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
- 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

Protection of our water sources and catchments is paramount to Hunter Water and is a cornerstone of the Australian Drinking Water Guidelines. Catchment management and source water protection provides the first barrier for the protection of water quality. In providing the community's water needs, both in terms of quality and quantity, Hunter Water operates to ensure protection for the source catchments and their respective environments.

This report presents Hunter Water’s performance in relation to former management activities undertaken during 2011-12 as, required by section 7.3 of the Operating Licence.

Hunter Water continues to adopt a “catchment to tap” philosophy in regard to the supply of high quality water to customers.

During 2011-12, Hunter Water has built upon a project to develop our own version of the Sydney Catchment Authority’s Catchment Decision Support System (CDSS). Hunter Water renamed our system Source Water Improvement Support System (SWISS). The SWISS model uses inputs from various spatial Graphical Information Systems (GIS) data ‘layers’ and weightings to determine the areas with greatest contribution to nutrient, turbidity and pathogen risk in catchments.

To effectively address catchment risks, Hunter Water developed a Catchment Management Plan (CMP) in 2010; this was written to benchmark Hunter Water’s methods against current best practice catchment management. The plan has identified a range of leading principles for catchment management and opportunities for Hunter Water to improve on current practices.

Some of the additional key activities undertaken during the 2011-12 reporting period were:

- Bushfire management
- Illegal access control
- Park maintenance
- Weed control across Hunter Water property
- Irrawang State Environmental Planning Policy 14 (SEPP) wetland rehabilitation project
- Study into algal nutrient and sediment nutrient sources
- Various community environmental education and sponsorship programs

Detail of these and other catchment activities are provided in the main body of this report.
1 Background Information

Hunter Water is a provider of urban water and wastewater services in the lower Hunter region incorporating the Local Government Areas (LGA’s) of Newcastle, Port Stephens, Dungog, Maitland, Cessnock and Lake Macquarie. In the six LGA’s within its area of operations, the health and hygiene of approximately half a million residents depend upon the services provided by Hunter Water. Water supplied by Hunter Water to these domestic, industrial and commercial customers is sourced from catchment areas in the LGA’s of Dungog and Port Stephens only.

Protection of our water sources and catchments is paramount to Hunter Water and is a cornerstone of the Australian Drinking Water Guidelines. Catchment management and source water protection provides the first barrier for the protection of water quality. In providing the community's water needs both in terms of quality and quantity, Hunter Water operates to ensure protection for the source catchments and their respective environments. Drinking water catchments include areas that capture water from surface runoff and/or groundwater aquifers. Protection and enhancement of catchment areas is essential to the provision of cost effective treatment and distribution of high quality water. In simple terms the higher the quality of source water the lower the cost of treatment, thereby protecting and enhancing community health and providing an asset for business, industry and a diverse range of domestic requirements.

The region's source waters are drawn from a combination of surface storages and groundwater resources. Under the Water Management and Water Access Licences issued by the NSW Office of Water (NOW), surface water is permitted to be extracted from the environment at Chichester Dam, the Allyn and Paterson Rivers at Gresford, and the Williams River at Seaham (from where it is transferred to Grahamstown Dam). Groundwater is permitted to be taken from the aquifers at Tomago (also known as Tomago Sandbeds) and the Tomaree Peninsula.

Figure 1-1 indicates the location of these sources and how they are related to one another and major population centres in the area.

Under the 2007-2012 Operating Licence, Hunter Water was required to report its performance and catchment activities in all of its source catchments, both surface and groundwater, in this report known as the Catchment Report. This report has been prepared to meet this requirement.
Figure 1-1 Hunter Water’s Major Water Sources
2 Catchment to Tap Risk Management

The Australian Drinking Water Guidelines 2011 (ADWG) Framework for the Management of Drinking Water Quality (referred to as ‘the Framework’) outlines a holistic “catchment to tap” approach to the management of drinking water quality. Hunter Water has adopted this approach, which emphasises a preventative risk management approach for all steps in the water supply process.

The ADWG recommend that best practice drinking water quality management is achieved using a multiple barrier process (refer to figure 2.1). This approach is based on the premise that no single treatment mechanism is infallible; each ‘barrier’ reduces risk to water quality incidents when it is applied in a robust manner - the greater the number of robust barriers that are implemented the lower the risk to public health. The ADWG further recommend continual strengthening of barriers to enhance the preservation of quality drinking water.

