



HUNTER WATER CORPORATION

Environmental Performance Indicators Report 2011-12



August 2012

About the Annual Operating Licence Reports

Hunter Water Corporation (Hunter Water) delivers services under an Operating Licence granted by the NSW Government. The licence protects consumers by prescribing minimum standards of service that Hunter Water must meet in relation to:

- Drinking water quality - supplying customers with safe drinking water
- Water continuity - providing customers with a reliable supply of water
- Water pressure - providing customers with water pressure as specified in the licence
- Wastewater transport - providing the reliable transport of sewage

The Operating Licence also sets out conditions relating to community consultation, customer and consumer rights, customer complaint and dispute handling, managing water demand and supply, environmental management, publication of environmental and Ecologically Sustainable Development (ESD) indicators and independent auditing of operational performance.

This report covers the final year of the previous Operating Licence, which was from 1 July 2007 to 30 June 2012. The content of the licence was determined after a full public review by the Independent Pricing and Regulatory Tribunal (IPART). Full copies of the 2007-2012 Operating Licence and the current licence (2012-2017) are available from the publications area of Hunter Water's website www.hunterwater.com.au.

Each year, an independent audit of Hunter Water's operations is conducted to assess the Corporation's compliance with the Operating Licence. The audit assesses Hunter Water's performance against service standards and associated conditions of the licence. This annual audit is overseen by IPART.

To assist in the audit process, the Operating Licence requires a number of reports to be provided annually to IPART. These reports are:

- Catchment Report
- Consultative Forum Report
- Customer Services Report
- Drinking Water Quality Management Report
- Environmental Performance Indicators Report
- Integrated Water Resource Plan Report
- Service Quality and System Performance Report

The reports must be submitted by 1 September each year with the exception of the Drinking Water Quality Management Report, which is submitted by 31 December. All reports, or key elements of them as set out in the Operating Licence, are available on Hunter Water's website or to the community free of charge at Hunter Water's offices.

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Executive Summary

Section seven of Hunter Water's operating licence relates to environmental management within Hunter Water. The licence requires the development and implementation of a five year Environmental Management Plan (EMP) and the development of a set of Environmental Performance Indicators that are reported each year. Between them, the Environmental Management Plan and Environmental Performance Indicators form the basis for Hunter Water's public commitment and reporting in relation to environmental management and sustainability.

Hunter Water reports against seven categories and 69 individual performance measures. The performance indicators were developed as part of the 2008-2013 EMP and are periodically updated in the Hunter Water Monitoring and Reporting Protocol. The 2011-12 Environmental Performance Indicators Report is the fifth report for the current set of indicators. Targets related to specific indicators are shown where Hunter Water has an internally or externally set performance target for that activity.

Progress on how Hunter Water is tracking against actions within the 2008-2013 EMP is summarised within a table in Section 9.1. Environmental performance for 2011-12 has been good and reasonably consistent with a general improvement each year over the life of the current operating licence. It should be noted that as per the requirement in the operating licence, ten years of historical data has been provided for indicators where it is available. In several instances data has only been collected over a shorter period of time (eg since the beginning of 2008-2012 operating licence). In this case the current historical trend is presented but will be less than ten years.

Table E-1 Summary of Hunter Water's Environmental Performance

| Business Area | 2011-12 Performance |
|----------------------|---|
| Catchment Management | A small number of trees (3550) were planted in 2011-12 compared to the two previous years. Hunter Water has committed to a large planting program over the next twelve months. |
| Water supply | The total water sourced from surface water storages, groundwater storages and recycling in 2011-12 was the lowest it has been in ten years. This is a result of a wet year and the fact that storages have been at near full capacity for an extended time. Groundwater extraction has been less than normal for the past two years due to operational reasons. Water consumption per capita and per property are also at the lowest levels in the past ten years. The wet year and mild conditions experienced over the 2011/12 summer period are the main reasons for the low water use over the period. The shift towards higher density living, the use of water efficient appliances and NSW BASIX requirements are likely to be strong influencing factors that contribute to the downward trend of the five year rolling average consumption per property. |
| Water conservation | Maintained an "excellent" rating for the Infrastructure Leakage Index and substantial water savings through water efficiency and water loss programs were achieved. Results were generally consistent with 2010-11. |

| Business Area | 2011-12 Performance |
|------------------------------------|--|
| Water recycling | The total recycled water supplied in 2011-12 is very similar to 2010-11. There has been a decrease in recycled water use in the industrial and commercial use sector however with plans to upgrade the Eraring Energy plant and design commenced on a new water reuse scheme at Kooragang Island, recycled water use volumes will increase substantially over the next few years. |
| Wastewater, trade waste, residuals | There has been good performance in indicators relating to wastewater, trade waste and residuals. There has been a general improvement in environmental compliance at wastewater treatment plants as a result of upgrade works. |
| Corporate responsibilities | No prosecutions or penalty infringement notices were issued to Hunter Water however a clean-up notice was issued by the Environment Protection Authority to regulate the clean-up and management of the lead contamination associated with the Chichester Trunk Gravity Main. In 2011-12 Hunter Water's greenhouse gas emissions have decreased from 2010-11 which is predominantly due to changes in the methodology for calculating nitrous oxide emissions from treatment plants that discharge into ocean and estuarine receiving waters however the reduction in water consumption was also a key factor. |
| Customers and community | The community and customer results are similar to 2010-11. There was no reputation survey conducted in 2011-12. |
| Financial Indicators | Operating costs have increased from 2010-11. |

1 Catchment Management

Hunter Water Corporation (Hunter Water) takes a catchment-to-tap approach in its management of water resources. Ensuring catchments are protected and managed is an important first step in ensuring a reliable supply of good quality water can be provided to our customers. Effective catchment management ensures community health is protected, provides an important natural asset and reduces treatment costs thereby minimising water prices for Hunter Water's customers.

Several of the catchments (Tomaree Peninsula, Chichester Wilderness and Tomago sandbeds) for Hunter Water's bulk water sources have been well protected over many years, in the interests of maintaining good raw water quality. Consequently they were attractive to the National Parks and Wildlife Service and have been added to the National Parks portfolio.

It is recognised that catchment protection activities require the active participation of a number of government agencies and private landholders. In 2011-12 Hunter Water continued to be involved in a range of short, medium and long-term strategic initiatives aimed at maintaining and improving the ecological health and water quality of source waters. These included feral animal control, weed management, fire management, land rehabilitation, control of illegal dumping and unauthorised access within the drinking water catchments.

Hunter Water has a Catchment Management Plan which was prepared in consultation with a range of stakeholders. The plan provides clear priorities for sustainable catchment management and collaboration across stakeholder groups to ensure safe drinking water for our region. The plan is available to view on the Hunter Water website at www.hunterwater.com.au.

Further information on catchment management can be found in the 2011-12 Catchment Report available on the Hunter Water website.

1.1 Key Performance Indicator

1.1.1 Tree Planting

OL CM-1 Total Number of Trees Planted

In 2011-12 3,550 trees were planted bringing the cumulative total since 2007-08 to 41,044. Trees are planted as part of revegetation, bush regeneration and carbon sequestration. The number of trees planted in 2011-12 was lower than in 2010-11 and is reflective of the type of projects conducted during the year.

In addition to the trees planted directly, Hunter Water is part of the Greenfleet program and through this program 6,782 native trees will be planted to offset carbon emissions from Hunter Water's fleet of corporate cars in 2011-12.

Table 1-1 Trees Planted¹

| | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 | Total (since 2007-08) |
|--------------------------------|---------|---------|---------|---------|---------|--------------------------|
| Number of trees planted | 2,964 | 430 | 16,398 | 17,702 | 3,550 | 41,044 |

Target: In the current Environmental Management Plan (EMP) Hunter Water has a target to plant 1.5 million trees within catchment areas and other locations within the organisation's operational area between 2007-08 and 2017-18. This target was associated with the commitment to offset greenhouse gas emissions associated with the construction and operation of Tillegra Dam. Planning refusal of the Tillegra Dam proposal has meant that the tree planting associated with this project did not proceed. As a result the target will not be achieved and will be revised as part of the next EMP which is currently in development. Hunter Water is proceeding with a large tree planting program in 2012-13 to offset greenhouse gas emissions associated with new water recycling projects.

¹ Note data has only been collected since 2007-08

2 Water Supply

Hunter Water is permitted to extract water from the environment under Water Management and Access licences issued by the NSW Office of Water (NOW). The licences have detailed monitoring and reporting requirements and also include a requirement to undertake a number of supplementary environmental studies, which are designed to develop a better understanding of the long-term sustainability of Hunter Water's extraction activities.

2.1 Key Performance Indicators

2.1.1 Water Management Licence Compliance

OL WML-1 Total number and nature of breaches of conditions under licences issued by NOW for water management

Hunter Water had one minor breach related to environmental flow release. A power interruption at 1:35am on 25-09-2011 stopped the hydro generator turbine and caused a reduced environmental flow down the river. NSW Office of Water were notified of this incident.

2.1.2 Environmental Flows Released from Chichester Dam

OL WML-2 Environmental Flows released from Dams (ML)

A total of 120,548 ML controlled and uncontrolled flows were released from Chichester Dam to the environment, including a total of 2,093 ML of controlled flows when the dam was not spilling. As shown in Table 2-1, minimum requirements for environmental flows have been met in 2011-12.

Total flows from Chichester Dam can vary significantly from year to year. This variation is primarily due to variations in rainfall on the Chichester catchment from year to year. The outflow from the dam over the last two years has been slightly above average and is consistent with the rainfall that has fallen.

Table 2-1 Environmental Flows Released from Chichester Dam¹

| | Annual Target | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---------------------------------|---------------|---------|---------|---------|---------|---------|
| Environmental flows (ML) | 5,110 | 121,373 | 101,838 | 50,683 | 124,407 | 120,548 |

Target: As required by the Water Management Licence, when combined inflows from Chichester and Wangat Rivers are equivalent to, or greater than, 14ML/day, Hunter Water must maintain a minimum flow release of 14ML/day from Chichester Dam. Alternatively when the combined inflows are less than 14ML/day, Hunter Water must maintain an equivalent daily flow release from Chichester Dam. These environmental flows are important to protect the ecological processes in the Williams River. Note that 14ML/day is equivalent to 5,110 ML/year which is the basis of the annual target in Table 2-1. This target has been met by Hunter Water in 2011-12.

¹ Note data over and above the water licence requirements has only been collected since 2007-08

2.1.3 Sources of Water

NWI-W1 *Volume of water sourced from surface water (ML)*

NWI-W1 *Volume of water sourced from ground water (ML)*

NWI-W4 *Volume of water sourced from recycling (ML)*

NWI-W7 *Total sourced water (ML)*

These indicators show where Hunter Water sources the water that is supplied to its customers. Table 2-2 shows volume and source of water and Figure 2-1 shows a breakdown of water sources. Figure 2-2 shows historical volumes of water sourced.

Table 2-2 Volume of Water Sourced

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Surface water (ML) | 58,674 | 54,408 | 63,411 | 60,934 | 63,711 | 64,311 | 61,814 | 63,433 | 65,676 | 61,035 |
| Ground water (ML) | 18,953 | 18,474 | 8,268 | 11,971 | 11,158 | 3,025 | 5,504 | 7,117 | 2,333 | 2,159 |
| Recycling (ML) | 1,988 | 2,403 | 1,929 | 1,860 | 2,055 | 2,174 | 2,872 | 2,899 | 2,186 | 1,873 |
| TOTAL | 79,615 | 75,285 | 73,608 | 74,765 | 76,924 | 69,510 | 70,190 | 73,449 | 70,195 | 65,067 |

Figure 2-1 Breakdown of Water Sourced in 2011-12

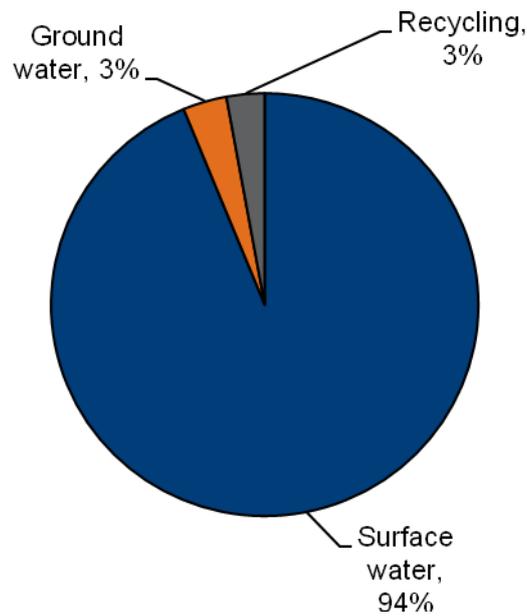
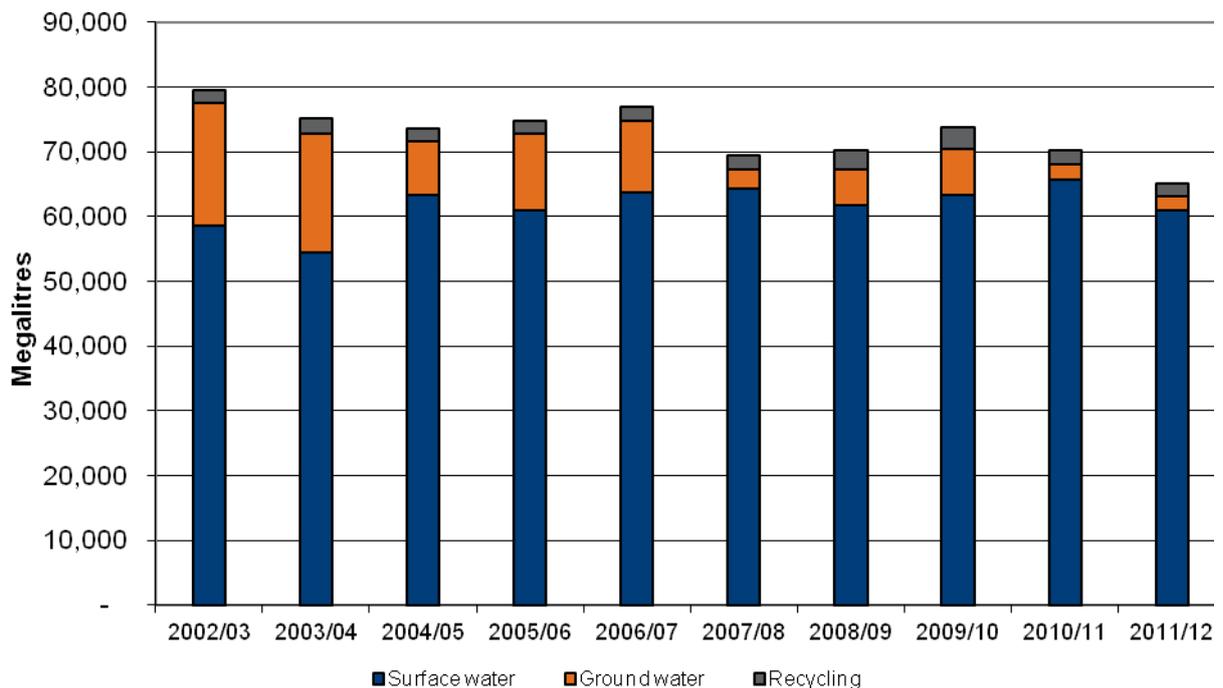


Figure 2-2 Volumes of Water Sourced from 2002-03 to 2011-12



As shown in Table 2-2 and Figures 2.1 and 2.2 the total water sourced from surface water storages, groundwater storages and recycling was the lowest it has been in ten years. This is a result of a wet year and the fact that storages have been at near full capacity for an extended time. Water demand from customers was also well below average which was a major contributing factor. Groundwater extraction has been less than normal for the past two years due to operational reasons.

2.1.4 Water Supplied from Natural Sources and Storages

OL WS-1 Quantity of water supplied by Hunter Water from each water storage (ML)

Table 2-3 shows the volumes of water extracted from each of Hunter Water's sources and Figure 2-3 shows the percentage of the total water for each source. Figure 2-4 is a historical comparison of volumes extracted from each source.

Table 2-3 Extraction from Sources and Storages

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Chichester Dam (ML) | 27,532 | 28,070 | 27,962 | 29,366 | 27,838 | 26,602 | 24,342 | 27,462 | 25,277 | 22,113 |
| Grahamstown Dam (ML) | 31,237 | 26,338 | 35,449 | 34,568 | 35,873 | 37,709 | 37,472 | 35,971 | 40,398 | 38,921 |
| Tomago Aquifer (ML) | 15,634 | 16,887 | 6,087 | 9,849 | 8,719 | 729 | 2,769 | 4,969 | 761 | 714 |
| Anna Bay Aquifer (ML) | 3,224 | 1,586 | 2,181 | 2,122 | 2,439 | 2,295 | 2,735 | 2,148 | 1,572 | 1,444 |
| TOTAL (ML) | 77,627 | 72,881 | 71,679 | 75,905 | 74,869 | 67,335 | 67,318 | 70,730 | 68,008 | 63,192 |

Figure 2-3 Extraction from Water Sources and Storages

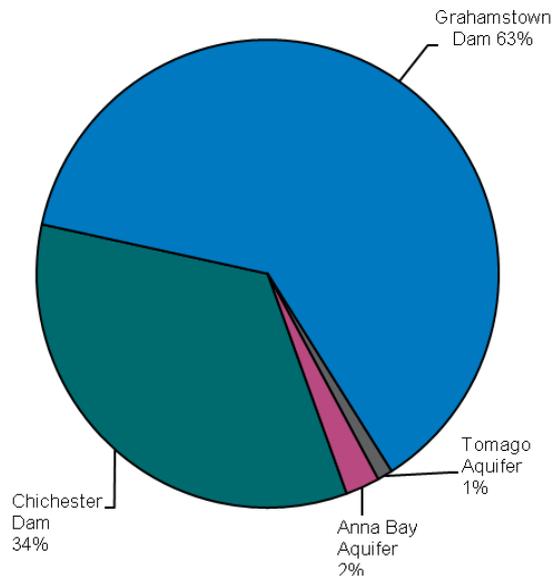
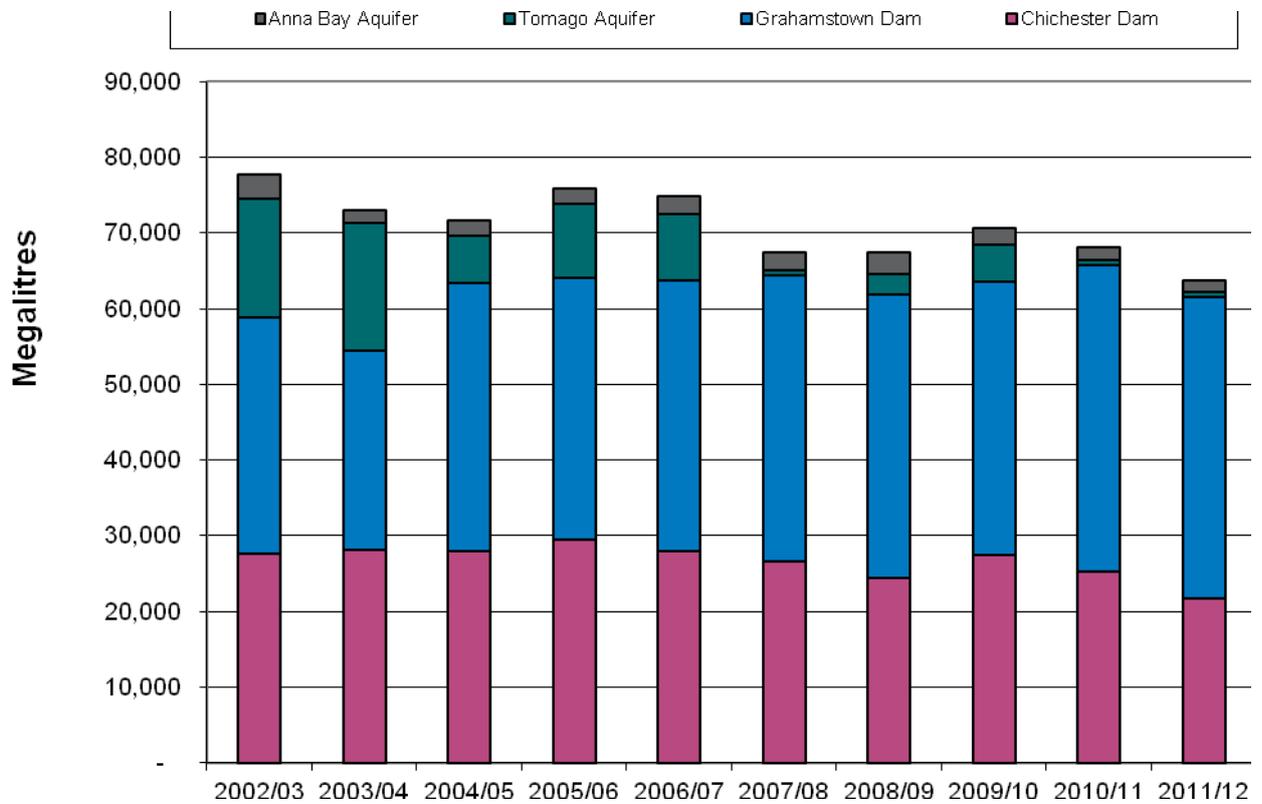


Figure 2-4 Extraction of Water Source 2002-03 to 2010-11



As shown in Figure 2.3 and 2.4, Grahamstown Dam is the major water extraction source comprising 63 per cent of total water sourced in 2010-11. The percentage volumes provided from the different sources is similar to 2010-11.

