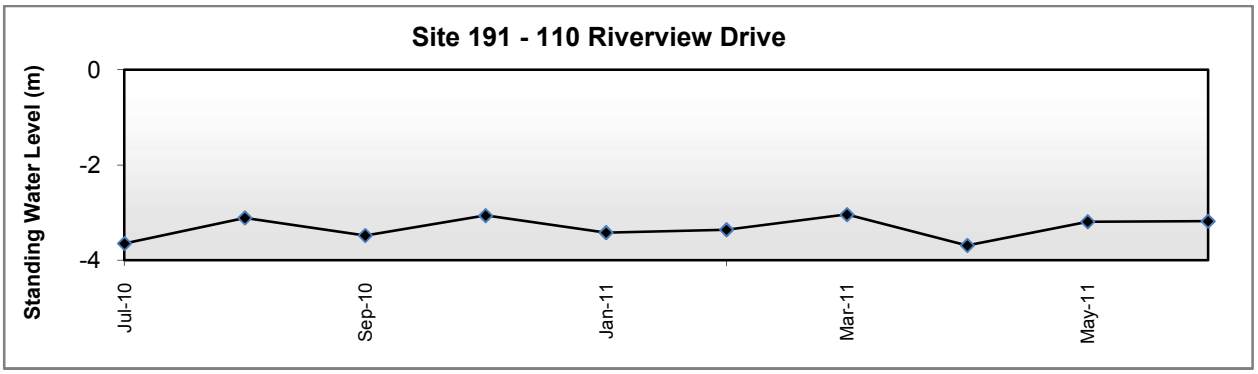

Site 186 - Wilgoma Street, Bourkelands
Standing Water Level (m)
0
-2
-4
-6
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

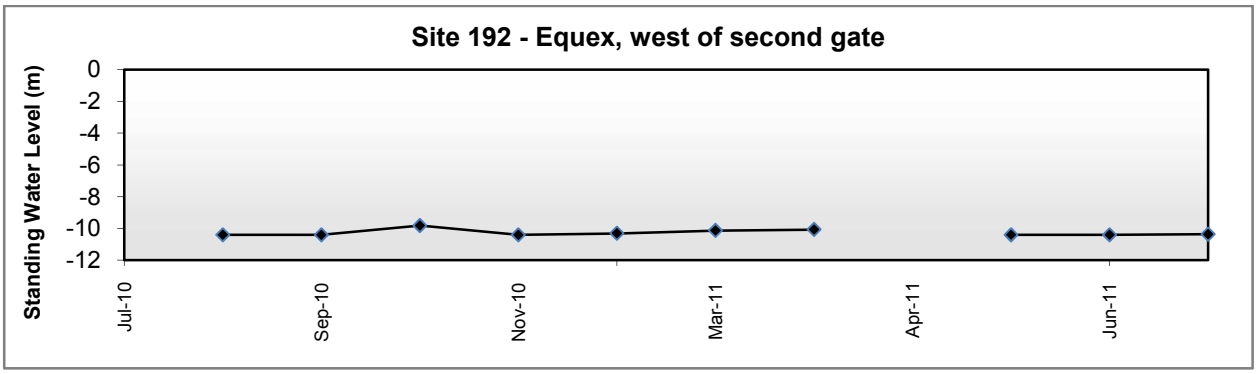

Site 187 - 70 Yarrawah Cresent, Bourkelands
Standing Water Level (m)
0
-2
-4
-6
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