Hunter Water applies a “multiple-barrier” approach to protecting water quality, where water is:

- protected within the catchment
- detained within a protected reservoir
- treated using coagulation and filtration to remove impurities
- disinfected to protect against microbiological contaminants
- transported and stored within a closed, well maintained distribution system
- routinely sampled and analysed for compliance

This process is shown in Figure 2-1. It should be noted that costs associated with catchment to tap risk management are captured in Table 3-1 covering the barriers of ‘Catchment’ and “Reservoir” only. Discussion of costs of other barriers is beyond the scope of this report.

Figure 2-1 ‘Multiple Barrier’ Approach to Water Quality
3 Catchment Activities

Activities carried out during the 2011-12 reporting period, and a brief description of each, appear in relevant sections of this report. These activities are either a direct or indirect requirement to fulfil the intent of the following pieces of legislation or regulatory instruments:

- Hunter Water Regulation 2010 (HWR 2010)
- Water Sharing Plans

It should be noted that most catchment activities carried out are an indirect requirement of the Hunter Water Regulation 2010, as this Regulation does not require any specific activities to be carried out; only that certain activities and types of developments be prevented.

Table 3-1 shows estimated and actual expenditure for the current reporting period as well as estimates for activities planned for the next reporting period (2012-13). In most cases, this expenditure doesn’t include salaries of Hunter Water employees, whose primary function it is to either carry out, plan or manage these activities.

Table 3-1 Summary of Catchment Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Regulatory instrument</th>
<th>Estimated ($)</th>
<th>% completed</th>
<th>Actual ($)</th>
<th>Estimated ($)</th>
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<tr>
<td>Catchment Management - Operational</td>
<td></td>
<td>$1,834,300</td>
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</tr>
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<td>Bushfire Management</td>
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<td>Ongoing</td>
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<td>$95,000</td>
</tr>
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<td>Illegal Access</td>
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<td>Ongoing</td>
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<td>Catchment Signage - Exclusion &amp; Information</td>
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<td>Weed Management - Balickera Canal &amp; Seaham Weir</td>
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<td>Ongoing</td>
<td>$17,922</td>
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<tr>
<td>Weed Management - Other (Pine Trees, Blackberry etc)</td>
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<td>Ongoing</td>
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<td>Medowie Floodplain Management Plan</td>
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<tr>
<td>Activity</td>
<td>Regulatory instrument</td>
<td>Estimated ($)</td>
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</tr>
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<td>Lead Contamination Project</td>
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<td>Tree Planting project - Lower Hunter Recycled Water Initiative</td>
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<td>$0</td>
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<td>Tocal Field Days - Engaging the Community</td>
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<td>$1,000</td>
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<td><strong>Community Sponsorship</strong></td>
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<td>$5,000</td>
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<td>CMA Water Watch</td>
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<td>Ongoing</td>
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<td>CMA Catchment Crawl</td>
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<td>Hunter Wetlands Centre Education Program</td>
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<td>$15,000</td>
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<tr>
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<td>Balickera Tree &amp; Silt Management</td>
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<td>Ongoing</td>
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<td>Activity</td>
<td>Regulatory instrument</td>
<td>2011/12 Estimated ($)</td>
<td>2011/12 %</td>
<td>2011/12 Actual ($)</td>
<td>2012/13 Estimated ($)</td>
</tr>
<tr>
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</tr>
<tr>
<td>Floodgate &amp; Levee Bank Maintenance</td>
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<td>$300,000</td>
<td>Ongoing</td>
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<td><strong>Totals</strong></td>
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<td></td>
<td><strong>$2,016,755</strong></td>
<td><strong>$2,993,300</strong></td>
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</tbody>
</table>

The following sections of this report provides a brief background to each of the above pieces of legislation, how it fits into the context of this report, and the activities undertaken in relation to that legislation.
4 Hunter Water Regulation 2010

4.1 Background

The Hunter Water Regulation 2010 (the Regulation) was gazetted in September 2010 and repealed the Hunter Water (Special Areas) Regulation 2003. This is now the only regulation under the Hunter Water Act 1991 and is regulated by the NSW Office of Water (NOW). It should be noted that only certain sections of the 2010 Regulation are relevant to “Special Areas” namely those within Part 2.