2.1.5 Demand

| | |
|----------------|---|
| <i>NWI-W11</i> | <i>Total urban water supplied (ML)</i> |
| <i>NWI-W12</i> | <i>Average annual residential water supplied (kL/property)</i> |
| <i>OL WS-2</i> | <i>Average annual residential water consumption (kL/capita)</i> |
| <i>OL WS-3</i> | <i>Industrial and commercial uses (ML)</i> |
| <i>OL WS-4</i> | <i>Consumption by large customers (ML)</i> |

Table 2-4 and Figure 2-5 show the total volume of urban water supplied. The calculation methodology for total urban water supplied was changed in 2010-11. In previous years the total urban volume supplied was the sum of 'residential', 'commercial, municipal, industrial', and 'other'. In 2010-11 and 2011-12 the calculation of total urban volume supplied also includes 'recycled water'. As a result, the figures for 2010-11 and 2011-12 are not comparable to the figures recorded in previous years. The total urban water supplied in 2011-12 is lower than 2010-11 which is reflective of reduced customer demand in the residential sector due to the wet year and very mild summer conditions that were experienced.

Table 2-4 Total Urban Water Supplied

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Total urban water supplied (ML) ¹ | 76,856 | 72,233 | 69,673 | 69,875 | 70,599 | 66,009 | 67,020 | 68,233 | 72,368 | 69,706 |

¹ The figure for 2010-11 and 2011-12 are not comparable to the figures recorded in previous years as the definition now includes recycled water. If a similar methodology was used to previous years the total urban water supplied in 2011-12 would be 63,183 ML.

Figure 2-5 Historical Water Supply

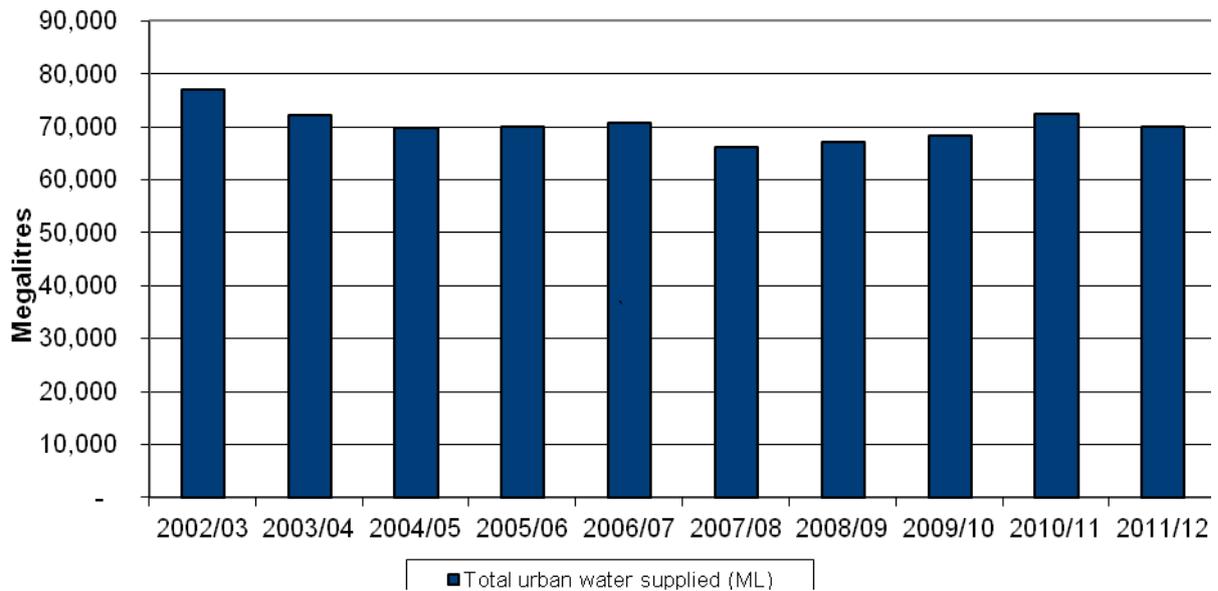
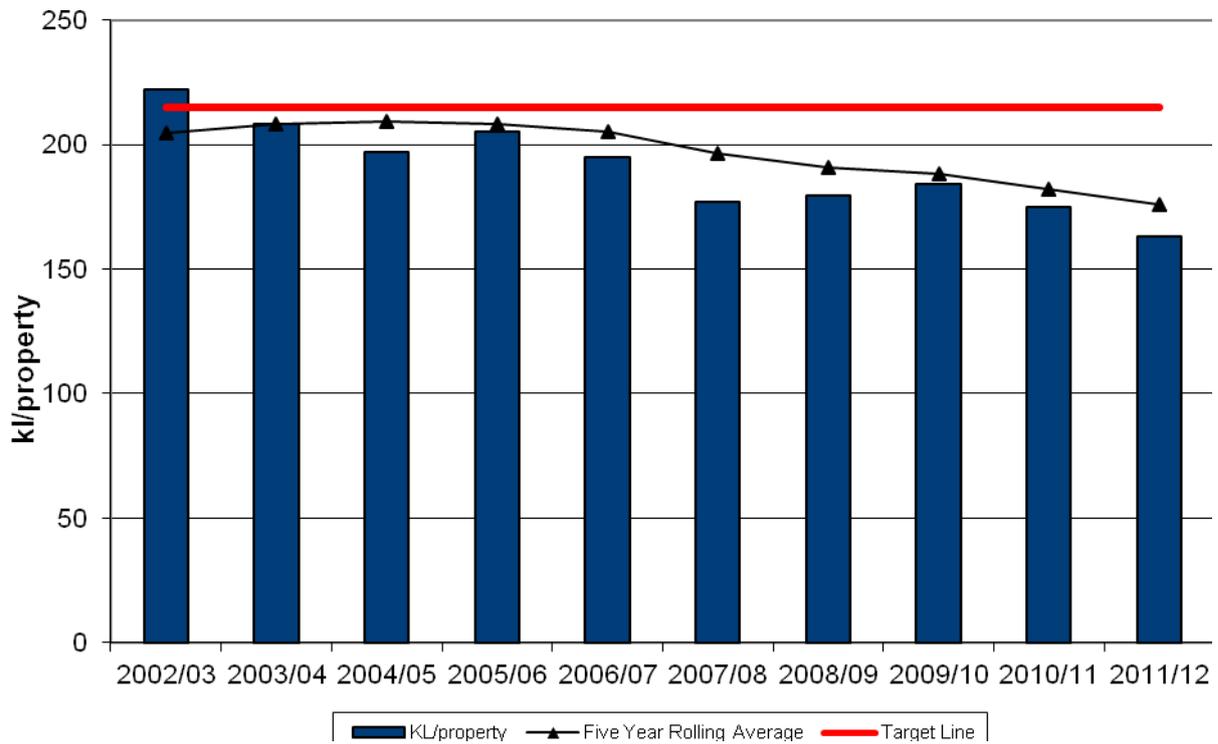


Table 2-5 shows historical residential water usage. Water consumption per capita and per property is the lowest it has been in ten years. The wet year and mild conditions experienced over the 2011-12 summer period would be the main reasons for the low water use over the period. The shift towards higher density living, the use of water efficient appliances and NSW BASIX requirements are also likely to be strong influencing factors that contribute to the five year rolling average consumption per property which has been trending downwards since 2005-06.

Table 2-5 Residential Water Use

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Kilolitres/property/ annum | 222 | 208 | 197 | 205 | 195 | 177 | 180 | 184 | 175 | 163 |
| Five year rolling average of above | 205 | 208 | 209 | 208 | 205 | 196 | 191 | 188 | 182 | 176 |
| Kilolitres/capita | 83 | 79 | 75 | 78 | 76 | 70 | 71 | 72 | 67 | 62 |

Figure 2-6 Residential Water Use Graph from 2002-03 to 2011-12



Target: Hunter Water has a target to ensure that the five year rolling average for annual residential water consumption is equal to or less than 215 kL. This target has been achieved in 2011-12.

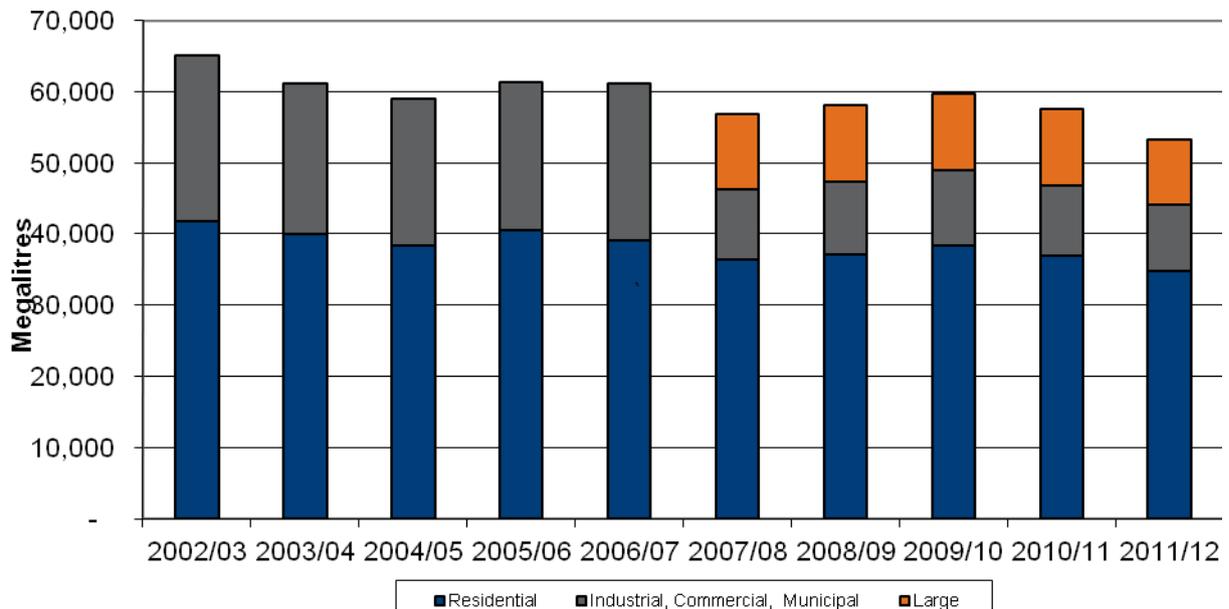
Table 2-6 shows water consumption by customer type and Figure 2-7 shows a historical breakdown of water consumption by customer type. The consumption figures in Table 2-6 are calculated based on billed metered customers. The differential in the sum of consumption in Table 2-6 and Total Urban Water Supplied (Table 2-4) can be attributed to the Hunter Water’s unbilled metered usage (for example, wastewater treatment plants and pump stations), unmetered water consumption (for example, water losses through the system and unauthorised usage) and the quantity of recycled water substituting potable water usage.

During 2011-12 there has been a noticeable drop in residential water use. As noted above this is likely to be driven largely due to the wet conditions and mild summer which would have contributed to low outdoor water usage in this customer sector.

Table 2-6 Consumption by Sector¹

| | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---|---------|---------|---------|---------|---------|
| Residential properties (ML) | 36,428 | 37,199 | 38,463 | 37,087 | 34,911 |
| Industrial, municipal & commercial properties (ML) ² | 9,940 | 10,148 | 10,719 | 9,715 | 9,371 |
| Large customers (ML) | 10,478 | 10,880 | 10,362 | 10,801 | 9,233 |

Figure 2-7 Historical Water Consumption by Sector³



¹ Note data has only been collected in the format required above since 2007-08. Data from 2002-03 to 2006-07 has commercial, municipal, industrial and large customers grouped together.

² This figure is calculated differently to the number quoted in the NPR (NWI) reporting. The number in this report excludes large customers (counted as a separate group) and vacant/superseded land parcels.

³ Data from 2002-03 to 2006-07 has commercial, municipal, industrial and large customers grouped together.

3 Water Conservation

Hunter Water has a good history of promoting water conservation through the introduction of user pays pricing, education and an ongoing leak reduction program.

The Integrated Water Resources Plan (also called the H₂50 Plan) addresses water conservation through the commitment to implement a range of water efficiency and water loss minimisation programs.

The water conservation programs focus on:

- Reducing losses in the water system
- Encouraging customers to substitute potable water supply with other sources (eg greywater, rainwater and recycled water)
- Conservation measures through pricing
- Encouraging the up-take of water efficiency products in homes and businesses, and
- Improving water use behaviour

Further details on progress on these programs can be found in the Integrated Water Resources (H₂50) Plan Report for 2011-12, available on the Hunter Water website.

3.1 Key Performance Indicators

3.1.1 Water Loss

| | |
|----------------|--|
| <i>NWI-A9</i> | <i>Infrastructure Leakage Index (ILI)</i> |
| <i>NWI-A10</i> | <i>Real losses (litres/service connection/day)</i> |
| <i>NWI-A11</i> | <i>Real losses (kL/km water main/day)</i> |
| <i>OL WL-1</i> | <i>Water losses (litres/connection/day)</i> |
| <i>OL WL-2</i> | <i>Water losses (kL/km water main/day)</i> |

Water losses are measured using the International Water Association's (IWA) Infrastructure Leakage Index (ILI).

The ILI shows how current actual losses (leakage) compare with the theoretical lowest possible level of leakage that could be achieved by an agency's water supply system. The calculation takes account of factors such as length of main, number of connections, connection density, operating pressure, meter errors, fire fighting use etc.

This enables comparison of leakage to occur between water agencies. For example an ILI of 1.7 means that the current leakage level is 1.7 times higher than the theoretical lowest possible value. Lower ILI values (moving towards 1, where leakage = the theoretical minimum) therefore reflect better performance. Higher ILI values mean that leakage has to be reduced by greater amounts to move towards the theoretical minimum. The IWA rates performance with ILI values lower than 1.5 as excellent whilst 1.5 - 3.5 is categorised good/fair.

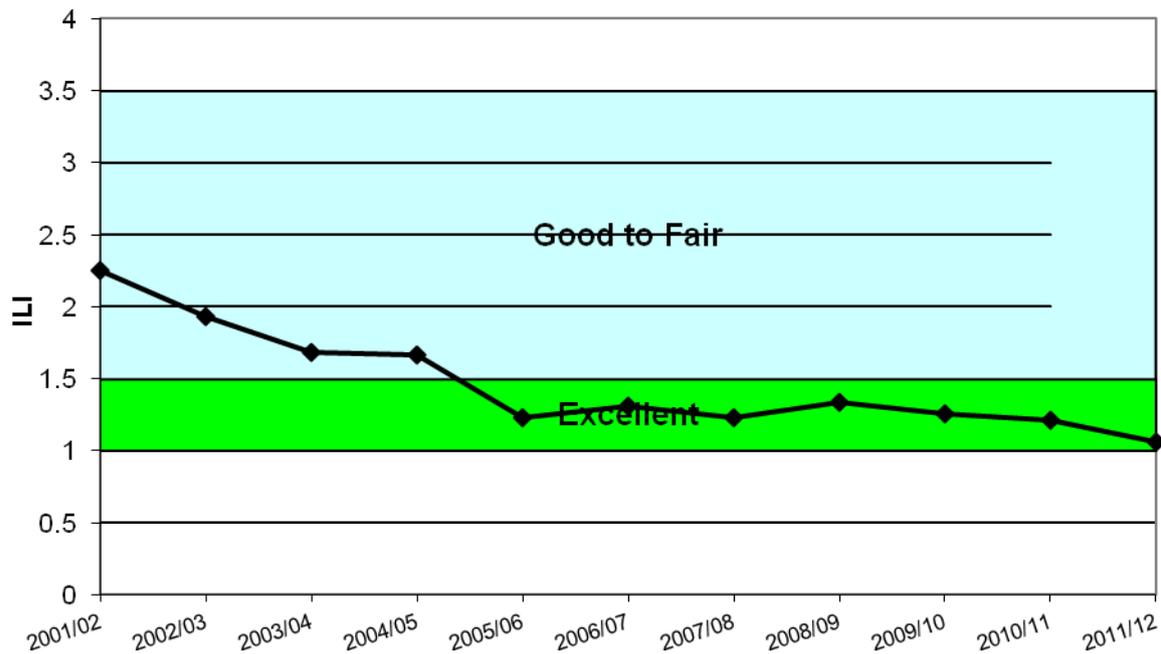
Water losses in 2011-12 are lower compared to 2010-11 figures and show steady improvement over the past 10 years. Table 3-1 summarises losses used to calculate the ILI and Figure 3-1 shows the historical trends of the ILI. Hunter Water achieved an ILI value of 1.06 in 2011-12, which falls well within the "excellent" range. The ILI has been within the "excellent" range since 2005-06. This can be

attributed to the active leak detection programs and water service and main replacement programs that have been carried out over the past seven years.

Table 3-1 Water Losses

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Real losses (L/connection/ day) | 115 | 113 | 110 | 81 | 85 | 80 | 94 | 88 | 84 | 75 |
| Real losses (kL/km watermain/day) | 5.3 | 5 | 5.1 | 3.8 | 4.2 | 3.9 | 3.7 | 3.5 | 3.4 | 3.2 |
| Water losses (L/connection/ day) | -- | -- | -- | -- | 109 | 101 | 120 | 106 | 101 | 90 |
| Water losses(kL/km water main/day) | -- | -- | -- | -- | 5.3 | 4.9 | 4.7 | 4.3 | 4.1 | 3.9 |

Figure 3-1 Infrastructure Leakage Index (ILI) Historical Trend



Target: Hunter Water has a target to achieve an “excellent” rating in the ILI. This has been achieved in 2011-12.

3.1.2 Water Restrictions

OL WR-1 Nature and length of each water restriction imposed

OL WR-2 Criteria applied in determining whether to request imposition of a water restriction

No water restrictions were imposed on Hunter Water customers during the 2011-12 reporting period. Water restrictions have not been imposed on Hunter Water Customers since December 1994.

The current Water Restriction Policy is shown in Table 3-2. Stage 1 involves the immediate application of a three day per week watering regime progressing to two days per week at Stage 2. Importantly, households with an internally connected rainwater tank benefit during Stages 1 to 3 through the ability to water during an additional day per week. In addition a new more severe restriction level has been introduced that would be triggered if storage levels fall below 30 per cent. The Stage 4 restriction level is essentially placing the community in “survival mode” with respect to water consumption in the event of a severe drought.