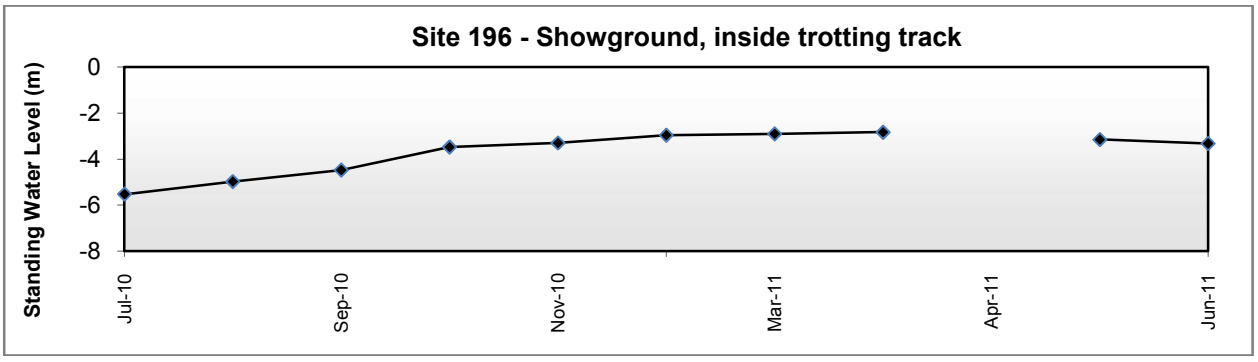

Site 188 - Illeura Road, Bourkelands
Standing Water Level (m)
0
-2
-4
-6
Jul-10
Sep-10
Nov-10
Feb-11
Apr-11
Jun-11

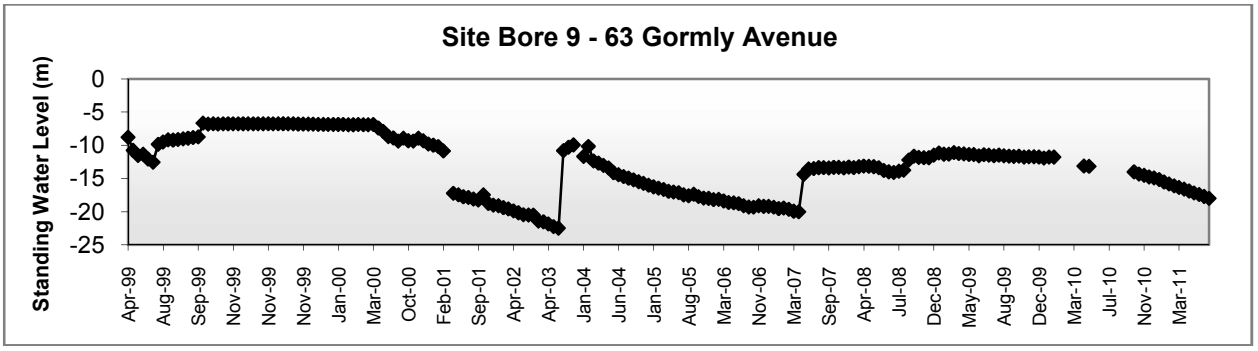

Site 189 - 46 Riverview Drive
Standing Water Level (m)
0
-2
-4
-6
-8
Jul-10
Sep-10
Jan-11
Mar-11
May-11

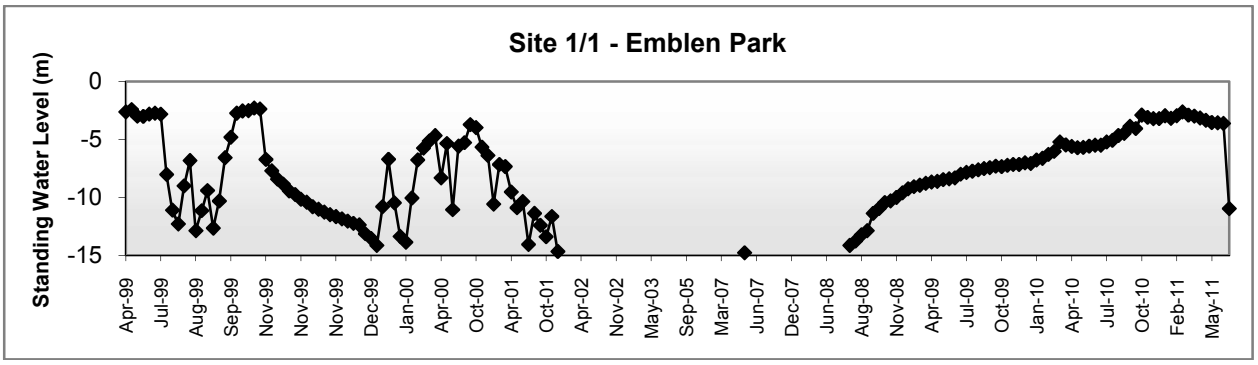

Site 190 - Roach Rd, rear 46 Riverview Drive
Standing Water Level (m)
0
-2
-4
-6
-8
-10
Jul-10
Sep-10
Nov-10
Mar-11
May-11