Section 53 of the Hunter Water Act 1991 defines the meaning of a Special Area stating that:

“(1) The Governor may, on the recommendation of the Minister, by order published in the Gazette, declare an area of land described in the order to be a special area.” and

“(2) The Minister may recommend an order only if of the opinion that the exercise of the State’s water rights under the Water Management Act 2000 could be adversely affected unless the order is made”.

In simple terms a “Special Area” is defined in legislation because of its recognised importance to protecting fresh water for drinking. This section of the Hunter Water Act sets the scene for catchment protection with the primary objective of ensuring that water emanating from a Special Area is not polluted.

The Regulation defines the geographical boundaries of Special Areas mentioned in this Regulation and also specific activities that are not allowable within each Special Area. Sections 7, 8, 9, 10, 11 and 12 of the Regulation define these activities. It is primarily the responsibility of respective local government authorities (Councils), being in most cases, the relevant consent authority, to ensure adherence with these sections.

The primary mechanism to fulfil this responsibility is the review of all development applications that may trigger the Regulation during the development application approval process. It is the responsibility of Councils to refer such development applications (DAs) to Hunter Water for comment. An abbreviated list of the more significant DAs referred to Hunter Water during the 2011-12 reporting period is provided in section 4.2.2.1.

The Regulation defines the following Special Areas:

- Chichester Catchment Area
- Grahamstown Catchment Area
- Nelson Bay Catchment Area
- North Stockton Catchment Area
- Tomago Sandbeds Catchment Area
- Williams River Catchment Area

Although not explicitly stated, the Regulation does not require Hunter Water to carry out any specific activities within these areas, however its intent is to make provision for healthy catchments and thus reduce the pollution risk to water captured by the catchment. Pursuant to the intent of the Regulation, Hunter Water carries out various activities, which are broadly divided into operational and strategic planning activities.

A brief description of activities carried out under the current Regulation is provided below and associated costs (if applicable) are provided in Table 3-1. In regard to costs, it should be noted that
operational activities can at times, be highly reactive by necessity and this is highlighted in budget estimates by having a substantial contingency for reactivity. Annual estimates of operational expenditure can differ significantly to actual expenditure because of this high contingency factor. Explanations of variation between the estimated and the actual expenditure for line items in Table 3-1 have been provided in the following sections.

4.2 Activities Carried Out Under the Hunter Water Regulation 2010

4.2.1 Catchment Management – Operational

4.2.1.1 General Catchment Management

In addition to specific catchment activities listed and discussed in subsequent headings, Hunter Water conducted the following operational activities under the theme of “General catchment management”. The following points are brief descriptions of some of the most significant of these activities. All are carried out annually and will continue in 2012-13. During this reporting period Hunter Water spent $18,176 against estimated expenditure of $20,000 and $20,000 has been budgeted for 2012-13 (excluding staff salaries). The activities carried out during the reporting period were incidental and reactive in nature and include:

Patrol and Monitoring

Hunter Water regularly patrols and monitors water activities and riparian zone health within Special Areas such as the Seaham Weir Pool, Grahamstown and Chichester Dams for activities contravening the Regulation. These activities are carried out by Hunter Water Rangers who also look at the general functionality of assets, as well as riparian vegetation and shoreline conditions. The very nature of this activity is to observe and assess assets and the environment and as a result, generates expenditure to address observations made. The Regulation also provides for Authorized Officers to issue infringements for activities specified in the Regulation with fines up to $750 for an individual and $1,500 for a corporation. During the reporting period Hunter Water developed an enforcement policy and enforcement manual and also provided training on law enforcement and evidence collection.

Grahamstown Dam Recreational Plan of Management

This plan of management is implemented by Port Stephens Council in consultation with, and approval from, Hunter Water, to allow for and manage limited recreational activities on Grahamstown Dam. These limited activities allow for sailing and fishing within a defined area of Grahamstown Lake between the months of October and April during day-light hours only. A representative from Hunter Water attends a quarterly meeting with representatives from both Port Stephens Council and Sailability NSW (Grahamstown Sailing Club), who administer the activities.