Table 3-2 Water Restriction Policy

| Restrictions | Broad strategies | Expected demand reductions and assumed demand |
|---------------------|--|---|
| Informal – 70% | Public education campaign | Intention is to ‘give some warning’ at least two months before mandating restrictions. Assumed demand = 225ML/day |
| Stage 1 – 60% | Ban fixed sprinklers Limited use of hand-held hoses between 5pm and 10am on nominated watering days: <ul style="list-style-type: none"> • Odd-numbered houses can water on Monday, Wednesday and Saturday • Even-numbered houses can water on Tuesday, Thursday and Sunday • Houses with internally connected rainwater tanks only, may also water on Friday | Expected demand reduction to 5% below average (15% below dry weather demand) Assumed demand = 205ML/day |
| Stage 2 – 50% | Ban fixed sprinklers Further limited use of hand held hoses between 5pm and 10am on nominated watering days: <ul style="list-style-type: none"> • Odd-numbered houses can water on Wednesday and Saturday • Even-numbered houses can water on Thursday and Sunday • Houses with internally connected rainwater tanks only, may also water on Friday | Expected demand reduction to 10% below average Assumed demand = 195ML/day |
| Stage 3 – 40% | Ban outdoor use of potable water except customers with internally connected rainwater tanks are allowed to use water for external purposes one day a week (Friday). | Expected demand reduction to 15% below average (demand is expected to be at around average winter day demand level throughout the whole year) Assumed demand = 185ML/day |

| Restrictions | Broad strategies | Expected demand reductions and assumed demand |
|---------------|--|--|
| Stage 4 – 30% | <p>Total ban on outdoor use of potable water (including customers with internally connected rainwater tanks)</p> <p>‘Heart strings’ advertising campaign</p> <p>Hunter Water to continue water efficiency mentoring with all large non-domestic customers and continue targeting residential customers with high water consumption</p> | <p>Expected demand reduction down to ‘minimum supply requirement’ (approx 30% below average day or 20% below average winter day demand)</p> <p>Assumed demand = 150 ML/day</p> |

Target: Hunter Water has a target to keep the frequency of imposition of water restrictions to less than one in ten years and the proportion of time in restrictions to less than five per cent. This target has been met in 2011-12.

3.1.3 Water-use Efficiency Measures

OL WC-1 Total volume of drinking water saved through water use efficiency (ML)

Table 3-3 presents the total annual volume of drinking water saved through residential and non-residential water efficiency programs, including asset upgrades, potable water substitution with recycled water and rainwater harvesting and leakage reduction programs.

Table 3-3 Water-use Efficiency¹

| | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|--|---------|---------|---------|---------|---------|---------|---------|---------|
| Total volume of drinking water saved through water use efficiency (ML) | 2,831 | 2,594 | 2,531 | 2,973 | 3,797 | 4,313 | 3,664 | 3,484 |

¹ Note data has only been collected since 2004-05. The numbers have been updated from previous years due to a change in methodology used to calculate water savings from water loss minimisation.

In 2011-12, Hunter Water has continued with its leakage management and water efficiency initiatives. The volume of drinking water saved in 2011-12 is slightly down on the volume from 2010-11. The main difference between 2009-10 and the last two years is a result of reduced recycled water use.

4 Water Recycling

Hunter Water is committed to encouraging water recycling where environmentally, socially and economically beneficial. Hunter Water has a long history of developing recycled water schemes such as the provision of recycled water to the Eraring power station which commenced in 1995.

Hunter Water's Lower Hunter Recycled Water Initiative is a four-year program that will deliver two significant recycled water projects by 2014 to improve the water supply security in the Lower Hunter. These projects include:

- Kooragang Industrial Water Scheme; and
- The Vintage Recycled Water Scheme

The Vintage is a residential golf course development at Pokolbin. In late 2008, The Vintage signed a 30-year commercial agreement with Hunter Water to purchase a minimum 200 ML/year of recycled water, with ultimate demand increasing to 395 ML/year. The ultimate demand represents 47 per cent of the projected 2030 Branxton WWTW effluent output. This scheme will result in the majority of effluent output at Branxton WWTW being recycled.

Detail design work has commenced on the Kooragang Industrial Water Scheme which, when completed will be Hunter Water's largest recycled water scheme.

During 2011-12 Hunter Water continued to deliver recycled water to a variety of customers including Eraring Energy, Oceanic Coal, several municipal golf courses, Kurri Kurri TAFE and a variety of agricultural water users.

4.1 Key Performance Indicator

4.1.1 Recycled Water

| | |
|-----------------|--|
| <i>NWI-W20</i> | <i>Volume of recycled water supplied – Residential (ML)</i> |
| <i>NWI-W21</i> | <i>Volume of recycled water supplied – Commercial, municipal and industrial (ML)</i> |
| <i>NWI-W22</i> | <i>Volume of recycled water supplied – Agricultural (ML)</i> |
| <i>NWI-W23</i> | <i>Volume of recycled water supplied – Environmental (ML)</i> |
| <i>NWI-W24</i> | <i>Volume of recycled water supplied – on site (ML)</i> |
| <i>NWI-W25</i> | <i>Volume of recycled water supplied – Other (ML)</i> |
| <i>NWI-W26</i> | <i>Total recycled water supplied (ML)</i> |
| <i>NWI-W27</i> | <i>Recycled water – (per cent of effluent recycled)</i> |
| <i>OL RW-1A</i> | <i>Per cent of recycled water substituting potable water use (%)</i> |
| <i>OL RW-1B</i> | <i>Recycled water substituting potable water use (ML)</i> |

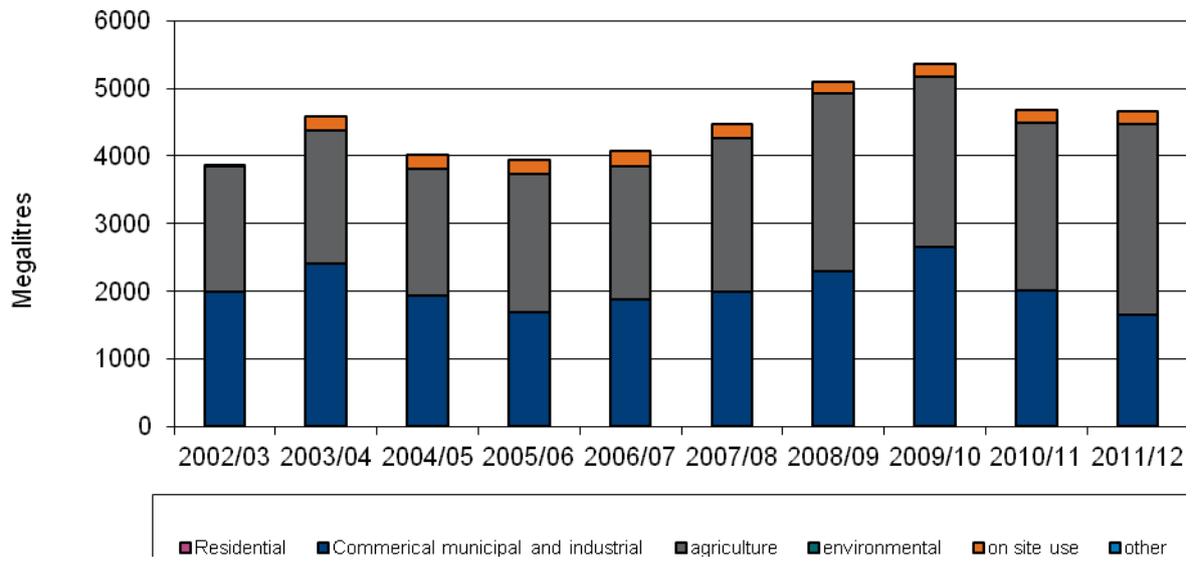
Table 4.1 shows volumes of recycled water by use, which is also summarised in Figure 4-1. The total recycled water supplied in 2011-12 is very similar to 2010-11. The volumes of recycled water used at Eraring Energy have been low in comparison to previous years. Reliability issues and maintenance have been issues for the recycled water facility at Eraring Energy during the reporting period. The on-site treatment facility is reaching the end of its life and is scheduled to be upgraded. Recycled water use at Oceanic Coal was limited for two months while a new agreement was executed.

Recycled water use in agriculture is slightly higher than 2010-11 however the majority of recycled water use in agriculture comes from indirect use by water users downstream of treatment plants that discharge into inland receiving waters. The volume of recycled water used in direct use programs was actually down compared to 2010-11 as a result of wet weather that reduced the irrigation requirements.

Table 4-1 Recycled Water

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Residential (ML) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Commercial, municipal and industrial (ML) | 1,988 | 2,403 | 1,929 | 1,686 | 1,875 | 1,984 | 2,289 | 2,648 | 2,006 | 1,643 |
| Agriculture | 1,856 | 1,968 | 1,881 | 2,040 | 1,967 | 2,269 | 2,623 | 2,520 | 2,488 | 2,824 |
| Environmental (ML) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| On site use (ML) | 22 | 217 | 210 | 216 | 218 | 218 | 180 | 180 | 180 | 197 |
| Other (ML) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total recycled water supplied (ML) | 3,866 | 4,588 | 4,020 | 3,942 | 4,060 | 4,471 | 5,092 | 5,348 | 4,674 | 4,664 |
| Potable water substituted by recycled water (ML) | 1,988 | 2,403 | 1,929 | 1,860 | 2,055 | 2,174 | 2,483 | 2,899 | 2,258 | 1,878 |
| Recycled water used to substitute potable water (%) | 51% | 52% | 48% | 47% | 51% | 49% | 49% | 54% | 48% | 40% |
| Effluent recycled % | 7% | 8% | 6% | 7% | 5% | 6% | 7% | 10% | 7% | 6% |

Figure 4-1 Historical Recycled Water Consumption by Sector



Target: Hunter Water has a target to produce 4000ML of recycled water by 2008-09 and 8000ML by 2013-14. The Kooragang Industrial Water Scheme that is scheduled for completion in 2014 will go a long way to helping Hunter Water achieve this target.

5 Wastewater, Trade Waste, Residuals

The Environment Protection Authority (EPA) issues licences for Hunter Water's wastewater pipe network and treatment systems. The removal of septic overflows and treated effluent from Lake Macquarie and Port Stephens and the upgrade of major coastal treatment plants have improved the quality of the region's beaches and health of these waterways over the last twenty years.

Water quality monitoring results from the Hunter Region's bathing beaches taken as part of the NSW Office of Environment & Heritage's beachwatch program indicate that the beaches are some of the cleanest in the State. Over the past twenty years, the Hunter Sewage Project and the Priority Sewage Program have provided services to over 22,000 unsewered properties in outlying areas and an additional \$100 million has been spent upgrading or rehabilitating the existing wastewater pipe network.

The next ten years will see further upgrades to wastewater treatment plants to service growth and system improvements to reduce the potential for sewer overflows.

5.1 Key Performance Indicators

5.1.1 Trade Waste Inspections

OL TW-1 Annual number of trade waste inspections

This indicator provides a measure of Hunter Water's activities to reduce the potential impact of trade contaminants on Hunter Water's sewage system. These inspections ensure contaminants from industry and business are not getting into Hunter Water's sewage system. The definition of each trade waste category is presented in Table 5-1. In 2011-12 a total of 898 trade waste inspections were completed, as shown in Table 5-2. Of these inspections, 451 were of minor trade waste discharges.

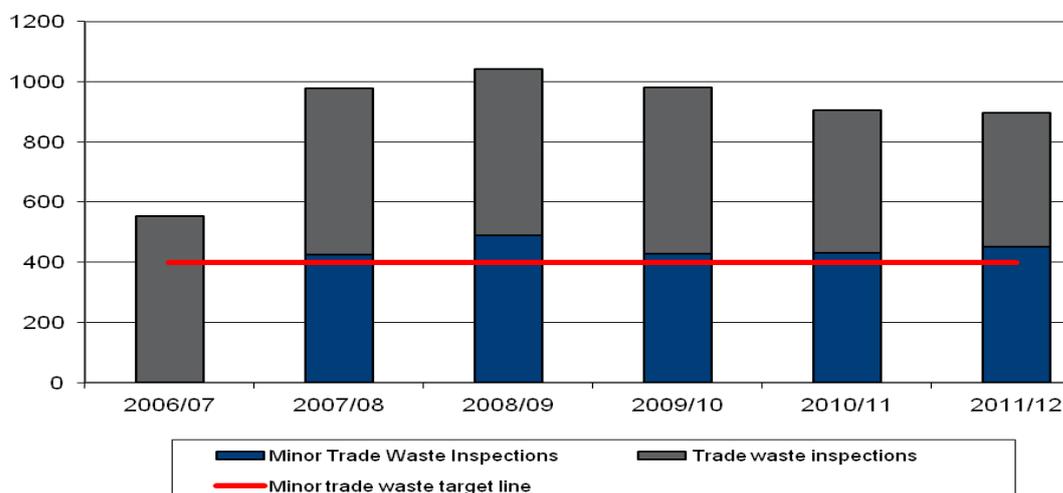
Table 5-1 Trade Waste Category Definition

| Level | Agreement Type | Description |
|-------|----------------|--|
| 1 | Deemed | Due to the relatively low risk associated with Level 1, a 'deemed' Agreement is put in place. |
| 2 | Minor | Level 2 Agreements are suitable for the majority of low-moderate risk trade wastewater dischargers. |
| 3 | Moderate | Level 3 is suitable where Hunter Water considers that the proposed discharge has the potential to be significant. |
| 4 | Major | Level 4 is suitable where Hunter Water considers the proposed discharge to be significant, because of the nature or the quantity of the waste. |

Table 5-2 Trade Waste Inspections¹

| | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---|---------|---------|---------|---------|---------|---------|
| Trade Waste Inspections (minor) | - | 427 | 491 | 428 | 433 | 451 |
| Trade Waste Inspections (moderate or major) | - | 552 | 553 | 554 | 473 | 447 |
| Total Trade Waste Inspections | 455 | 979 | 1044 | 982 | 906 | 898 |

Figure 5-1 Trade Waste Inspections



Target: Hunter Water has a target to complete 400 inspections of minor trade waste discharges per annum and has met this target in 2011-12.

5.1.2 Wastewater System

- NWI-A14 Sewage breaks and chokes (number per 100 km sewer main)
- OL WWS-1 Annual number of sewage odour complaints generated from the sewage treatment plants or the sewage system
- NWI-E13 Sewer overflows reported to the environmental regulator (per 100km of main)

¹ Note data has only been collected since 2006-07.

The set of indicators outlined in Table 5-3 show the performance of Hunter Water’s sewage system which is monitored in accordance with the standards and indicators set out in the operating licence. This monitoring helps highlight areas with problems that need attention. This set of indicators also provides a measure of the impact of the sewer system on both the environment and customers. Property connection sewermain breaks and chokes per 100km of sewermain were lower in 2011-12 than the two previous years. Sewer overflows reported to the regulator was also down compared to 2010-11. The number of odour complaints is very similar to 2010-11.

The numbers for odour complaints shown in Table 5-3 are for verified odour complaints and differ from the total odour complaints number reported in the Customer Services Report. The odour complaint measure in the Customer Services Report follows the National Performance Framework definition for reporting odour complaints. That definition states that all contacts made of suspected sewer odours are to be treated as complaints.

Table 5-3 Sewer Transport System Statistics¹

| | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|--|---------|---------|---------|---------|---------|---------|---------|
| Property connection sewermain breaks and chokes per 100km of sewermain | - | 63.5 | 51.7 | 44.4 | 58.2 | 59.9 | 46.6 |
| Number of odour complaints ² | 315 | 246 | 362 | 146 | 117 | 158 | 154 |
| Number of odour complaints (averaged over 5 years) | 220 | 239 | 278 | 254 | 236 | 206 | 186 |
| Sewage service complaints per 1,000 properties | 33.7 | 35.2 | 26.5 | 2.3 | 2.2 | 2.25 | 2.14 |
| Sewer overflows reported to environmental regulator per 100km of sewermain | - | - | - | 1.5 | 0.1 | 0.08 | 0.04 |

Hunter Water investigates all reports of odour to determine the source of the odour. If the odour is found to be from Hunter Water infrastructure, it is verified and logged as a complaint relating to either

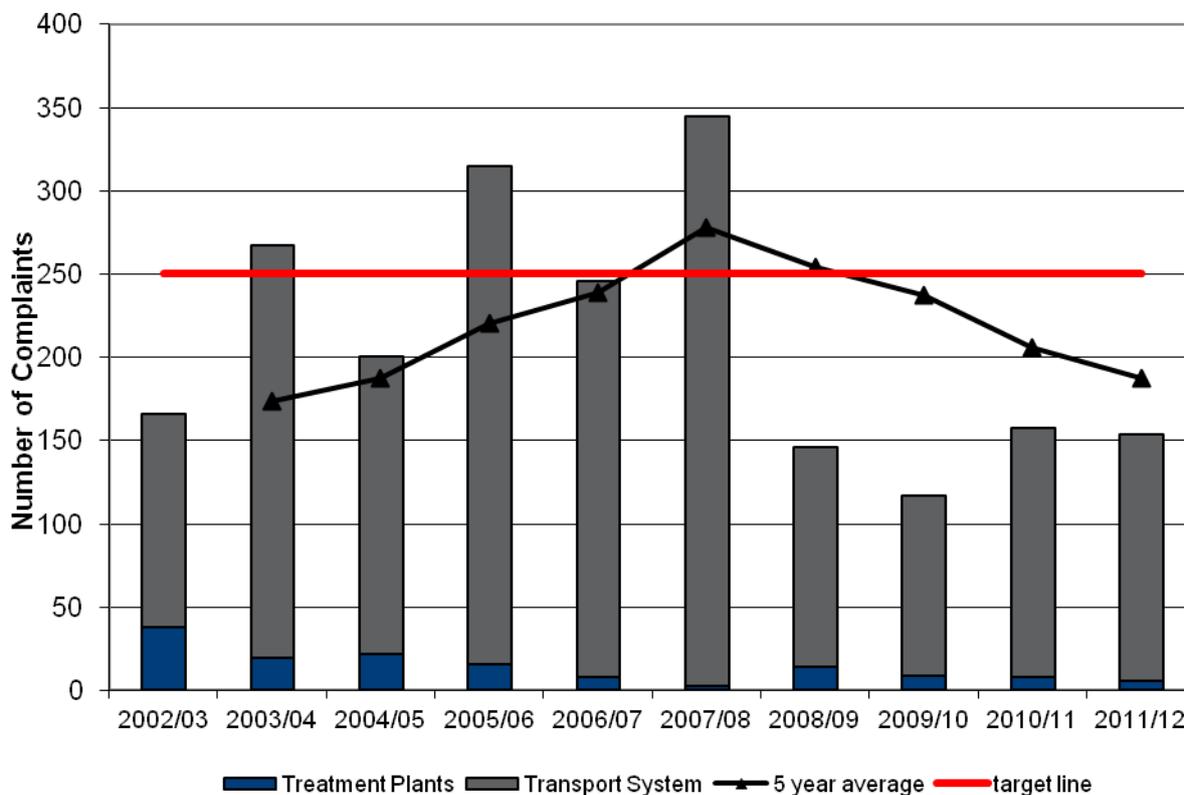
¹ Note data has only been collected in this format since 2005-06

² This indicator measures verified as relating to Hunter Water infrastructure, rather than total reported odour complaints – see discussion in this section.

the reticulation system, pump station or treatment plant. If it is found to be from another source it is not included as a complaint in this report. Verified complaints have been the basis for this operating licence indicator since 2001 and are the basis of the information presented in Table 5-3 and Figure 5-2. We have continued to report verified complaints in this report for consistency with previous years and with the odour target in Environmental Management Plan (see section 8.3).

Hunter Water believes that for the purposes of environmental indicator reporting, it is important to separately maintain and report verified odour complaints. On a number of occasions in recent years, Hunter Water has received high numbers of complaints from customers about suspected sewer odours. Investigation has revealed that these odours were not originating from the sewer system but rather from rotting vegetation in local creeks after flooding or from nearby industrial premises. While customers lodged complaint to Hunter Water about these odours, verification has identified that these odours do not originate from the sewer system and are outside of Hunter Water's control. For analysis of the total odour complaints lodged, refer to the Customer Services Report.

Figure 5-2 Verified Sewer Odour Complaints



Target: Hunter Water has a target to keep verified odour complaints below a five year rolling average of 250. This target has been met in 2011-12.