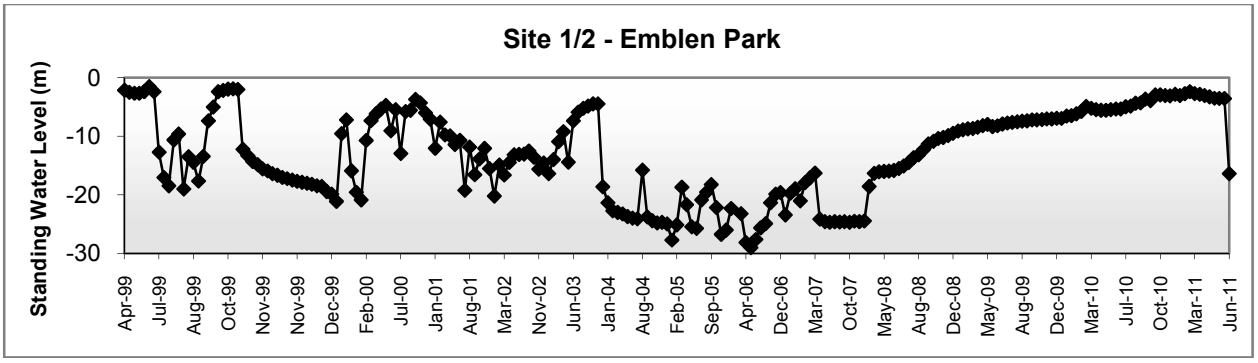

Site 191 - 110 Riverview Drive
Standing Water Level (m)
0
-2
-4
Jul-10
Sep-10
Jan-11
Mar-11
May-11

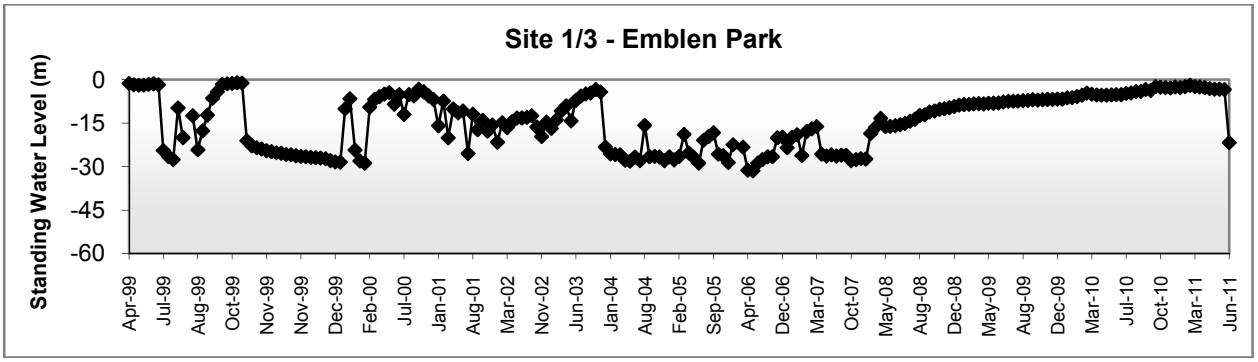

Site 192 - Equex, west of second gate
Standing Water Level (m)
0
-2
-4
-6
-8
-10
-12
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