Feral Animal Management

Hunter Water is a founding member of the Port Stephens Vertebrate Control Committee which manages a strategic and coordinated annual control program. As in past years, the 2011-12 program targeted wild dogs and foxes using 1080 baiting. Baiting was carried out in July and August 2011 on Hunter Water land at Tomago, Grahamstown Dam, Balickera Canal and Chichester Dam. These months are selected as the risk of exposure to non targeted species is minimised, thereby maximising the program’s effectiveness.

Hunter Water is a major landholder in the Upper Williams and Chichester catchments and as an initiative to increase the effectiveness of wild dog control in the upper catchment area Hunter Water again provided sponsorship funding of $5,000 to the Allyn, Paterson, Williams, Wild Dog Association. This association is endorsed by the Livestock Health and Pest Authority (LHPA) who also provide...
technical support to association members. This funding will be used to provide ongoing training on trapping and safe baiting procedures and environmental awareness to members as well as purchase traps and assist the aerial baiting program. Further enhancement of the aerial baiting program was made by Hunter Water making improvements to the Chichester Dam helicopter pad, which provides a central and safe landing site for refuelling and bait-loading. Aerial baiting in the Upper Williams and upper Chichester valleys is scheduled in August 2012.

Native Seedling Planting

During the reporting period, Hunter Water planted approximately 3,550 native seedlings as part of capital works and operational activities. These trees were planted at various locations throughout the Corporation’s operating area on land owned or directly controlled by Hunter Water. The cost associated with all native seedling planting in 2011-12 has been included in either the budget for property management, general catchment management or absorbed as part of the capital works delivery process. Changing approaches to land management practices have led to opportunities for Hunter Water to revegetate land previously maintained as cleared land for operational purposes. Examples include the buffer zone around Grahamstown Dam. Hunter Water has long-term plans for large-scale planting in these areas; however most of these areas require significant preparation, such as weed control prior to planting. This process commenced in 2009-10 with large scale pine tree removal around Grahamstown Dam. A large scale planting project is planned in 2012-13 at Grahamstown Dam, Irrawang Swamp and Upper Chichester. Due to the scale of this project Hunter Water went to open tender in 2011-12 and has now awarded the contract to the successful tender. Hunter Water plans to spend $2,000,000 in 2012-13 on this project. Funds for this project will be provided by the Federal Government Grant as part of the Lower Hunter Recycled Water Initiative for carbon off-setting. Forward estimates for this project were not included in the 2010-11 report as funding had not been secured at that time.

4.2.1.2 Park Maintenance

Hunter Water has public parks located at Chichester Dam, Grahamstown Dam (Finnan Park), Seaham Weir and Balickera Pump Station. All parks have toilets, picnic tables, barbecues and children’s play equipment and are extremely well patronised by the general public, necessitating substantial budget funding in order to maintain a suitable and safe standard. Park maintenance is conducted to maintain functional and tidy facilities for not only water quality reasons but also for the general public. During this reporting period Hunter Water planned to spend $25,000 and spent $50,167, and has budgeted $30,000 again in 2012-13. Increased expenditure was due to vandalism and improvements required for public safety and amenity at Finnan and Chichester Parks, which includes the children’s play area, internal roads, barrier fencing and picnic shelters.

4.2.1.3 General Property Management

Hunter Water privately owns large areas of land surrounding Grahamstown Dam, Chichester Dam, Upper Williams Valley and within the Tomago Sandbeds. Other property owned by Hunter Water requires continual surveillance in order to carry out repairs to infrastructure such as (but not limited to) fencing, roads, tracks and fire-breaks. These properties are largely rural or undeveloped land, which in most cases share a common boundary with other private properties. The majority of expenditure during the current reporting period was on preparation of property management plans for Hunter Water freehold land in the Upper Williams River catchment that is either leased or will be leased, for rural production. Hunter Water requires all lessees to adhere to a property management plan as a condition of the lease. During this reporting period Hunter Water planned to spend $25,000 and expended $40,000. Hunter Water has budgeted $40,000 in 2012-13. The annual budgeted amount is a contingency for unplanned reactive work and over spending was due to cancellation of the Tillegra
Dam project and the necessity to ensure properties under the footprint of the Tillegra Dam, be responsibly managed to enhance catchment protection.

### 4.2.1.4 Bushfire Management

Hunter Water is required to carry out bushfire protection as it is a Public Authority under the Rural Fires Act 1997 Section 63.