5.1.3 Sewage Treatment and Compliance

NWI-E1 *Per cent of sewage treated to a primary level*

NWI-E2 *Per cent of sewage treated to a secondary level*

NWI-E3 *Per cent of sewage treated to a tertiary or advanced level*

This set of indicators is used to report on the potential impact of wastewater treatment works by level of treatment (primary, secondary, tertiary) with tertiary being the highest level of treatment. Details of plant capacity and treatment levels are outlined in Table 5-4.

Table 5-4 Plant Capacities 2011-12

| Plant name | Treatment level ¹ | Equivalent population ² |
|---------------|------------------------------|------------------------------------|
| Belmont | Secondary | 115,000 |
| Boulder Bay | Secondary | 58,000 |
| Branxton | Tertiary | 8,500 |
| Burwood Beach | Secondary | 220,000 |
| Cessnock | Tertiary | 32,000 |
| Dora Creek | Tertiary | 28,000 |
| Dungog | Secondary | 3,260 |
| Edgeworth | Tertiary | 60,500 |
| Farley | Tertiary | 40,000 |
| Karuah | Tertiary | 1,450 |
| Kearsley | Secondary | 2,050 |
| Kurri Kurri | Tertiary | 21,500 |
| Morpeth | Tertiary | 55,500 |

¹ Level of Treatment based on Water Services Association of Australia (WSAA) definition.

² Equivalent population figure is based on plant capacities at the end of 2011-12.

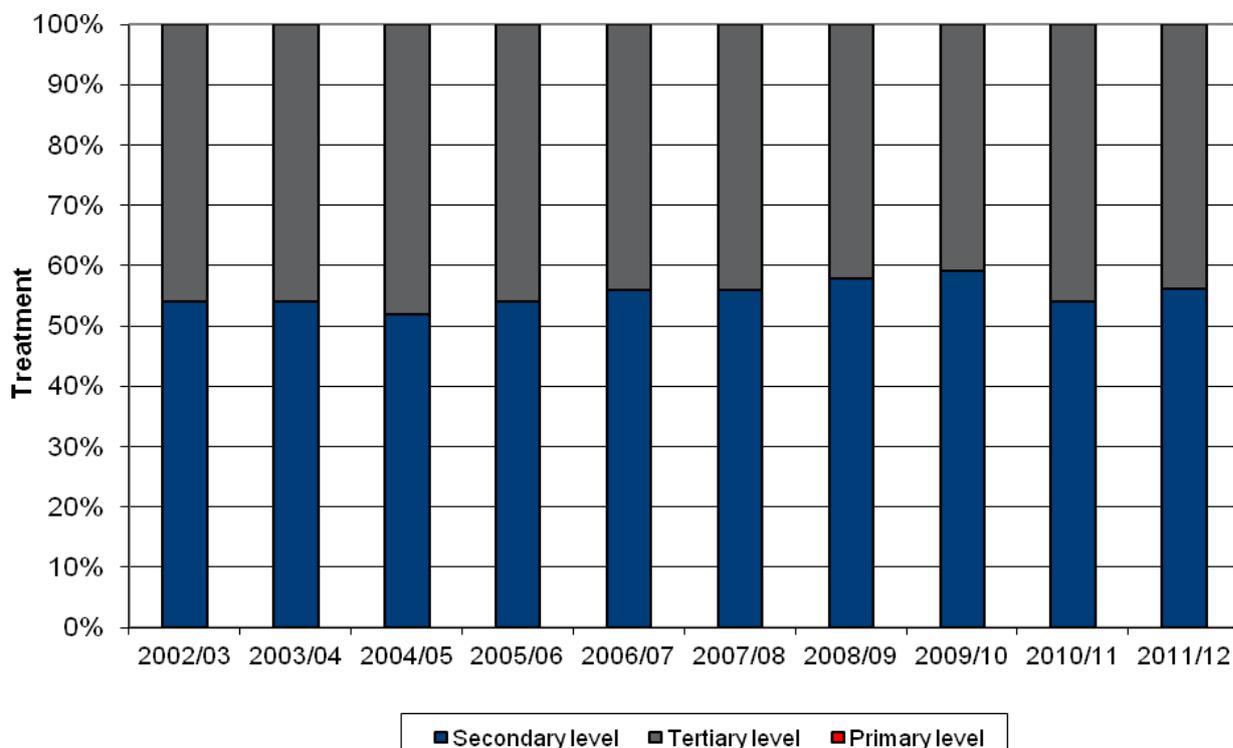
| Plant name | Treatment level ¹ | Equivalent population ² |
|-----------------|------------------------------|------------------------------------|
| Paxton | Tertiary | 3,200 |
| Raymond Terrace | Tertiary | 35,000 |
| Shortland | Tertiary | 37,000 |
| Tanilba Bay | Tertiary | 6,800 |
| Toronto | Tertiary | 30,000 |

In 2011-12 the proportion of sewage treated to various levels was:

- Primary level: 0%
- Secondary level: 56.1%
- Tertiary level: 43.9%

Trends from 2002-03 to 2011-12 are shown in Figure 5-3.

Figure 5-3 Historical Sewage Treatment



Target: Hunter Water has a target to treat 100 per cent of sewage to secondary level as a minimum. This target has been met in 2011-12.

5.1.4 Compliance with EPA Wastewater Treatment Plant Conditions

NWI-E4 Per cent of sewage volume treated that was compliant

NWI-E5 Number of sewage treatment plants compliant at all times

NWI-E7 Compliance with environmental regulator – sewage (yes/no)

OL STC-1 Total number (and nature) of breaches of conditions relating to environmental impacts under OEH sewage treatment system licences

During the period Hunter Water had eighteen treatment plants with fifteen separate system licences (several licences include more than one treatment plant). Note that Clarence Town Wastewater Treatment Works has been recently commissioned and hence in 2012-13 there will be nineteen treatment plants however Clarence Town WWTW has not yet discharged effluent and hence will not be reported upon in this report. Table 5-5 shows that in 2011-12, 99.4 per cent of sewage volume that was treated was compliant.

Table 5-5 Historical Sewage Compliance

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Sewage volume treated that was compliant | 92.8% | 95.0% | 99.9% | 85.6% | 99.1% | 87.3% | 91.1% | 95.0% | 100.0% | 99.4% |

Target: Hunter Water has a target to have 100 per cent of sewage treated to be compliant. This target was not met in 2011-12.

It should be noted that the data in Table 5-5 is based upon the flow weighted plant compliance with concentration limits, as described in the National Performance Framework 2011-12 Definitions Handbook. As such, this assessment is based on operational results for the 2011-12 period, related only to licence conditions regarding treatment concentration percentile limits and does not include compliance/non-compliance with all other licence conditions as reported in the Annual Returns submitted to OEHL during 2011-12. The figures presented in Figure 5-4 and Table 5-6 are related to treatment plant compliance with all licence conditions as reported in the Annual Returns submitted to EPA in 2011-12.

Hunter Water has a requirement to report on all conditions contained within the environmental protection licences. In 2011-12, Hunter Water did not fully comply with all EPA licences. Of the total 1847 applicable licence conditions, 1810 were complied with during the reporting period. This is equivalent to 98.4 per cent compliance which is an improvement from 2010-11 as shown in Table 5-6. The following twelve sewage treatment plants were compliant at all times during the reporting period:

- Belmont
- Boulder Bay
- Tanilba Bay
- Cessnock
- Edgeworth
- Kearsley
- Shortland
- Dora Creek
- Karuah
- Toronto
- Dungog
- Kurri Kurri

Of the 37 conditions not complied with, most non-compliances arose from monitoring requirements relating to missed samples or flow not being monitored continuously due to equipment failure. There were five limit related non-compliances which included non-compliance of BOD and TSS load limits at Farley WWTW and exceedance of daily flows discharged at Paxton WWTW. There were also a number of operational non-compliances which included a power outage at Raymond Terrace WWTW which led to flows being discharged without appropriate UV treatment, eight operational non-compliances at Burwood Beach WWTW, and an overflow from the wet weather storage pond at Branxton WWTW.

Figure 5-4 Treatment Plant Compliance

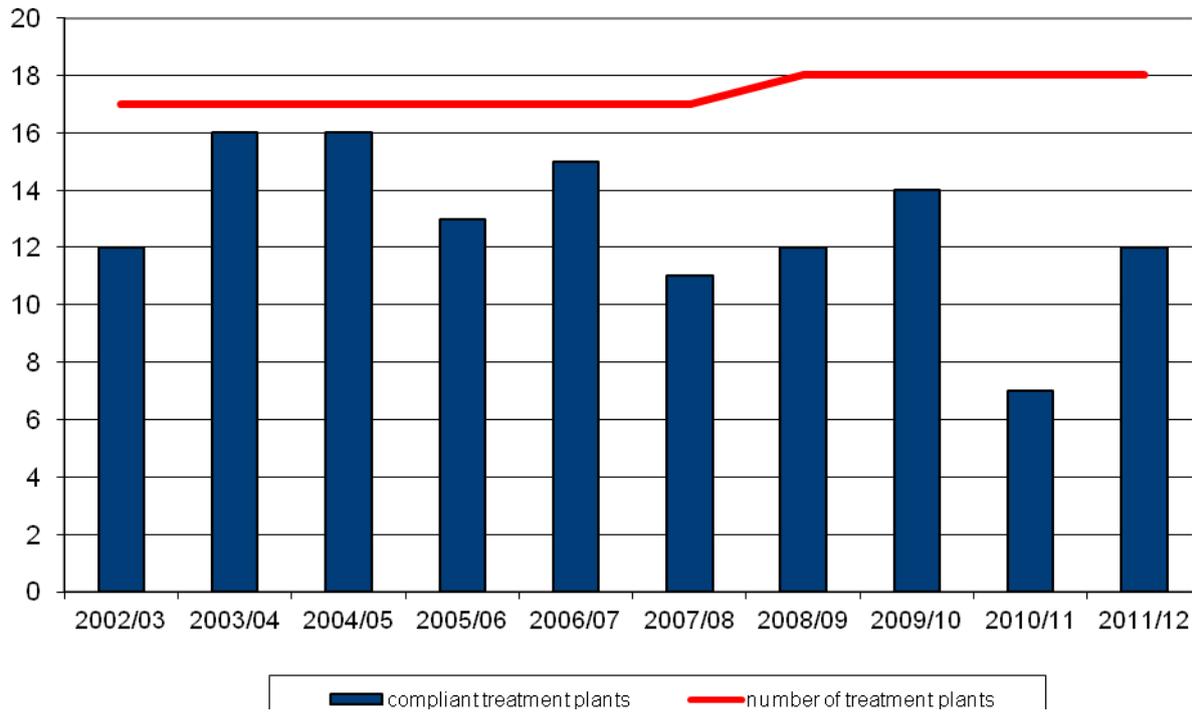


Table 5-6 Compliance with EPA Wastewater Treatment Plant Conditions

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Compliance (%) | 97.9 | 99.1 | 98.1 | 98.1 | 96.5 | 96.0 | 98.8 | 99.1 | 97.9 | 98.4 |

5.1.5 Recreational Water Quality

OL RWQ-1 Percentage of samples that complied with the recreational water quality guidelines as reported by OEH's Beachwatch program

This indicator is important because it is an indirect measure of Hunter Water's coastal wastewater treatment performance. In 2011-12, 100 per cent of samples complied with the guidelines. Table 5.7 outlines historical performance showing that Hunter Region beaches have returned consistently high levels of compliance in recent years.

Table 5-7 Recreational Water Quality

| Year | Historical Performance |
|----------------|---|
| 2004-05 | All beaches complied with faecal coliform and enterococci except Merewether which complied 97% of the time with regards to faecal coliform and Glenrock lagoon which complied 97% of the time with regards to enterococci. |
| 2005-06 | All beaches complied with faecal coliform and enterococci except North and South Burwood beach which complied 98% of the time with regards to faecal coliform and Redhead Beach which complied 95% of the time with regards to enterococci. |
| 2006-07 | All beaches complied with faecal coliform and enterococci except Swansea Heads Little Beach which complied 94% of the time with regards to enterococci. |
| 2007-08 | 100% - All beaches complied with faecal coliform and enterococci. |
| 2008-09 | 100% - All beaches complied with faecal coliform and enterococci. |
| 2009-10 | 100% - All beaches complied with faecal coliform and enterococci. |
| 2010-11 | 100% - All beaches complied with faecal coliform and enterococci. |
| 2011-12 | 100% - All beaches complied with faecal coliform and enterococci. |

5.1.6 Biosolids

NWI-E8 Per cent of biosolids reused (%)

OL BIO-1 Dewatered biosolids reused (tonnes)

During 2011-12, 86 per cent of dewatered biosolids suitable for land application produced was reused. The remaining fourteen per cent were stockpiled on-site. This is summarised in Table 5.8, Figure 5.5 and Figure 5.6.

Note that biosolids from Burwood Beach are discharged to the ocean. Currently these biosolids are not in a form that allows land application and hence is not included in the figure below. Hunter Water is developing a long term plan for the Burwood Beach site which will include a review of the strategy for biosolids management at this plant. Extensive stakeholder consultation is occurring.

Figure 5.6 shows that agriculture continues to be the dominant market for biosolids reuse. Although the percentage of biosolids used in mine site rehabilitation has decreased, it continues to be an important market for Hunter Water biosolids.

Table 5-8 Biosolids Reuse

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Dewatered biosolids reused (tonnes) | 3,990 | 4,293 | 4,856 | 6,152 | 5,556 | 5,786 | 5,091 | 5,123 | 4,668 | 4,738 |
| Per cent of biosolids suitable for land application reused (%) | 83 | 99 | 89 | 88 | 104 | 100 | 88 | 104 | 95 | 86 |
| Percent of biosolids stockpiled for future reuse (%) | 17 | 1 | 11 | 12 | 0 | 0 | 12 | 0 | 5 | 14 |

Hunter Water reuses 100 per cent of biosolids produced from its operations. In a given year, where the figure for 'per cent of biosolids suitable for land application reused (%)' is not equal to 100 per cent, it should be noted that the remaining percentage of biosolids has been stockpiled on site for reuse at a later date. This can occur due to a range of reasons including contractor availability and weather constraints.

Figure 5-5 Dry Tonnes of Biosolids Beneficially Reused

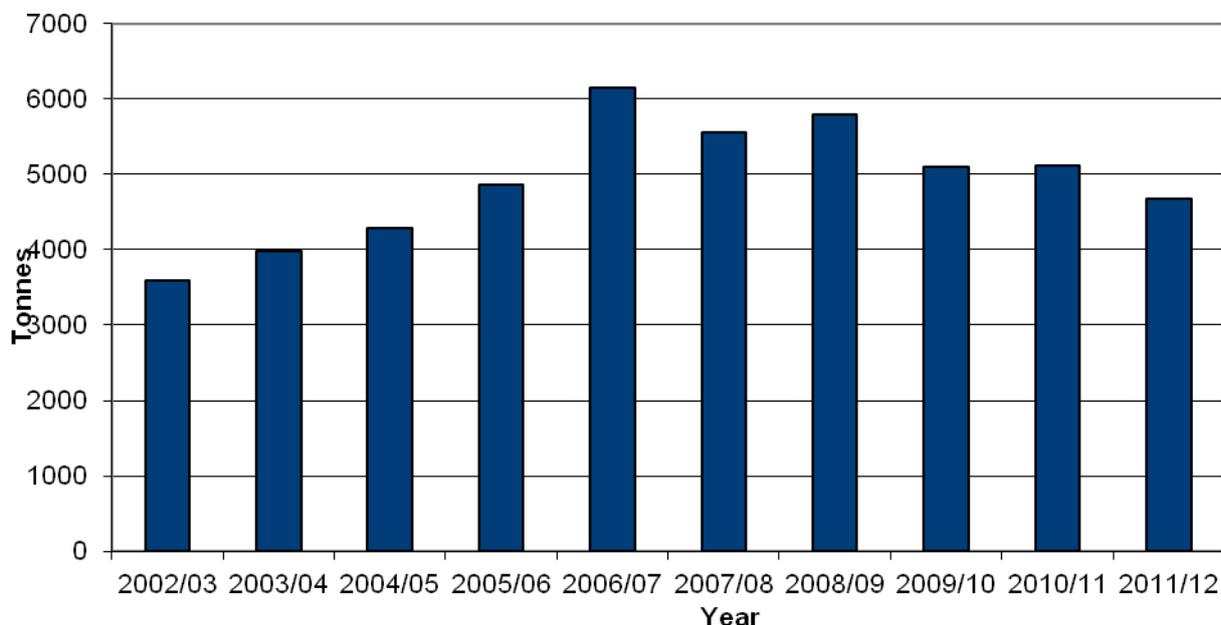
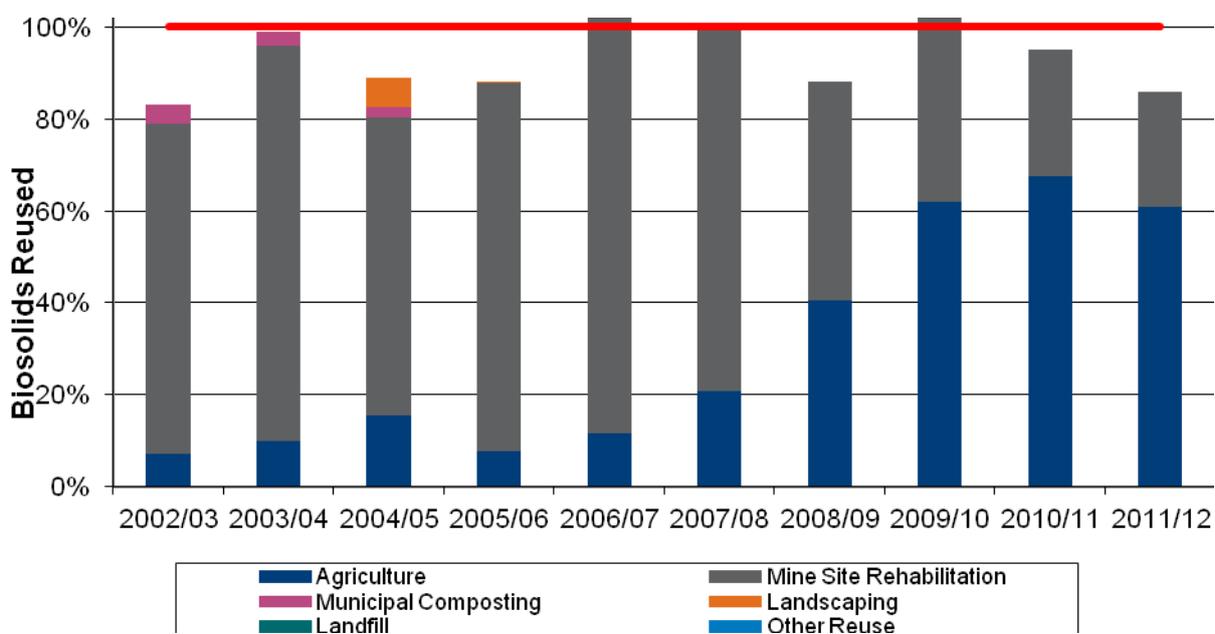


Figure 5-6 Markets for Biosolids



Target: Hunter Water has a target to have 100 per cent biosolids suitable for land application reused. Whilst 86 per cent of biosolids produced in 2011-12 were reused, the remaining fourteen per cent will be stockpiled and available for reuse in future years.

6 Corporate Responsibilities

Hunter Water is currently managing a significant program of capital works which will provide assets to meet higher standards and future growth in the region. Hunter Water undertakes environmental impact assessments and community consultation for key capital works projects, keeping the community informed and ensuring the environmental and community impacts of all infrastructure projects are minimised. This also allows an opportunity for feedback from the community throughout each major project.

6.1 Key Performance Indicators

6.1.1 Breaches of Statutory Instruments

OL BSI-1 Total number of prosecutions and notices (including penalty notices) issued to Hunter Water under relevant environmental legislation

OL BSI-2 Total number of prosecutions and notices (including penalty notices) under relevant environmental legislation issued to contractors engaged by Hunter Water.