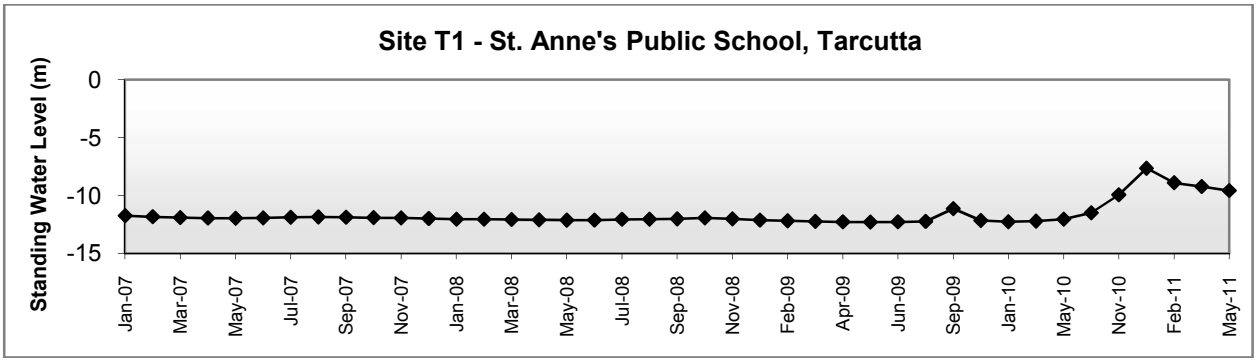

Site 196 - Showground, inside trotting track
Standing Water Level (m)
0
-2
-4
-6
-8
Jul-10
Sep-10
Nov-10
Mar-11
Apr-11
Jun-11

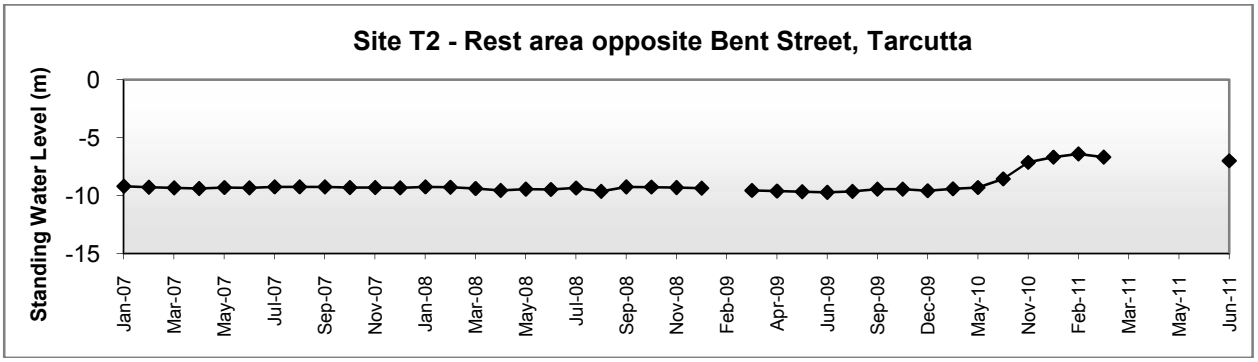

Site Bore 9 - 63 Gormly Avenue
Standing Water Level (m)
0
-5
-10
-15
-20
-25
Apr-99
Aug-99
Sep-99
Nov-99
Nov-99
Nov-99
Jan-00
Mar-00
Oct-00
Feb-01
Sep-01
Apr-02
Apr-03
Jan-04
Jun-04
Jan-05
Aug-05
Mar-06
Nov-06
Mar-07
Sep-07
Apr-08
Jul-08
Dec-08
May-09
Aug-09
Dec-09
Mar-10
Jul-10
Nov-10
Mar-11


Site 1/1 - Emblen Park
Standing Water Level (m)
0
-5
-10
-15
Apr-99
Jul-99
Aug-99
Sep-99
Nov-99
Nov-99
Nov-99
Dec-99
Jan-00
Apr-00
Oct-00
Apr-01
Oct-01
Apr-02
Nov-02
May-03
Sep-05
Mar-07
Jun-07
Dec-07
Jun-08
Aug-08
Nov-08
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Feb-11
May-11


Site 1/2 - Emblen Park
Standing Water Level (m)
0
-10
-20
-30
Apr-99
Jul-99
Aug-99
Oct-99
Nov-99
Nov-99
Dec-99
Feb-00
Jul-00
Jan-01
Aug-01
Mar-02
Nov-02
Jun-03
Jan-04
Aug-04
Feb-05
Sep-05
Apr-06
Dec-06
Mar-07
Oct-07
May-08
Aug-08
Dec-08
May-09
Aug-09
Dec-09
Mar-10
Jul-10
Oct-10
Mar-11
Jun-11