There were no prosecutions or penalty infringement notices issued to Hunter Water during 2011-12 however Hunter Water did receive a clean-up notice issued under the *Protection of the Environment Operations Act, 1997* to regulate the clean-up and management of the lead contamination associated with the Chichester Trunk Gravity Main. There were no prosecutions or legal notices issued to contractors engaged by Hunter Water during 2011-12.

The historic number of prosecutions/notices issued to Hunter Water and engaged contractors are shown in Table 6-1.

Table 6-1 Prosecutions, Penalty Infringements and Notices¹

| | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|--|---------|---------|---------|---------|---------|
| Prosecutions/notices issued to Hunter Water | 1 | 0 | 1 | 0 | 1 |
| Prosecutions/notices issued to contractors | 0 | 0 | 0 | 0 | 0 |

Target: Hunter Water has a target to have nil prosecutions and penalty infringement notices. This target was not met in 2011-12.

6.1.2 Noise

OL NOI-1 Total number of noise complaints generated from Hunter Water's construction or operational activities

¹ Note data has only been collected in this format since 2007-08

This measures Hunter Water's noise impact on the community from any of its activities e.g. pump stations, machinery etc. Two verified noise complaints were associated with Hunter Water construction or operational activities during 2011-12. There were no infringement notices or fines associated with these activities. There has been a notable reduction in noise complaints received over the past three years as shown in Table 6-2. Hunter Water follows up each complaint and deals with it on a case-by-case basis. Wherever possible, mitigation measures are implemented to reduce noise levels.

Table 6-2 Noise Complaints from Hunter Water Operational Activities

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Noise complaints | 0 | 0 | 6 | 14 | 6 | 12 | 13 | 2 | 1 | 2 |

6.1.3 Energy

Hunter Water is a medium level consumer of electrical energy. It is expected that Hunter Water's energy consumption will increase in the future due to higher environmental performance (effluent quality) requirements at sewage treatment facilities, requiring more energy intensive technology, and the connection of additional customers.

In order to ensure Hunter Water's energy requirements are met in an efficient and cost-effective way, Hunter Water has been and will continue to place a strong emphasis on energy efficiency.

6.1.3.1 Electricity Consumption of Buildings (kWh)

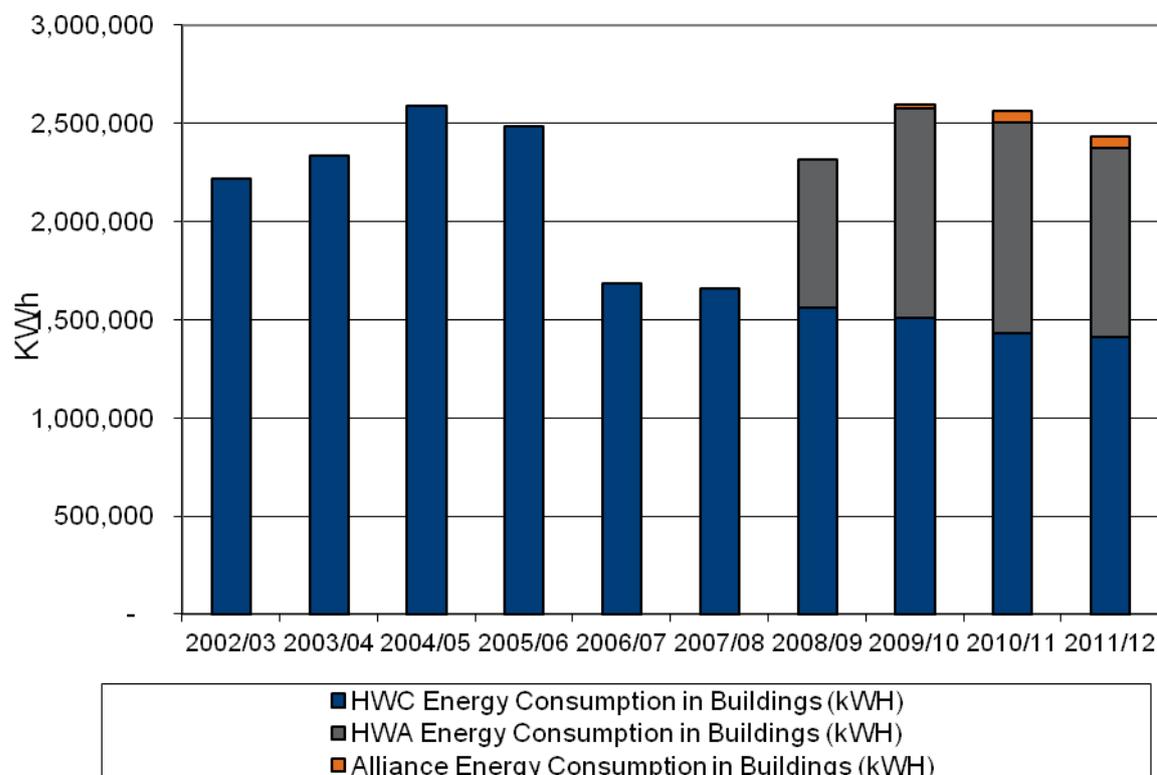
OL EC-1 Electricity consumption in buildings (kWh)

Table 6-3 and Figure 5-1 show electricity consumption by Hunter Water's buildings. The step change in Hunter Water's energy use in buildings in 2005-06 to 2006-07 was due to the construction of a new energy efficient Head Office in Newcastle. From 2008-09 onwards Hunter Water was required to report energy use for its subsidiary company, Hunter Water Australia (HWA) as part of mandatory reporting guidelines and hence the overall consumption reported has increased. From 2009-10 Hunter Water has also reported on the energy consumption for the Wastewater Treatment Alliance located in a leased building that is located in Wickham. Energy use in buildings has been decreasing over the past three years as a result of energy efficiency improvements undertaken to the building management systems in Hunter Water and Hunter Water Australia Head Offices.

Table 6-3 Electricity Consumption of Buildings (kWh)

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Hunter Water | 2,216,930 | 2,335,882 | 2,591,318 | 2,485,855 | 1,686,075 | 1,657,101 | 1,561,138 | 1,513,124 | 1,435,042 | 1,414,917 |
| HWA | | | | | - | - | 753,251 | 1,066,533 | 1,070,439 | 961,264 |
| Alliance | | | | | - | - | - | 18,431 | 59,380 | 61,524 |
| TOTAL | 2,216,930 | 2,335,882 | 2,591,318 | 2,485,855 | 1,686,075 | 1,657,101 | 2,314,389 | 2,598,088 | 2,564,861 | 2,436,705 |

Figure 6-1 Historical Energy Consumption of Buildings



6.1.3.2 Electrical Energy Efficiency of Water and Wastewater Assets

OL EC-2 Electrical energy efficiency of water assets (kWh/ML and kWh/EP of water supplied)

OL EC-3 Electrical energy efficiency of wastewater assets (kWh/EP of wastewater processed)

Table 6-4, Figure 6-2 and Figure 6-3 outline the electricity consumption of Hunter Water’s water and wastewater assets. Historically Hunter Water’s energy efficiency indicators have been measured as kWh/ML treated however the use of this unit of measurement for the energy efficiency of wastewater services was not a good indicator as during wet weather the electricity usage at treatment plants does not necessarily increase in proportion to the increase in electricity usage required for pumping in the wastewater transport system. Therefore the indicator varied greatly from year to year and did not provide opportunity to identify and monitor trends.

In 2009-10 this indicator was changed to kWh/EP of wastewater processed. It should be noted that the figure used as the EP value in the following energy efficiency calculations is actually the population supplied with sewer quoted in Hunter Water’s Annual Report. The electrical energy efficiency of water assets will continue to be measured as kWh/ML in addition to kWh/EP, using the figure for population supplied with water quoted in Hunter Water’s Annual Report, of water supplied. Note that as a result of billing anomalies and other data corrections historical numbers have been updated and hence are different to values presented in previous years. The numbers are reasonably consistent with previous years however there are several confounding issues and hence it is considered that a longer period of tracking will be required before meaningful data is available for this indicator.

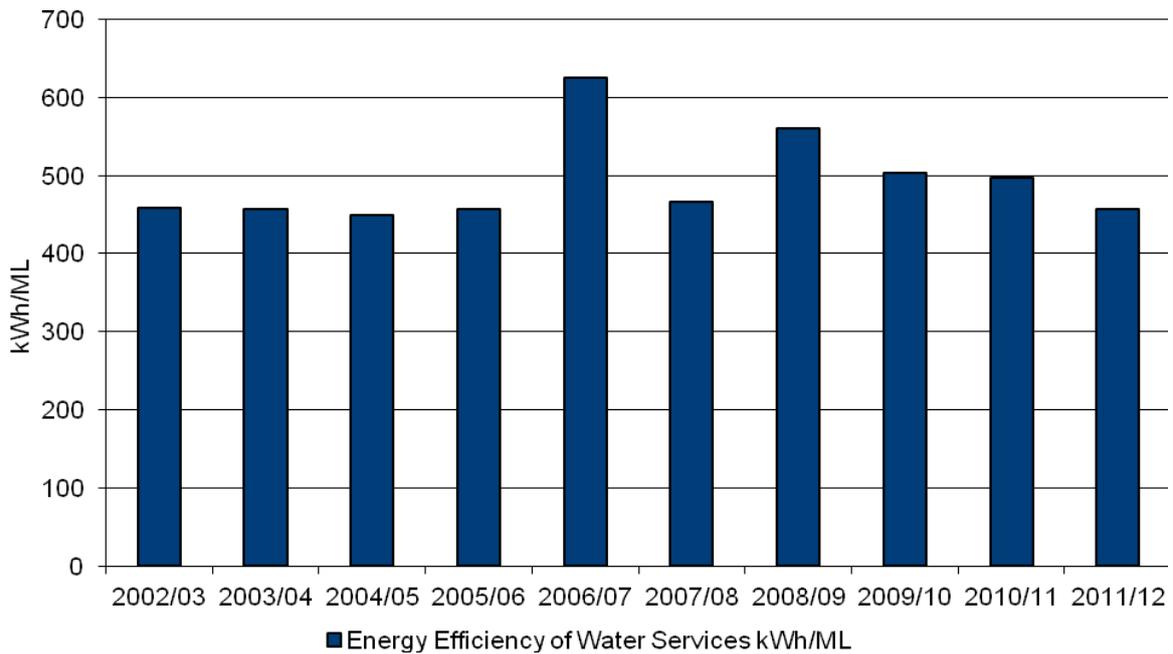
There are a number of variables that can influence energy use. The energy consumed per megalitre of water supplied was lower in 2011-12 than it has been in the past three years. The mild climate conditions experienced during the year would be a major contributing factor to this result. Hunter Water is placing a strong emphasis on improving the energy efficiency of its operational assets to combat rising energy prices and to abate greenhouse gas emissions.

Table 6-4 Electrical Energy Efficiency of Water and Wastewater Assets

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Water assets (kWh/ML of water supplied) | 458 | 457 | 450 | 457 | 625 | 466 | 561 | 503 | 498 | 456 |
| Water assets (kWh/EP of water supplied) ¹ | - | - | - | - | 87 | 60 | 73 | 72 | 68 | 53 |
| Wastewater assets (kWh/EP of wastewater treated) ¹ | - | - | - | - | 83 | 80 | 87 | 75 | 80 | 87 |

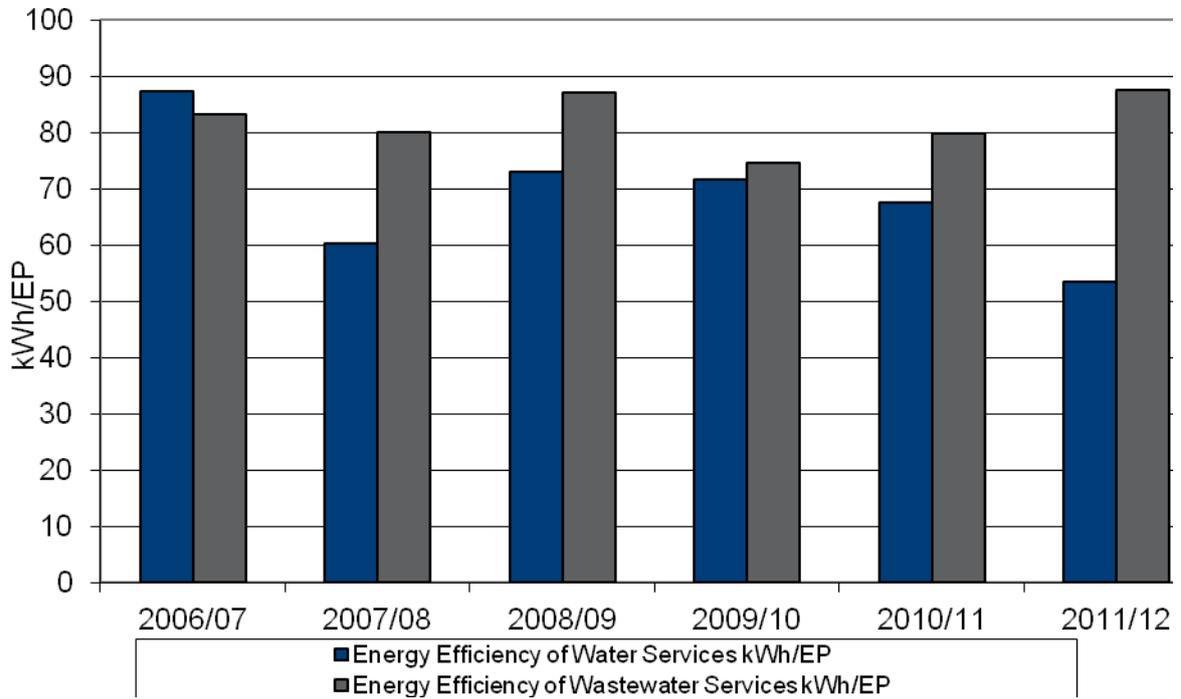
¹ The figure used as the EP value in the energy efficiency calculations is actually the population supplied with water and sewer as quoted in Hunter Water's Annual Report.

Figure 6-2 Historical Electrical Energy Efficiency of Water (kWh/ML)



When energy use per population served is plotted (see Figure 6-3) the data shows that water energy consumption per population served in 2011-12 is lower for water services compared to previous years but higher for wastewater services. These results are mainly a result of the climatic factors experienced during the year (ie mild temperatures and above average rainfall). It should be also noted however that tighter environmental discharge requirements for wastewater will typically result in more energy intensive processes being used which will be expected to contribute to higher energy usage per EP over time.

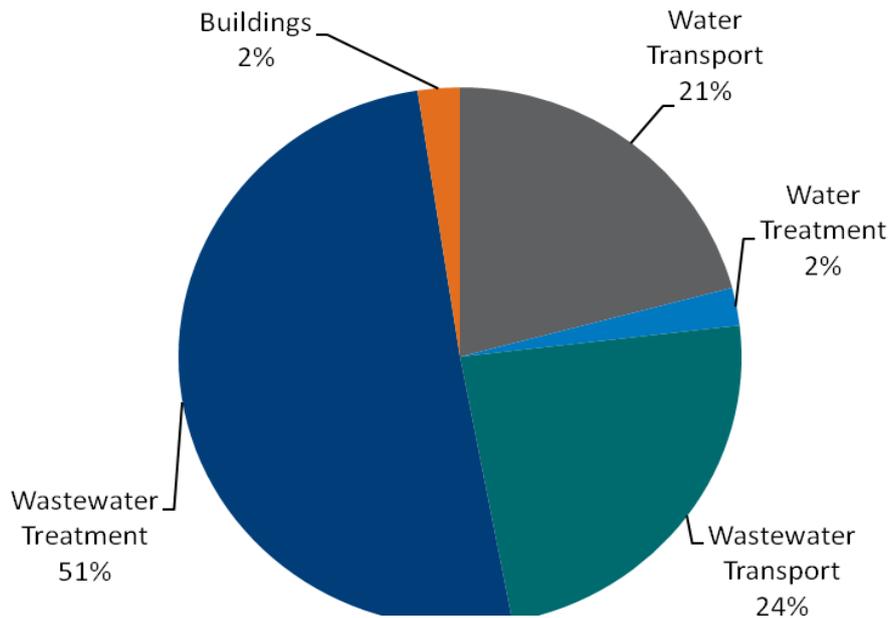
Figure 6-3 Historical Electrical Energy Efficiency of Water and Wastewater (kWh/EP)



6.1.3.3 Electrical Energy Consumption by Activity

Figure 6-4 shows the breakdown of Hunter Water’s electricity consumption by asset type. In comparison to 2010-11, electricity consumption by wastewater assets has increased considerably relative to water assets. This is reflective of low water consumption and wet weather over the reporting period.

Figure 6-4 Electrical Energy Consumption



6.1.3.4 Electricity Consumption from Renewable Sources or Generated by Hunter Water

OL EC-4 Electricity consumption from renewable sources or renewable sources generated by Hunter Water expressed as a percentage of total electricity consumption

Hunter Water does not generate any electricity for sale or internal use. Cogeneration facilities at Cessnock Wastewater Treatment Plant and photo-voltaic solar panels on Hunter Water’s Head Office will be installed during 2012-13. Hunter Water Corporation’s assets are used to generate power with hydro-electric power generators located at Chichester Dam and within the Chichester Trunk Gravity Main. These generators are owned and operated by Delta Electricity.

6.1.4 Greenhouse Gases

- NWI-E9 Greenhouse gas emissions (tonnes CO₂ -equivalents) – water (per 1000 properties)*
- NWI-E10 Greenhouse gas emissions (net tonnes CO₂ – equivalents) – sewage (per 1000 properties)*
- NWI-E11 Net greenhouse gas emissions (net tonnes CO₂ – equivalents) – other (per 1000 properties)*
- NWI-E12 Total net greenhouse gas emissions (net tonnes CO₂ – equivalents) (per 1000 properties)*

Target: Hunter Water has a target to have no net increase in greenhouse gas emissions between 2006-07 and 2013-14.

Table 6-5 outlines the net greenhouse gas emission by activity, while Figure 6-5 summarises net greenhouse gas emission by source and progress against meeting Hunter Water's carbon stable target. In 2011-12 Hunter Water's greenhouse gas emissions have decreased from 2010-11 which is predominantly due to changes in the methodology for calculating nitrous oxide emissions from treatment plants that discharge into ocean and estuarine receiving waters. Hunter Water has exceeded its greenhouse emission target by 3812 tonnes and hence an equivalent amount of banked carbon credits will be offset in order to meet the policy.

Table 6-5 Net Greenhouse Gas Emissions (tonnes CO₂-equivalents)¹

| | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---|---------|---------|---------|---------|---------|
| Net greenhouse gas emissions (tonne CO ₂ – equivalents) water | 26,709 | 29,340 | 32,317 | 32,020 | 26,417 |
| Net greenhouse gas emissions (tonne CO ₂ – equivalents) water (per 1000 properties) | 121 | 132 | 144 | 140 | 115 |
| Net greenhouse gas emissions (tonne CO ₂ – equivalents) sewage | 60,591 | 62,936 | 62,567 | 65,467 | 67,871 |
| Net greenhouse gas emissions (tonne CO ₂ – equivalents) sewage (per 1000 properties) | 290 | 298 | 294 | 304 | 310 |
| Net greenhouse gas emissions (tonne CO ₂ – equivalents) other | 3,058 | 4,560 | 5,886 | 6,258 | 6,582 |
| Net greenhouse gas emissions (tonne CO ₂ – equivalents) other (per 1000 properties) | 14 | 21 | 26 | 27 | 29 |
| Total net greenhouse gas emissions (tonne CO ₂ – equivalents) | 90,358 | 96,835 | 100,770 | 103,745 | 100,870 |
| Total net greenhouse gas emissions (tonne CO ₂ – equivalents) (per 1000 properties) | 409 | 436 | 448 | 455 | 438 |

¹ Note data has only been collected in this format since 2007-08 however additional historical data is shown in Figure 6-5 below.

Figure 6-5 Historical Net Greenhouse Gas Emissions (tonnes CO2-equivalents)

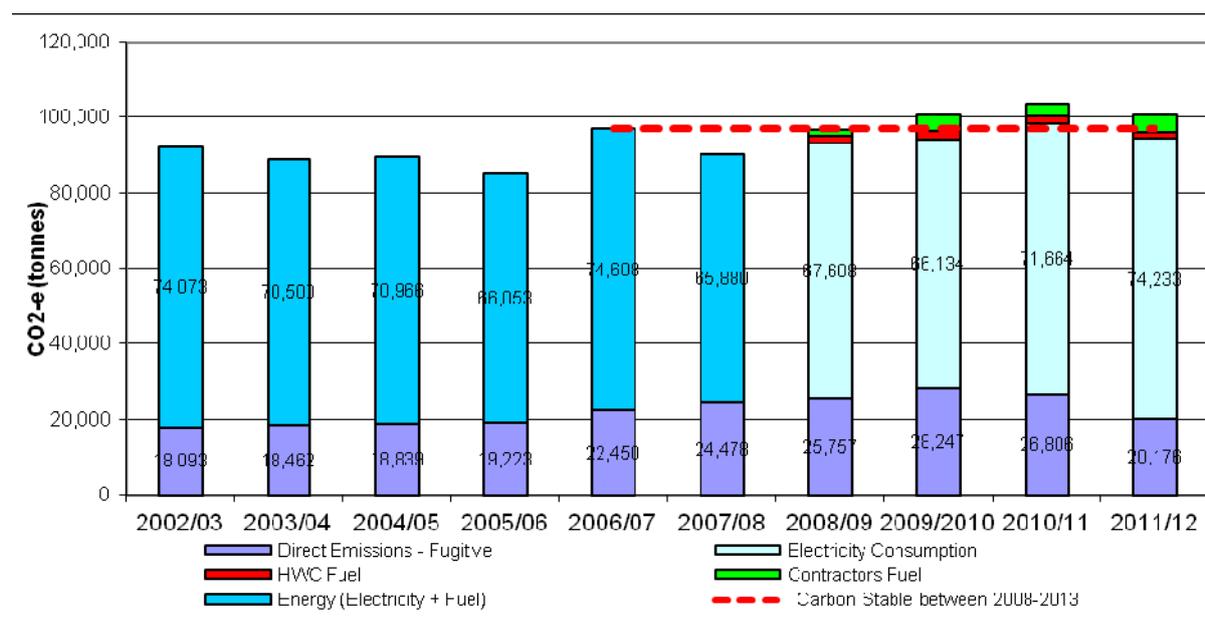


Table 6-6 and Figure 6-6 outline the greenhouse gas offsets that Hunter Water has generated or purchased. These will be used when required to meet the target of net increases in greenhouse gas emissions.

Table 6-6 Greenhouse Gas Offsets (tonnes of CO2-e)¹

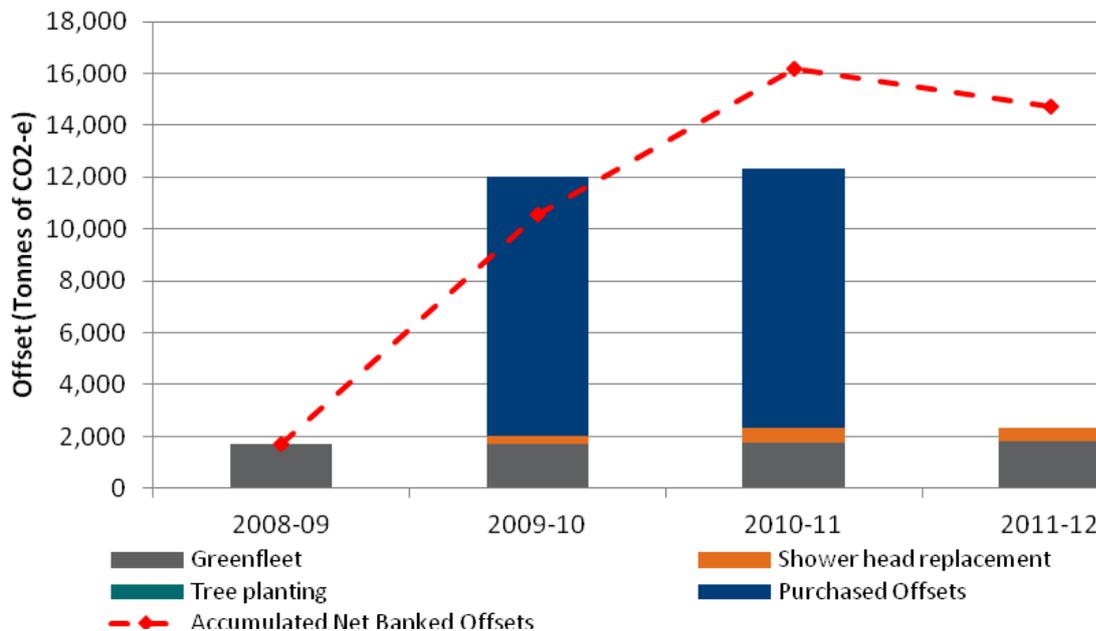
| Offset type (Tonnes of CO2-e) | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|-------------------------------|--------------|---------------|---------------|--------------|
| Greenfleet | 1,717 | 1,717 | 1,745 | 1,817 |
| Shower head replacement | 0 | 300 | 568 | 522 |
| Tree planting ² | 0 | 0 | 0 | 0 |
| Purchased Offsets | 0 | 10,000 | 10,000 | 0 |
| Total Offsets | 1,717 | 12,017 | 12,313 | 2,339 |

¹ Note data has only been collected since 2008-09

² Hunter Water has planted a number of trees, reported in Table 1.1, which have not been included in the offset count presented in Table 6.6. The offsets generated as a result of tree planting activities will be recorded pending an audit and verification process, to be completed at a later date, to assess success of tree planting and account for carbon sequestered.

| Offset type (Tonnes of CO2-e) | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---|---------|---------|---------|---------|
| Offsets Retired to Meet Carbon Target | 0 | 3,174 | 6,689 | 3812 |
| Net Banked Offsets | 1,717 | 8,843 | 5,624 | -1473 |
| Net Banked Offsets Accumulated from Previous Year | 0 | 1,717 | 10,560 | 16,184 |
| Accumulated Net Banked Offsets | 1,717 | 10,560 | 16,184 | 14,711 |

Figure 6-6 Greenhouse Gas Offsets (tonnes CO2-equivalents)



6.1.5 Waste Management

OL WM-1 Solid waste generated (tonnes)

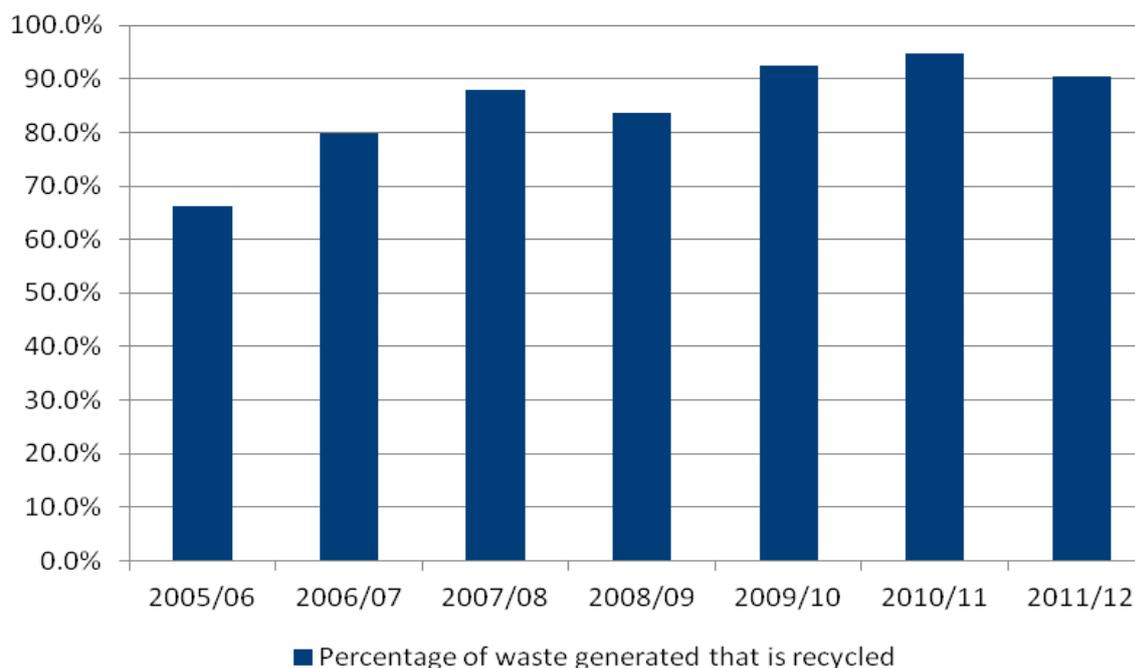
OL WM-2 Waste recycled or reused expressed as a percentage of solid waste generated

Table 6-7 presents an overview of waste generated and recycled across Hunter Water's operations including capital works. Figure 6.7 presents the percentage of waste generated that is recycled using historical data back to 2005-06.

Table 6-7 Waste Recycled in 2011-12

| Waste type | Qty generated (tonnes) | Qty recycled (tonnes) | % |
|----------------------|-------------------------------|------------------------------|--------------|
| Vegetation | 39.5 | 31.5 | 80% |
| Concrete | 823 | 744 | 90% |
| Soil/Spoil | 152,445 | 139,609 | 92% |
| Asphalt | 1460 | 1011 | 69% |
| Timber | 34 | 28 | 83% |
| Bricks or tiles | 9.6 | 8.1 | 84% |
| Metals - ferrous | 112 | 78 | 70% |
| Metals - non ferrous | 0 | 0 | 0% |
| Plasterboard | 150 | 0 | 0% |
| Plastics | 7.4 | 7.4 | 100% |
| Paper & packaging | 150.7 | 127.4 | 85% |
| General waste | 1292 | 0 | 0% |
| Recycling waste | 10.1 | 10.1 | 100% |
| Cardboard boxes | 4.7 | 4.7 | 100% |
| Ink jet cartridges | 143 | 125 | 87.2% |
| Printer paper | 12.1 | 11.1 | 92% |
| TOTAL | 156,694 | 141,796 | 90.5% |

Figure 6-7 Percentage of Waste Generated that is Recycled



In 2011-12, Hunter Water continued to achieve high levels of waste recycling. The recycling percentages are slightly below levels achieved in 2009-10 and 2010-11. Note that recycled waste figures are heavily influenced by soil/spoil that is generated from both operational activities and as part of capital works projects.

6.1.6 Contaminated Lands

OL CL-1 Number of sites under control of Hunter Water that present a potential risk of harm as defined under the Contaminated Land Management Act 1997

A contaminated sites register was completed in 2010 and will be continually maintained and updated over time. In 2010-11 investigations into contaminated land along the Chichester Trunk Gravity Main (CTGM) and Farley Wastewater Treatment Works commenced and are still underway. Hunter Water has been liaising with stakeholders and OEHL have been formally notified under the Contaminated Land Management Act (CLM Act) in relation to investigations at both sites. At this point in time neither site constitutes a significant risk of harm under the CLM Act however ongoing monitoring and management actions will be undertaken to ensure Hunter Water can manage any contamination risks effectively.

6.1.7 Environmental Training

OL ET-1 Number of Staff Given Environmental Training

As shown in Table 6-8 a total of 85 Hunter Water staff received environmental training in 2011-12.

Table 6-8 Environmental Training¹

| | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|------------------------------------|---------|---------|---------|---------|---------|---------|
| Staff given environmental training | 182 | 144 | 0 | 261 | 75 | 85 |

Target: Hunter Water has a target to have 100 staff trained per annum and did not achieve this target in 2011-12. Online general awareness training will be rolled out to all staff in 2012-13 in addition to targeted environmental training for relevant operational staff.

¹ Note data has only been collected since 2006-07.

7 Customers and Community

Hunter Water places a high priority on building strong partnerships and relationships with the community. This allows broad community involvement in issues that affect the water cycle and helps achieve sustainable water cycle management.

We strive to keep local communities, councils and industry informed about the planning and the scope of our operations and infrastructure works by providing timely and factual information. We promote community ownership and responsible use of water resources through public information programs and school and community group talks. We have an annual sponsorship program designed to support a wide range of community and environmental activities throughout the region.

In 2011-12 Hunter Water facilitated a number of education initiatives focussed on both schools and the wider community. For schools, this included distributing a Water Audit Kit to over 100 primary and high schools in the region, The Bubbles and Supa Squirt Water Saving Show for younger children, active involvement in the Catchment Management Authority's Catchment Crawl and Water Watch programs, and school visits throughout National Water Week as part of the 'Ambassadors Program'.

For the wider community, Hunter Water participated in a number of events to present on and discuss water efficiency and catchment management. This included Tocal Field Days, Newcastle Home Show, HIA Home Ideas Expo, the Living Smart Festival, as well as water efficient gardening stalls held in nurseries throughout spring.

7.1 Key Performance Indicators

7.1.1 Community Partnerships

OL CP-1 Value of sponsorship for community environmental projects

OL CE-1 Number of hits on Hunter Water website

Hunter Water's Corporate Sponsorship Program and Community Grants Program support local environmental initiatives across our area of operation that provide a direct benefit to the community. The projects that are funded through these programs must demonstrate a clear environmental outcome and feature projects that minimise the community's ecological footprint, ensure sustainable use of natural resources, balance demand with a sustainable water supply and ensure there is enough water for our community today and in the future. The value of projects sponsored in 2011-12 is shown in Table 7-1.

Table 7-1 Value of Sponsorship¹

| | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---|-----------|-----------|-----------|-----------|-----------|
| Value of sponsorship for community environmental projects | \$131,000 | \$172,500 | \$125,000 | \$127,000 | \$121,000 |

¹ Note data has only been collected since 2007-08.

The total number of hits on the Hunter Water website is shown in Table 7-2 and is relatively consistent with the number received in 2010-11.

Table 7-2 Hits on the Hunter Water Website¹

| | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|----------------------------------|---------|---------|---------|---------|---------|
| Hits on the Hunter Water website | 104,130 | 96,000 | 116,313 | 166,588 | 169,628 |

7.1.2 Reputation Study

OL CPS-1 Overall performance rating in domestic customer perceptions Survey

OL CPS-2 Community acceptance of water supply standard

OL CPS-3 Community acceptance of household sewage disposal service

OL CPS-4 Attitudes towards water conservation

Since 1987, Hunter Water has been formally and independently assessing its role, performance and practices through a survey of domestic customers.

The Community Reputation Study measures and reports community perceptions in relation to social, ecological and environmental issues, thereby providing Hunter Water with an accurate gauge of community sentiment.

In 2010 the method of conducting the study was revised, thus affecting historical comparisons. A more simplified rating scale and new wording was adopted to help clarify the question and make the intent of the question clearer. Minor changes were made in 2011 to improve the content of the study. The survey was not conducted in 2011-12 but will be run again in 2012-13.

Table 7-3 shows the public's perception of Hunter Water in the 2011 survey and its performance across the last four surveys completed. The results of the 2011 survey indicate a notable increase in the community's perception of Hunter Water's performance and reputation across the four performance indicators when compared to the 2010 results.

Overall, the survey results provide feedback from the residential community that they believe Hunter Water is a reliable, high quality water supplier. The community considers our operational activities to be our strength and Hunter Water also rated highly in relation to interactions with our Customer Service and Field Staff. However, there is still room for improvement in all areas assessed.

¹ Note data has only been collected since 2007-08

Table 7-3 Community and Customer Reputation Survey Results

| Perception | 2003 Survey | 2005 Survey | 2007 Survey | Revised questions | 2010 survey | Revised questions | 2011 survey |
|---|-------------|-------------|-------------|--|-------------|--------------------------------------|-------------|
| Overall performance rating | 91.5% | 93% | 93% | Overall performance of Hunter Water as a water utility in the Hunter Region | 71.70% | | 81% |
| | | | | Overall satisfaction with Hunter Water as water utility in the Hunter Region | 61.50% | | 75% |
| Community acceptance of water supply standard | 89.5% | 96% | 93% | Supplies water that is safe to drink to my residence | 85.00% | | 91% |
| Community acceptance of household sewage disposal service | 86.0% | 85% | 87% | Effectively disposes of sewage so that it does not add to pollution | 63.60% | | 76.6% |
| Latest attitudes towards water conservation | | | 91% | Encourages the community to use water efficiently | 71.40% | | 77.4% |
| | | | | Hunter Water's management of the region's water resources | 76.30% | Manages water as a valuable resource | 77.7 |

8 Financial Indicators

Hunter Water provides water, sewage and recycled water services to the Hunter area. Water and sewer rates generate the operating revenue required to provide water and sewer services, infrastructure upgrades and continued protection of the catchment area and surrounding waterways.

8.1 Key Performance Indicators

| | |
|-----------------|---|
| <i>NWI-F11</i> | <i>Operating cost – water (\$/property)</i> |
| <i>NWI-F12</i> | <i>Operating cost – sewage (\$/property)</i> |
| <i>NWI-F13</i> | <i>Combined operating cost - water and sewage (\$/property)</i> |
| <i>NWI-P1.3</i> | <i>Usage charge 1st step (water price)</i> |
| <i>OL CSD-1</i> | <i>Operating cost of water/ ML of water supplied</i> |
| <i>OL PD-1</i> | <i>Number of people residing in HWC area of operations (ten year trend)</i> |
| <i>OL PD-2</i> | <i>Proportion of people residing in HWC area of operations served by treated water</i> |
| <i>OL PD-3</i> | <i>Proportion of people residing in HWC area of operations connected to water and sewer</i> |

Table 8-1 outlines key financial indicators for Hunter Water. Table 8-2 presents modelling estimates of population served and Figure 8-1 presents the historical population growth of customers serviced by water and sewer. The operating cost of water has jumped up compared to previous years due to the fact that operating costs have risen but also water consumption has been down compared to recent years. Note that the combined cost of water and sewerage per property is consistent with 2011-12.

Table 8-1 Financial Indicators

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Operating cost of water (\$/ML of water supplied) | 472 | 513 | 587 | 598 | 645 | 622 | 611 | 628 | 638 | 743 |
| Operating cost of water (\$/property) | 177 | 178 | 193 | 195 | 211 | 186 | 184 | 190 | 191 | 225 |
| Operating cost of sewage (\$/property) | 184 | 180 | 190 | 217 | 228 | 259 | 271 | 305 | 323 | 288 |
| Combined operating cost – water and sewage (\$/property) | 350 | 347 | 373 | 401 | 427 | 431 | 455 | 495 | 514 | 513 |

Table 8-2 Census Data

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Population in Hunter Water area of operations | 502,436 | 507,460 | 512,432 | 517,403 | 517,273 | 522,415 | 527,557 | 537,631 | 560,603 | 567,526 |
| Proportion supplied with treated water | 97.4% | 97.1% | 97.8% | 97.7% | 97.8% | 97.8% | 97.8% | 97% | 96.2% | 95.1% |
| Proportion of population connected to water and sewer services | 93.0% | 94.0% | 94.0% | 94.0% | 94.5% | 94.0% | 94.0% | 93.2% | 92.7% | 91% |

Figure 8-1 Population Served by Hunter Water

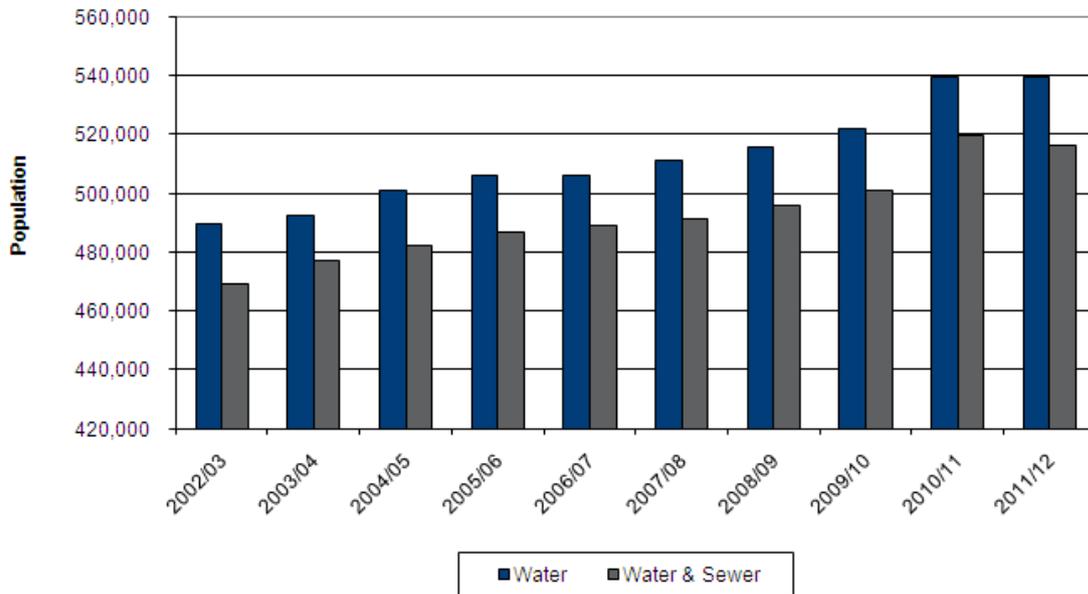


Table 8.3 shows the historical water price as set by IPART.