Site 1/3 - Emblen Park
Standing Water Level (m)
0
-15
-30
-45
-60
Apr-99
Jul-99
Aug-99
Oct-99
Nov-99
Nov-99
Dec-99
Feb-00
Jul-00
Jan-01
Aug-01
Mar-02
Nov-02
Jun-03
Jan-04
Aug-04
Feb-05
Sep-05
Apr-06
Dec-06
Mar-07
Oct-07
May-08
Aug-08
Dec-08
May-09
Aug-09
Dec-09
Mar-10
Jul-10
Oct-10
Mar-11
Jun-11


Site T1 - St. Anne's Public School, Tarcutta
Standing Water Level (m)
0
-5
-10
-15
Jan-07
Mar-07
May-07
Jul-07
Sep-07
Nov-07
Jan-08
Mar-08
May-08
Jul-08
Sep-08
Nov-08
Feb-09
Apr-09
Jun-09
Sep-09
Jan-10
May-10
Nov-10
Feb-11
May-11


Site T2 - Rest area opposite Bent Street, Tarcutta
Standing Water Level (m)
0
-5
-10
-15
Jan-07
Mar-07
May-07
Jul-07
Sep-07
Nov-07
Jan-08
Mar-08
May-08
Jul-08
Sep-08
Nov-08
Feb-09
Apr-09
Jun-09
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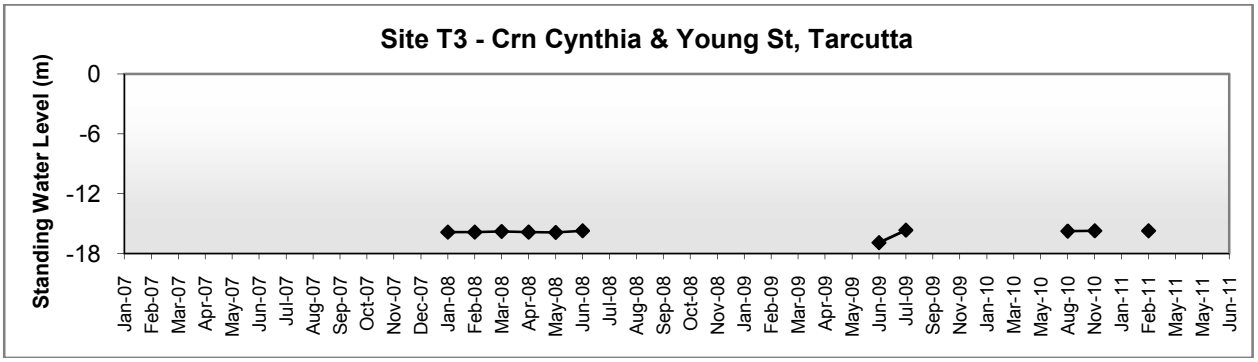
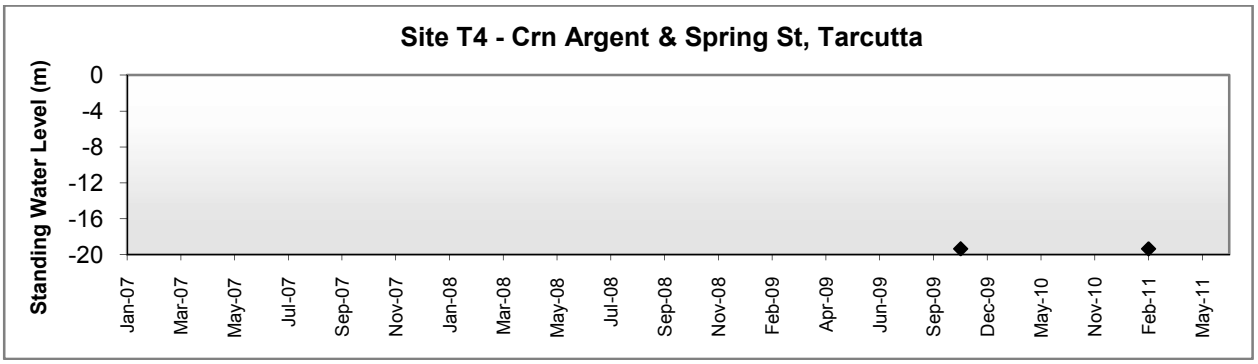
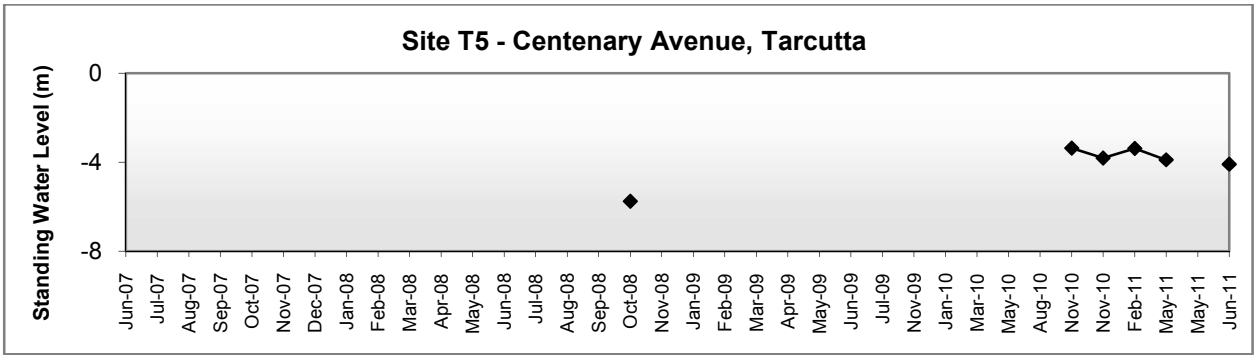
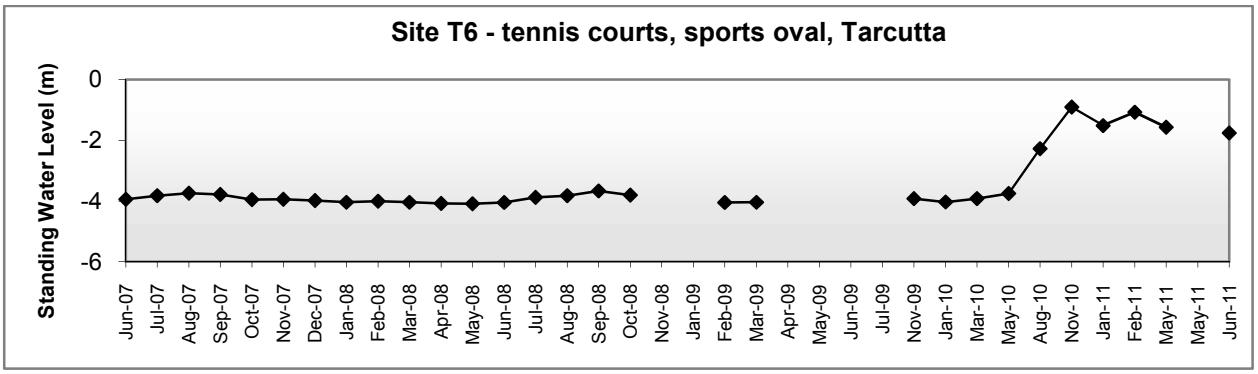
Dec-09
May-10
Nov-10
Feb-11
Mar-11
May-11
Jun-11