These prices are set by the Independent Pricing and Regulatory Tribunal (IPART). Hunter Water has achieved full compliance with implementing IPART's determined prices for 2011-12.

Table 8-3 Historical Water Price

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Residential water usage charges \$/kL | 0.94 | 1.01 | 1.01 | 1.09 | 1.14 | 1.20 | 1.27 | 1.57 | 1.71 | 1.90 |

9 Hunter Water Environmental Performance Indicators Report Checklist

9.1 Operating Licence Checklist

Table 9-1 Section 7.1: Environmental Performance Indicators Operating Licence Requirements

| Section In Licence | Item description | Compliance |
|---|---|---|
| Environmental Performance Indicators | | |
| 7.1.1 | HWC must publish on its internet website the latest Environmental Performance Indicators. | This report is available on the internet |
| 7.1.2 | HWC must monitor, record, compile data and report on: the Environmental Performance Indicators for the immediately preceding financial year; any environment performance indicators specified in instruments that give effect to the National Water Initiative; and EPI in any other instrument determined by IPART. | This report fulfils the requirements of this clause |
| 7.1.4 | By no later than 1 September each year, HWC must report on its performance against the indicators in clause 7.1.2, in a manner to be approved by IPART. | Completed |
| 7.1.6 | The report must provide information which enables a year to year comparison in relation to HWC's performance against the environmental performance indicators. In particular, HWC is to compare the indicators with historical annual values over at least the previous 10 years where comparable data is available. | Comparison to historical data was completed where historical data is available and/or recorded in previous years. |
| 7.1.7 | Environmental Performance Indicator Report is to be made available free of charge to the public via HWC's offices and website | The report will become available when finalised and submitted to IPART. |

9.2 Environmental Performance Indicators

Table 9-2 NWI Element: Water Resources

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|---|--|--------------------|-------------------------------|
| NWI-W1 | Volume of water sourced from surface water (ML) | As at 2011, surface water sources are Grahamstown Dam and Chichester Dam. A potential future source will be Tillegra Dam. | NWI 2008-13 EMP | Section 2.1.3 |
| NWI-W2 | Volume of water sourced from ground water (ML) | As at 2011, ground water sources are Tomago, Lemon Tree Passage, Fingal Bay, Nelson Bay and Anna Bay. | NWI 2008-13 EMP | Section 2.1.3 |
| NWI-W4 | Volume of water sourced from recycling (ML) | Recycled water / water recycled - highly treated wastewater that can be used in industrial processes, for irrigation in agriculture, urban parks and landscapes, and in the home for flushing toilets, car washing and watering gardens. Includes onsite reuse at wastewater treatment plants. | NWI | Section 2.1.3 |
| NWI-W7 | Total sourced water (ML) | | NWI 2008-13 EMP | Section 2.1.3 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|---|---|---------------------------------------|-------------------------------|
| NWI-W11 | Total urban water supplied (ML) | | NWI 2008-13 EMP | Section 2.1.5 |
| NWI-W12 | Average annual residential water supplied (kL/property) | | NWI OL Clause 9.1.1 2008-13 EMP | Section 2.1.5 |
| NWI-W20 | Volume of recycled water supplied – Residential (ML) | | NWI | Section 4.1.1 |
| NWI-W21 | Volume of recycled water supplied – Commercial, municipal and industrial (ML) | | NWI | Section 4.1.1 |
| NWI-W22 | Volume of recycled water supplied – Agricultural (ML) | | NWI | Section 4.1.1 |
| NWI-W23 | Volume of recycled water supplied – Environmental | | NWI | Section 4.1.1 |
| NWI-W24 | Volume of recycled water supplied – on site (ML) | | NWI | Section 4.1.1 |
| NWI-W25 | Volume of recycled water supplied – Other (ML) | | NWI | Section 4.1.1 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|---|---|--------------------|-------------------------------|
| NWI-W26 | Total recycled water supplied (ML) | | 2008-13 EMP | Section 4.1.1 |
| NWI-W27 | Recycled water – (per cent of effluent recycled) | Effluent – sewage/wastewater that has received all of the designed treatment processes at the relevant wastewater treatment plant. Excludes bulk water purchased. | 2008-13 EMP | Section 4.1.1 |
| OL RW-1A | Per cent of recycled water substituting potable water use (%) | As defined in National Performance Framework: urban performance reporting indicators and definitions, a handbook for WSAA members as current for the reporting period. Potable – suitable for drinking. Term used interchangeably with drinking water. | 2008-13 EMP | Section 4.1.1 |
| OL RW-1B | Recycled water substituting potable water use (ML) | Definitions as per OL RW-1A | 2008-13 EMP | Section 4.1.1 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|---|--|------------------------------------|-------------------------------|
| OL WS-1 | Quantity of water supplied by Hunter Water from each water storage (ML) | Water Storages are: Chichester Dam, Grahamstown Dam, Tomago Sandbeds, Anna Bay Sandbeds. As at 2009 Tillegra Dam is subject to planning approvals. | OL Clause 9.3.4 2008-13 EMP | Section 2.1.4 |
| OL WS-2 | Average annual residential water consumption (kL/capita) | 5 year rolling average Per capita – for each head of population, using the figure derived in OL PD-1 | 2008-13 EMP | Section 2.1.5 |
| OL WS-3 | Industrial and commercial uses (ML) | Excludes use by large customers - As defined in operating licence, including clause 14.1. Data Source CIS premise types NRES-I, NRES-C and NRES-SU | OL Clause 9.3.8 (b) 2008-13 EMP | Section 2.1.5 |
| OL WS-4 | Consumption by large customers (ML) | Large customers – (Definition as per OL WS-3) | OL Clause 9.3.8 (c) 2008-13 EMP | Section 2.1.5 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|--|---|--------------------|-------------------------------|
| OL WC-1 | Total volume of drinking water saved through water use efficiency (ML) | <p>Drinking water - (Definition as per NWI-H5)</p> <p>Water use efficiency – includes programs funded, initiated or administered by Hunter Water such as recycled water substituting for potable water use, water loss minimisation programs and retrofit programs.</p> <p>Public disclosure of progress against water conservation initiatives occurs through the IWRP Performance Report, in compliance with Operating Licence Clause 9.2.18.</p> | 2008-13 EMP | Section 3.1.3 |
| OL WR-1 | Nature and length of each water restriction imposed | Water restriction - As defined in operating licence clause 14.1. | OL Clause 9.3.2 | Section 3.1.2 |
| OL WR-2 | Criteria applied in determining whether to request imposition of a water restriction | Water restriction - (Definition as per OL WR-1) | OL Clause 9.3.3 | Section 3.1.2 |

Table 9-3 NWI Element: Asset data

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|--|--|--------------------|-------------------------------|
| NWI-A9 | Infrastructure Leakage Index (ILI) | | NWI 2008-13 EMP | Section 3.1.1 |
| NWI-A10 | Real losses (litres/service connection/day) | | NWI 2008-13 EMP | Section 3.1.1 |
| NWI-A11 | Real losses (kL/km water main/day) | | NWI 2008-13 EMP | Section 3.1.1 |
| NWI-A14 | Sewage breaks and chokes (number per 100 km sewer main). | The number of sewage breaks and chokes in the sewage system managed by the corporation. Property connection breaks and chokes are to be included in this indicator. | NWI 2008-13 EMP | Section 5.1.2 |
| OL WL-1 | Water losses (litres/connection/day) | Water losses – apparent losses + real losses Apparent losses – unauthorised consumption and retail metering errors Real losses – As calculated in NWI-A8 | 2008-13 EMP | Section 3.1.1 |
| OL WL-2 | Water losses (kL/km water main/day) | Water losses – (Definition as per OL WL-1) Real losses – As calculated in NWI-A9 | 2008-13 EMP | Section 3.1.1 |

Table 9-4 NWI Element: Pricing and Finance

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|--|---|--------------------|-----------------------------|
| NWI-F11 | Operating cost – water (\$/property) | | NWI 2008-13 EMP | Section 8.1 |
| NWI-F12 | Operating cost – sewage (\$/property) | | NWI 2008-13 EMP | Section 8.1 |
| NWI-F13 | Combined operating cost - water and sewage (\$/property) | | NWI 2008-13 EMP | Section 8.1 |
| NWI-P1.3 | Usage charge 1 st step (water price) | This indicator is referred to as water price in this report. | NWI | Section 8.1 |
| OL CSD-1 | Operating cost of water/ ML of water supplied | Total operating costs of water only divided by total ML of water supplied (before losses) | 2008-13 EMP | Section 8.1 |

Table 9-5 NWI Element: The Customers

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|--|--|--------------------|-------------------------------|
| OL CPS-1 | Overall performance rating in Domestic Customer Perceptions Survey | Based on Community and Customer Reputation Survey | 2008-13 EMP | Section 7.1.2 |
| OL CPS-2 | Community acceptance of water supply standard | Based on Community and Customer Reputation Survey | 2008-13 EMP | Section 7.1.2 |
| OL CPS-3 | Community acceptance of household sewage disposal service | Based on Community and Customer Reputation Survey | 2008-13 EMP | Section 7.1.2 |
| OL CPS-4 | Attitudes towards water conservation | Based on Community and Customer Reputation Survey | 2008-13 EMP | Section 7.1.2 |
| OL WWS-1 | Annual number of sewage odour complaints generated from the sewage treatment plants or the sewage system | According to the <i>National Performance Framework: urban performance reporting indicators and definitions handbook</i> , all calls received in regards to sewage odour is a complaint. However, Hunter Water has only reported complaints that were verified as associated with sewage odour. Data is averaged over five years | 2008-13 EMP | Section 5.1.2 |

Table 9-6 NWI Element: Environment

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|--|---|--------------------|-------------------------------|
| NWI-E1 | Per cent of sewage treated to a primary level | Based on dry weather flow (excludes wet weather bypass) in accordance with Department of Environment, Climate Change and Water (OEH) Environment Protection Licences. | NWI | Section 5.1.3 |
| NWI-E2 | Per cent of sewage treated to a secondary level | As per NWI-E1 | NWI | Section 5.1.3 |
| NWI-E3 | Per cent of sewage treated to a tertiary or advanced level | As per NWI-E1 | NWI | Section 5.1.3 |
| NWI-E4 | Per cent of sewage volume treated that was compliant. | | NWI | Section 5.1.4 |
| NWI-E5 | Number of sewage treatment plants compliant at all times. | Sewage treatment plant compliance - the number of scheduled samples that complied in the reporting period divided by the total number of scheduled samples in the reporting period. | NWI | Section 5.1.4 |
| NWI-E7 | Compliance with environmental regulator – sewage (yes/no) | Brief explanation if “no”, such as the number and nature of non-compliances. | NWI | Section 5.1.4 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|---|--|--------------------|-------------------------------|
| NWI-E8 | Per cent of biosolids reused (%) | <p>Calculation</p> <p>Dry Tonnes - total mass of material in wet tonnes adjusted for moisture content.</p> <p>Excludes grit & screenings</p> | NWI | Section 5.1.6 |
| NWI-E9 | Greenhouse gas emissions (tonnes CO ₂ - equivalents) – water (per 1000 properties) | <p>Greenhouse gas emissions - include gases such as carbon dioxide, methane, nitrous oxide and other forms of air pollutants, that result from the burning of fossil fuels such as coal, natural gas or oil, which contribute to the warming of the Earth's atmosphere</p> <p>Calculation</p> <p>Based on methodology and tools outlined in Australian Greenhouse Office (AGO) Factors and Methods Workbook.</p> | NWI 2008-13 EMP | Section 6.1.4 |
| NWI-E10 | Greenhouse gas emissions (net tonnes CO ₂ – equivalents) – sewage (per 1000 properties) | | | Section 6.1.4 |
| NWI-E11 | Net greenhouse gas emissions (net tonnes CO ₂ – equivalents) – other (per 1000 properties) | | | Section 6.1.4 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|---|---|--------------------|-------------------------------|
| NWI-E12 | Total net greenhouse gas emissions (net tonnes CO2 – equivalents) (per 1000 properties) | | | Section 6.1.4 |
| NWI-E13 | Sewer overflows reported to the environmental regulator (per 100km of main) | All sewer overflows as reported to OEH during the year including those in the property service connections. | NWI 2008-13 EMP | Section 5.1.2 |
| OL CM-1 | Total number of trees planted | <p>Trees may be planted as part of revegetation projects, bush regeneration activities or for the purpose of carbon sequestration. Shrubs planted will also be included in the number.</p> <p>This indicator recognises all works on Hunter Water land and the works undertaken by or on behalf of Hunter Water on land that is not owned by Hunter Water, such as offsetting impacts to one area by rehabilitation or replanting at another area.</p> <p>Public disclosure of other catchment management activities, including their nature and associated expenditure occurs through publication of an annual Catchment Report, as defined in Operating Licence Clause 7.3.</p> | 2008-13 EMP | Section 1.1.1 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|---|---|--------------------|-------------------------------|
| OL WML-1 | Total number and nature of breaches of conditions under licences issued by NOW for water management | Water Management Licence includes Water Management Licence under Part 9 of the Water Act 1912 and Access Licences, Water Supply Works and Water Use approvals under the Water Management Act 2000. NOW - the NSW Office of Water | 2008-13 EMP | Section 2.1.1 |
| OL WML-2 | Environmental Flows released from Dams (ML) | Environmental flows - natural flows or releases of water, intended to supply the environment's needs. Include environmental flows released from the dam and spills released through the outlet works and via the spillway Hunter Water has minimum flow release requirements in relation to water release from Chichester Dam as defined in Clause 3.3 of Part 9 Water Management Licence 20WM000020 (or as superseded). | 2008-13 EMP | Section 2.1.2 |
| OL TW-1 | Annual number of trade waste inspections | Trade Waste - any waste water generated from or as a result of an industrial or commercial activity undertaken, other than at domestic or household premises. Total number is to include breakdown of minor and other inspections. | 2008-13 EMP | Section 5.1.1 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|---|---|--------------------|-------------------------------|
| OL STC-1 | Total number (and nature) of breaches of conditions relating to environmental impacts under OEH sewage treatment system licences | Licence means a licence (for a scheduled activity) issued under the Protection of Environment Operations Act 1997 by OEH for the purposes of setting standards and conditions for sewage or water treatment for a sewage system, WWTP, or water filtration plant. | 2008-13 EMP | Section 5.1.4 |
| OL RWQ-1 | Percentage of samples complied with the recreational water quality guidelines as reported by OEH's Beachwatch program. | Recreational water - a water body that is used for recreational purposes. Beachwatch - the OEH run program responsible for monitoring and reporting on ocean beach water quality. | 2008-13 EMP | Section 5.1.5 |
| OL BIO-1 | Dewatered Biosolids Reused (Tonnes) | | 2008-13 EMP | Section 5.1.6 |
| OL BSI-1 | Total number of prosecutions and notices (including penalty notices) issued to Hunter Water under relevant environmental legislation. | Penalty notice - a notice to the effect that, if the person served with the notice does not wish to have a specified penalty offence dealt with by a court, the person may pay the penalty prescribed under section 227 for the offence. | 2008-13 EMP | Section 6.1.1 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|--|---|--------------------|---------------------------------|
| OL BSI-2 | Total number of prosecutions and notices (including penalty notices) under relevant environmental legislation issued to contractors engaged by Hunter Water. | <p>Penalty notice – (Definition as per OL BSI-2)</p> <p>This indicator will report on breach notices which contractors inform Hunter Water were incurred whilst they were conducting works for the corporation.</p> <p>Each breach notice will be reported on the date that the contractor informed Hunter Water, not on the date the penalty was incurred.</p> | 2008-13 EMP | Section 6.1.1 |
| OL NOI-1 | Total number of noise complaints generated from Hunter Water's construction or operational activities. | The indicator will include complaints incurred by contractors conducting works for Hunter Water. | 2008-13 EMP | Section 6.1.2 |
| OL EC-1 | Electricity consumption in buildings (kWh). | Buildings - Offices or depots owned by Hunter Water which are separately metered | 2008-13 EMP | Section 6.1.3.1 |
| OL EC-2 | Electrical Energy Efficiency of water assets (kWh/ML and kWh/EP of water supplied) | <p>Water supplied – (Definition as per OL CSD-1)</p> <p>EP – is population reported for NWI-C1</p> | 2008-13 EMP | Section 6.1.3.2 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|---|--|--------------------|---------------------------------|
| OL EC-3 | Electrical Energy Efficiency of wastewater assets (kWh/EP of wastewater processed) . | Wastewater processed – Total volume of wastewater as measured at the wastewater treatment plant inlet works. EP – is population reported for NWI-C5 | 2008-13 EMP | Section 6.1.3.2 |
| OL EC-4 | Electricity consumption from renewable sources or renewable sources generated by Hunter Water expressed as a percentage of total electricity consumption. | Renewable sources - non-fossil fuel sources including hydro electric generation, solar, wind or co-generation facilities. | 2008-13 EMP | Section 6.1.3.4 |
| OL WM-1 | Solid waste generated (tonnes) | Solid Waste – includes waste from Hunter Water’s offices, operations or from contractors, that goes to landfill facilities. | 2008-13 EMP | Section 6.1.5 |
| OL WM-2 | Waste recycled or reused expressed as a percentage of solid waste generated | Re-use - the application of a diverted waste product to a subsequent use, which may be the same, or different from the original purpose, and which extends the life of the product, but without further manufacture. | 2008-13 EMP | Section 6.1.5 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|--|---|--------------------|-------------------------------|
| OL CL-1 | Number of sites under control of Hunter Water that present a significant risk of harm as defined under the Contaminated Land Management Act 1997 | Contaminated land - definition in accordance with the Contaminated Land Management Act 1997, to mean the presence in, on or under the land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality. The presence of this substance must also present a risk of harm to human health or any other aspect of the environment. | 2008-13 EMP | Section 6.1.6 |
| OL ET-1 | Number of staff given environmental training | Environmental training - Training courses developed to give staff awareness and skills in a variety of environment related areas. | 2008-13 EMP | Section 6.1.7 |
| OL EMP-1 | Progress against objectives and targets outlined in the 2008-13 EMP | 2008-2013 Environmental Management Plan – Hunter Water has a 5 year EMP that sets objectives, actions and targets for Hunter Water’s environmental programs. Each year a brief status report will be generated that reports upon progress on the EMP’s stated actions and targets. | 2008-13 EMP | Section 9.3 |
| OL CP-1 | Value of sponsorship for community environmental projects | | 2008-13 EMP | Section 7.1.1 |
| OL CE-1 | Number of hits on Hunter Water website | | 2008-13 EMP | Section 7.1.1 |

| Identifier | Indicator | Definitions & Interpretation (Hunter Water context) | Requirement Source | Location in Report |
|------------|--|---|--------------------|-----------------------------|
| OL PD-1 | Number of people residing in HWC area of operations (10 year trend) | Based on extrapolation of census data | 2008-13 EMP | Section 8.1 |
| OL PD-2 | Proportion of people residing in HWC area of operations served by treated water | Treated water - water that has undergone treatment at a Water Treatment Plant, where a Water Treatment Plant is defined as supplying a zone listed in NWI-H2. | 2008-13 EMP | Section 8.1 |
| OL PD-3 | Proportion of people residing in HWC area of operations connected to water and sewer | | 2008-13 EMP | Section 8.1 |