Site T3 - Crn Cynthia & Young St, Tarcutta
Standing Water Level (m)
0
-6
-12
-18
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Sep-09
Nov-09
Jan-10
Mar-10
May-10
Aug-10
Nov-10
Jan-11
Feb-11
May-11
May-11
Jun-11


Site T4 - Crn Argent & Spring St, Tarcutta
Standing Water Level (m)
0
-4
-8
-12
-16
-20
Jan-07
Mar-07
May-07
Jul-07
Sep-07
Nov-07
Jan-08
Mar-08
May-08
Jul-08
Sep-08
Nov-08
Feb-09
Apr-09
Jun-09
Sep-09
Dec-09
May-10
Nov-10
Feb-11
May-11


Site T5 - Centenary Avenue, Tarcutta
Standing Water Level (m)
0
-4
-8
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Nov-09
Jan-10
Mar-10
May-10
Aug-10
Nov-10
Nov-10
Feb-11
May-11
May-11
Jun-11


Site T6 - tennis courts, sports oval, Tarcutta
Standing Water Level (m)
0
-2
-4
-6
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
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Mar-10
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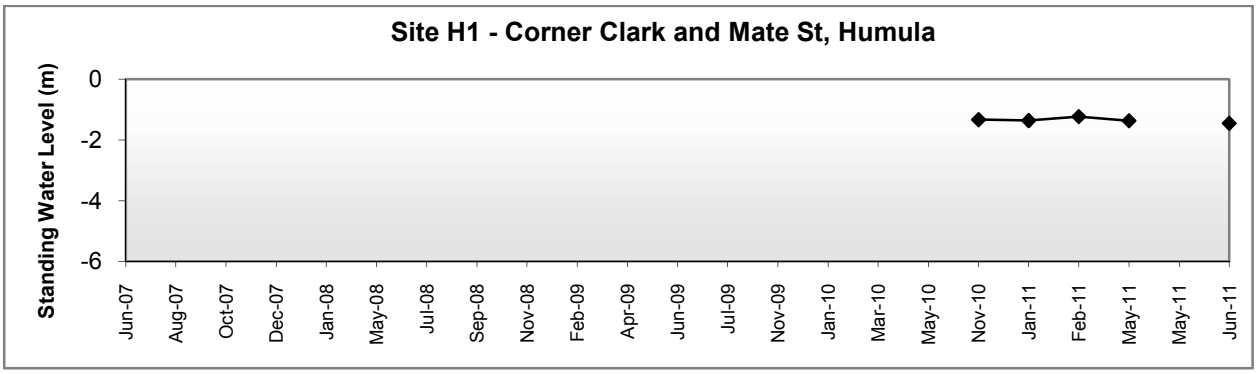
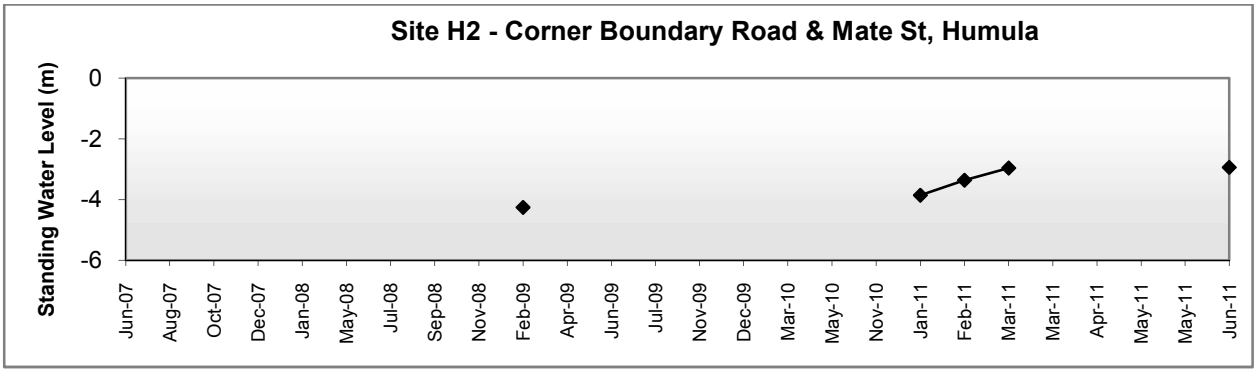
Nov-10
Jan-11
Feb-11
May-11
May-11
Jun-11


Site H1 - Corner Clark and Mate St, Humula
Standing Water Level (m)
0
-2
-4
-6
Jun-07
Aug-07
Oct-07
Dec-07
Jan-08
May-08
Jul-08
Sep-08
Nov-08
Feb-09
Apr-09
Jun-09
Jul-09
Nov-09
Jan-10
Mar-10
May-10
Nov-10
Jan-11
Feb-11
May-11
May-11
Jun-11


Site H2 - Corner Boundary Road & Mate St, Humula
Standing Water Level (m)
0
-2
-4
-6
Jun-07
Aug-07
Oct-07
Dec-07
Jan-08
May-08
Jul-08
Sep-08
Nov-08
Feb-09
Apr-09
Jun-09
Jul-09
Nov-09
Dec-09
Mar-10
May-10
Nov-10
Jan-11
Feb-11
Mar-11
Mar-11
Apr-11
May-11
May-11
Jun-11