9.1 Progress on Achieving EMP Commitments

OL EMP-1 Progress against objectives and targets outlined in the 2008-13 EMP

Table 9-7 Progress Against Objectives and Targets

| Objectives | Actions | Targets | 2011-12 Progress |
|---|---|---|--|
| Goal 1: Protection of our drinking water catchments | | | |
| Continue to be involved in and support strategic initiatives to maintain and improve the ecological health and water quality of source waters | Continued involvement in developing and promoting best management farming practices along the Williams River | Finalise Project Report for Greswick Angus Demonstration Farm by end of 2008. | Final report was completed in 2008. |
| | Develop Land Management Implementation Plan for Hunter Water activities within drinking water catchment areas | Develop plan by end of 2008 | The Hunter Water Catchment Management Plan has been completed and is available on the Hunter Water website. |
| | Develop Plan of Management agreements with the Department of Environment and Climate Change in relation to the transfer of management responsibilities within Tomago, Tomaree and Stockton Groundwater Reserves | Plans of Management to be finalised by Dec 2009. | MoU for Tilligerry State Conservation Area has been completed and is awaiting sign-off by Hunter Water & National Parks. A Plan of Management for Tomaree has been completed. Finalisation of Plans of Management for Tilligerry will be responsibility of National Parks and Wildlife Service as required under the NP&W Act. |

| Objectives | Actions | Targets | 2011-12 Progress |
|---|---|---|---|
| Ensure that land use activities within the special areas do not present a risk to water quality | Continue to liaise with local Councils and the Department of Water and Energy to ensure that developments are consistent with Hunter Water (Special Areas) Regulation. | Comply with drinking water quality monitoring requirements in Operating Licence. | Regular meeting with Dungog and Port Stephens Councils have been held. Hunter Water funded the development of a Water Sensitive Urban Design Development Control Plan for Port Stephens Council which will guide development in catchments. |
| | Continued close liaison with agencies responsible for catchment protection to identify and support a range of priority actions to promote ecological health and improve water quality | Full compliance with Operating Licence requirements relating to catchment management | The Catchment Management Plan has been rolled out to the main catchment stakeholders. Hunter Water has made clear its intentions with regard to increased involvement in catchment management at these meetings. |
| | Continued close liaison with agencies responsible for catchment protection to ensure that community education and incident response planning is well promoted and implemented. | Regular meetings with Department of Water and Energy, Councils and Catchment Management Authority | Regular meetings with Office of Water and Energy, Councils, Catchment Management Authority, Lower Hunter Bushfire Management Committee were held and HWC works closely with the SES and Police |
| Undertake measures that will promote ecological health and water quality within drinking water catchments | Undertake large scale tree planting activities within the HWC operational area including drinking water catchments | 1.5 million native trees to be planted within catchment areas and within other locations of HWC operational area within the next ten years. | The cumulative number of trees planted since 2007-08 is 41,044. |

| Objectives | Actions | Targets | 2011-12 Progress |
|--|---|---|---|
| Goal 2: Reliable supply of drinking water with minimal environmental impacts | | | |
| Comply with the requirements of the Water Management Licence, Water Access Licences and associated approvals | Operate, monitor and report in accordance with Water Management Licence, Water Access Licences and associated approvals requirements | Full compliance with Water Management Licence requirements – to view the licence requirements visit http://www.dnr.nsw.gov.au/ | Report completed and submitted on time. |
| | Prepare and implement a Sustainable Groundwater Extraction Strategy | | Sustainable Groundwater Extraction Strategy now agreed and in place. A vegetation monitoring program is also now in place. |
| | Provide for water access and environmental flows in accordance with licence requirements. | | Completed |
| Maintain long term security and sustainability of water use for our growing number of customers | Prepare and seek environmental approvals for development of a dam at Tillegra, upgrades at Balickera Pump Station and improved connections in water supply with Central Coast | Full compliance with any relevant conditions of approval | A development approval was not provided for Tillegra Dam however the approvals for the other upgrades were obtained and work is now complete. |

| Objectives | Actions | Targets | 2011-12 Progress |
|--|--|--|------------------|
| As part of the planning for Tillegra Dam develop construction and operational environmental management plans that allow for the dam to be constructed and operated in a manner that minimises environmental impacts. | Develop a construction environmental management plan before commencing the construction of the new dam | A development approval was not provided for Tillegra Dam. Therefore this action is no longer applicable | |
| Revise Integrated Water Resource Plan in consultation with the community. | Revise plan by end 2008. | The Integrated Water Resource Plan (H250) was finalised in late 2008 and placed on the Hunter Water website in February 2009. | |
| Take a regional perspective with regards to future water supply requirements | Hold regular discussions with Central Coast Councils and any other relevant councils in relation to ongoing water requirements | In Nov 2010, the NSW Government announced it would not proceed with the Tillegra Dam proposal but, instead, would commence planning on the Lower Hunter Water Plan (LHWP). The LHWP will determine the optimal supply demand mix to ensure a secure & sustainable supply for the Lower Hunter. It will include full consideration of inter-regional opportunities for water supply options, including the Central Coast. | |

| Objectives | Actions | Targets | 2011-12 Progress |
|--|--|---|---|
| Further development of drought contingency measures to ensure our customers never run out of water | If water storage levels fall below critical trigger points the Corporation will undertake environmental investigations and seek approvals regarding access to groundwater supplies at Tomago and North Stockton in the event of a severe drought | Commence investigations if the trigger nominated in the Drought Management Plan is reached. | Water storage levels have not fallen below critical trigger points. As part of the development of the Lower Hunter Water Plan the Drought Management Plan will be revised. |
| | Investigate water recycling and capture options | Options paper by end of 2009 | Expansion of the Kooragang Industrial Water Scheme (KIWS) has been a key focus. Also new agreements with Daracon, ABI Group and Oceanic Coal have been progressed. |
| Goal 3: Conserve water supplies by ensuring efficient water use | | | |
| Promote and implement water use efficiency programs | Revise Integrated Water Resource Plan including education programs in consultation with the community | Ensure that the 5 year rolling average for annual residential water consumption calculated for the financial year is equal to or less than 215 kilolitres | During 2011-12 the annual residential water consumption was 163 kilolitres. The 5 year rolling average is 176 kilolitres and remains well below the target of 215 kilolitres. |

| Objectives | Actions | Targets | 2011-12 Progress |
|--|--|--|--|
| Implement water loss reduction where environmentally and economically feasible | Undertake leakage detection, water pressure management and water loss reduction programs | Undertake active leak detection for at least 4000km of water mains over the next 5 years | <p>A total of 1160km of leak detection was completed in 2011-12, bringing the cumulative total to 6579km. Hunter Water exceeded the target of 4000km in 2009-10. Community consultation for the implementation of pressure management at Argenton and Redhead is under way and pressure management options reports have been completed for Charlestown, Warners Bay and New Lambton.</p> <p>The total annualised water loss reduction for the period was estimated at 577ML.</p> |
| Implement water recycling where environmentally and economically feasible | Proceed with planning for recycled water plant on Kooragang Island | Complete project planning & design by end of 2009 | Detail design is well underway with construction due to commence in early 2013. |
| | Explore the viability of dual reticulation water recycling opportunities for any new greenfield development within Hunter Water's area of operations | Commission Thornton North Dual Reticulation scheme by end of 2009. | The scheme will proceed however due to a slowdown in activity by developers the timing of the commissioning has been deferred. |

| Objectives | Actions | Targets | 2011-12 Progress |
|---|---|--|--|
| Seek additional water recycling initiatives where environmentally and economically feasible and socially acceptable | Increase recycled water usage from 4000ML/yr in 2007 to 8000ML/yr in 2013 (includes both direct and indirect reuse) | The Kooragang Industrial Water Scheme that is scheduled for completion in 2014 will go a long way to helping Hunter Water achieve this target. | |
| Implement targeted community education for all new water recycling initiatives | Communication plans in place for each new scheme at least 6 months prior to commissioning | Communication and consultation plans are in place for Lower Hunter Recycled Water Initiative, Kooragang Industrial Water Scheme, and Branxton Irrigation Water Scheme. | |
| Goal 4: Manage Hunter Water's storm water and wastewater infrastructure to ensure healthy waterways, clean beaches and clean air | | | |
| Dispose of wastewater in an environmentally sustainable manner | Operate, monitor and report in accordance with OEH licence requirements | Full compliance with OEH licences | During 2011-12 Hunter Water had 10 out of 18 plants that were fully compliant with the OEH licences. |
| Reduce environmental and community impact of overflows from the wastewater systems | Prepare and implement Upgrade Management Plans (UMP) for each wastewater system | All wastewater systems except Dungog and Clarence Town (which have no requirements to prepare UMP's at this stage) have Upgrade Management Plans in place. | |

| Objectives | Actions | Targets | 2011-12 Progress |
|--|--|---|--|
| Cater for growth across the Lower Hunter by planning and upgrading wastewater treatment facilities | Implement major upgrades for treatment plants over the next ten years | Meet OEH Pollution Reduction Program Commitments and not be an impediment to proposed regional growth centres | Hunter Water successfully completed 16 Pollution Reduction Program items in 2011-12 with a further 21 on track to be achieved. Seven PRP items are currently listed as at risk pending renegotiation with OEH. |
| Monitor the health of our waterways and beaches | Continue environmental monitoring of receiving inland and ocean receiving waterways and involvement in the OEH Beachwatch program. | Full compliance with beach water quality specified by OEH under the program | Hunter Water was 100% compliant with beach water quality as specified by EPA under the Beachwatch program. |
| | | Review and publicly report on Inland & Ocean Monitoring Programs by end of 2009 | During 2010-11 a new two-year Marine Environmental Assessment Program for Burwood Beach and Boulder Bay WWTWs was developed in consultation with OEH, NSW Health and the Marine Parks Authority. The purpose of this program is to assist in the sustainable decision-making process for the Stage 3 Upgrades of Burwood Beach and Boulder Bay WWTWs. A consultancy was awarded to Worley Parsons in May 2011 to undertake the two-year program of studies, expected to be completed by late 2013. |

| Objectives | Actions | Targets | 2011-12 Progress |
|---|--|--|--|
| Manage storm water assets to improve environmental outcomes | Continue to implement relevant actions from the Storm Water Environmental Improvement Plans | Implementation of the Storm water Environmental Improvement Plans | An update of the Stormwater Environmental Improvement Plan commenced in 2011 and is due for completion late 2012. This report will pull together Hunter Water's future direction for stormwater and outline key projects to be implemented. |
| Manage trade waste to ensure no adverse impacts on the sewage system, treatment plants or effluent. | Commence regular inspections of minor trade waste customers. Implement a risk based approach to inspection and sampling of major customers. | 400 minor customer inspections per annum | Hunter Water completed 451 minor trade waste inspections in 2011-12. |
| Maximise beneficial reuse of biosolids where environmentally and economically acceptable | Operate in accordance with the Biosolids Strategy and Implementation Plan which outlines minesite rehabilitation and pasture improvement as the two primary end uses in the medium term. | 100 % reuse of all dewatered biosolids. | In 2011-12 5532 tonnes (dewatered) were produced; 4738 tonnes (dewatered) were reused - 86% of biosolids produced were reused (Of the biosolids produced 61% was Agriculture, 25% was Mine site and the remaining 14% was stock piled for future reuse). |
| Manage odour production from our wastewater treatment plants and systems | Monitor odour complaints received to enable proper assessment of need for odour control actions. | Number of Complaints to remain under 250 complaints (annual average over 5 years). | This target has been met in 2011-12 (5 year annual average odour complaints is 186). |

| Objectives | Actions | Targets | 2011-12 Progress |
|--|---|--|--|
| Goal 5: Minimise the environmental impacts of HWC's infrastructure projects | | | |
| Conservation of natural resources | Undertake appropriate environmental assessment for applicable new infrastructure and relevant operational activities | Full compliance with environmental legislation | Environmental impact assessment's were completed for all relevant projects in 2011-12. |
| | Develop procedures and training in accordance with the Corporate Environmental Management System to ensure project managers and contractors are aware of environmental responsibilities | | 85 staff were given relevant environmental training throughout 2011-12. |
| | Incorporate environmental requirements into contracts | | Environmental requirements are built into all relevant contracts. |
| Conservation of cultural heritage | Undertake appropriate indigenous and non-indigenous heritage assessments | | Heritage assessments have been undertaken for all relevant projects. |

| Objectives | Actions | Targets | 2011-12 Progress |
|---|--|--|---|
| Minimise impacts on community | Undertake appropriate consultation and community impact assessment for applicable new infrastructure and relevant operational activities | Full compliance with safeguards nominated in impact assessment process | Environmental compliance is routinely monitored by Environmental Management Representatives and formal compliance audit checklists are completed every six months and at the completion of a project. |
| | | Undertake periodic customer surveys to gauge satisfaction with Hunter Water. | A Reputation Survey was undertaken in 2010-11. Hunter Water has improved against most questions asked in the survey which had valuable feedback for Hunter Water. |
| Goal 6: Promote efficient use of resources and minimisation of waste | | | |
| Minimise the environmental impact of HWC's use of energy and greenhouse gas emissions | Develop Greenhouse Gas Emissions Strategy including initiatives that will offset greenhouse gas emissions | Strategy developed by end of 2008. | The Greenhouse Gas Strategy was developed and approved in 2009. The strategy was revised in 2010-11 following a detailed study which investigated abatement potential over the next six years. |

| Objectives | Actions | Targets | 2011-12 Progress |
|---|---|---|------------------|
| Develop and implement energy savings plans for major facilities | Develop energy savings plans for top 10 energy use facilities by mid 2008 and implement 75% of identified savings by 2013 | Projects with annual savings of 925 megawatt hours were implemented in 2011-12. Over the last three years, Hunter Water has created \$1 million worth of annual savings through implementing energy efficiency initiatives. Along the way 4,000 tonnes of carbon are abated annually. | |
| Develop incentive program for Hunter Water to take up fuel efficient fleet cars | Programs in place by 2009 | Hunter Water has implemented a scheme for its executive vehicles that mandates that new fleet vehicles meet 3.5 stars as per the green vehicle guide as a minimum. A progress incentive scheme has also been implemented to encourage the selection of vehicles that are 4 stars and above. | |
| Explore potential for greater use of LPG gas and bio-diesel fuel alternatives | | Hunter Water has mandated the use of biofuels where this is an option for a particular vehicle and where there is local availability. The availability of biofuels within the Lower Hunter is limited to E10, B2 and B5. | |

| Objectives | Actions | Targets | 2011-12 Progress |
|--|--|---|---|
| Implement HWC's Waste Recycling and Purchasing Policy (WRAPP) | Develop a recycled materials strategy, including initiatives that will reduce the use of virgin extracted natural materials | Strategy in place by end of 2009 | The recycled materials strategy was completed in 2010. |
| | Undertake a study to investigate the potential to increase the amount of recycled materials used for new infrastructure projects | Study completed by end of 2010 | As part of the recycled materials strategy an investigation into the use of recycled materials within new infrastructure projects was also completed. |
| Goal 7: Responsibly manage our land and property assets | | | |
| Conserve our heritage | Develop register for Hunter Water's heritage assets | Finalise register by end of 2008 | In March 2011 Hunter Water's section 170 Heritage Register was approved by the NSW Heritage Council. The Heritage Register can be viewed on the HWC intranet and the website. |
| Effective land management | Develop and maintain contaminated sites register | Develop register by mid 2008 | The contaminated sites register was completed in August 2010. Hunter Water has been undertaking detailed investigations into high risk sites. |
| | Continue weed and feral animal control programs for land under our control | Report annually on land management activities | Weed and feral animal control is managed and reported on within the Catchment Report which is a separate annual operating licence report. |

| Objectives | Actions | Targets | 2011-12 Progress |
|--|--|---|--|
| Assets and facilities are maintained in a manner aesthetically acceptable to the community | <p>Undertake bush regeneration and land contamination assessments when appropriate</p> <p>Undertake landscaping programs in association with upgrades of operational facilities</p> <p>Aesthetics to be factored into asset design</p> | <p>Landscaping plans for new infrastructure including specified maintenance periods.</p> <p>Review implementation of Hunter Water's aesthetics policy by 2010</p> | <p>Bush regeneration and land contamination assessments are managed and reported on within the Catchment Report which is a separate annual operating licence report.</p> <p>Restoration requirements are built into all relevant construction contracts.</p> <p>Hunter Water's Aesthetics policy has been loaded onto its internal intranet and is maintained in the electronic document management system and so is readily accessible to all staff. Review of the policy was completed and no changes were considered necessary.</p> |
| Goal 8: Contribute to sustainability and environmental awareness within the community | | | |
| Develop partnerships with the community | Maintain a sponsorship program which provides support to relevant community environmental initiatives. | Call for applications for sponsorship program annually | Corporate sponsorship program is a 3-year program. Call for applications for the current program occurred in 2009-10 and the program will end June 2012-13. In 2011-12 the total sponsorship provided was \$121k. |

| Objectives | Actions | Targets | 2011-12 Progress |
|---|--|---|--|
| | Participate in the Together Today program which will support research and development of water and energy saving initiatives as well as raising awareness and educating the broader community of better ways to save and use our valuable resources. | Measurable reductions in per capita use of energy and water across the Hunter | Hunter Water continues to be involved in Together Today via membership of the business development committee and the marketing and communications committee. In 2011-12 Hunter Water actively participated in Together Today engagement activities including Earth Hour. |
| Continue to inform the community of the Corporation's activities and its impact on the environment. | Utilise Open Board, the Consultative Forum, media, Annual Reporting, Hunter Water website, Hunter Water's community newsletter, open days, school curriculum support materials and other information packages. | Conduct biennial customer surveys to gauge customer satisfaction. | A Community and customer reputation survey was completed in 2010-11 as well as satisfaction data collected from monthly transactions. Feedback has been good with satisfaction levels up from 2009-10. Still room for improvement in some areas. |
| Report on environmental performance | Consult with stakeholders and the community in relation to operational activities and infrastructure projects | Annual Report and Environmental Performance Indicator Report to be posted on the Hunter Water website by end of November each year. | The 2010-11 Annual Report and Environmental Performance Indicator (EPI) Report was completed and posted on the website in September 2011. The 2011-12 EPI Report will be posted on the website in September 2012. |

| Objectives | Actions | Targets | 2011-12 Progress |
|--|--|---|---|
| Goal 9: Continue to improve environmental management practices and promote an environmentally responsible culture | | | |
| Continue to develop effective tools and systems to manage environmental responsibilities | Maintain and continually improve the Corporation's Environmental Management System | Management review of Environmental Management System every year | An audit of the Hunter Water Environmental Management System (EMS) was completed in 2009-10 and another is scheduled for 2012-13. An EMS improvement plan is currently in place and HWC has committed to having an accredited EMS by June 2017. |
| An environmentally aware and committed workforce | Rolling program of targeted environmental training for staff | 100 people put through environmental training each year. | A total of 85 Hunter Water staff were given environmental training in 2011-12. |
| Environmental awareness and proven performance from our contractors | Environmental inductions and preparations of site specific Environmental Management Plans mandatory for all construction works that can affect environment | Full compliance | Environmental inductions and preparation of site specific Environmental Management Plans were completed for all construction works. |
| Audit environmental performance | Periodically undertake internal and external audits of environmental requirements and systems | Independent audit of Corporate Environmental Management System every 5 years and minimum of 2 internal environmental audits each year | Audits of chemical storage and handling and stormwater management at HWC treatment plants will be completed for 2011-12. All audits are reported through to the Board Audit and Risk Committee. |