Hunter Water is a member of the Port Stephens Bush Fire Management Committee, which is convened and coordinated by the Port Stephens Rural Fire Service. All bushfire management planning by Hunter Water is carried out in full consultation with the Port Stephens Rural Fire Service.

The primary objective of Hunter Water's Bushfire Management Plan is risk minimisation of identified assets in and adjacent to Hunter Water land by means of hazard reduction. Hazard reduction methods fall into two main strategies:

1. Mechanical clearing (slashing) of fire trails and asset protection zones
2. Controlled burning at strategic locations

During the current reporting period Hunter Water conducted only mechanical hazard reduction.

The Corporation budgeted $94,300 for the current reporting period and spent $94,300. Hunter Water has budgeted $95,500 for the 2012-13 year.

### 4.2.1.5 Illegal Access Mitigation

As in previous period reports, unauthorised access on Hunter Water land continued to be a significant problem during 2011-12. Vandalism and illegal dumping is often associated with illegal access and as reported in previous periods, typically involves such things as: cut fencing; ramming and/or cutting access gates;; ramming bore-heads with stolen cars; and general vandalism to buildings. Given the length and remoteness of boundary fencing under the control of Hunter Water it is not possible to keep out determined offenders and there is not one barrier type that could achieve this. Through experience Hunter Water has determined that the best barrier to illegal access is the placement of interlocking concrete blocks, however this strategy cannot be employed in all situations.

Hunter Water continues to work closely with NSW Police, Port Stephens Council and National Parks & Wildlife Service in combating this problem. Hunter Water is in the process of taking a more whole-of-business approach to security and has set up an internal Security Working Group, which has representatives from all Hunter Water departments and meets quarterly to discuss incidents and future strategy. One strategy under discussion is to investigate the use of covert surveillance equipment.

Hunter Water budgeted $30,000 for illegal access in 2011-12, and a total of $28,883 was spent. This expenditure was largely for repairs to gates, fencing and the installation of concrete blocks.

Hunter Water has budgeted $30,000 for illegal access mitigation activities in 2012-13.

### 4.2.1.6 Catchment Information Signage

Hunter Water planned to expend $10,000 on catchment signage in 2011-12, and spent $2,370. Under expenditure was due to budgetary prioritisation across the System Operations division. The deferral of this project will have no significant impact as there is existing signage in strategically necessary locations. This project aims to increase the amount of signage and make minor changes to some existing signs. Hunter Water has budgeted $10,000 in 2012-13.
4.2.1.7 Weed Management

Balickera Canal and Seaham Weir

Hunter Water treats aquatic weeds in the Balickera Canal in accordance with a licence issued by the Office of Environment & Heritage (OEH) to treat Water Hyacinth and Alligator weed. This licence allows for up to three treatments per growing season.

During the current reporting period Hunter Water focused on aquatic weeds especially where this has the potential to create operational and/or water quality problems such as the Seaham Weir Pool and Balickera Canal. Regular visual inspections of Special Areas waterways indicate that Chichester Dam and Grahamstown Dam have no current aquatic weed problems.

Hunter Water continues to work closely and liaise regularly with Port Stephens Council Noxious Weeds Officers regarding the treatment of all weeds within the Port Stephens LGA on land that is owned or under the care and control of Hunter Water. In 2011-12 funding of $5,000 was again provided to Port Stephens Council to assist in weed treatment within the Seaham Weir Pool. This cost is included in the total cost for Balickera Canal, as the Balickera Canal draws water directly from the Seaham Weir Pool and therefore Hunter Water is a major stakeholder in maintenance of the Seaham Weir Pool.

As detailed above, Hunter Water takes a proactive approach to weed control from an operational perspective, however weed infestation is dependent on many environmentally variable parameters and therefore it is extremely difficult to predict future requirements in this area. In 2011-12, $20,000 was budgeted for weed management in Balickera Canal and the Seaham Weir and actual expenditure was $17,922. Hunter Water plans to continue weed control in the next reporting period and has budgeted $20,000 for 2012-13.

Weed Management – Other

Hunter Water carried out the following weed control within land owned or controlled by Hunter Water:

- Control of Giant Parramatta Grass on Hunter Water properties in the Upper Williams Valley. Hunter Water owns large areas of rural property that was to be part of the inundation area of the cancelled Tillegra Dam. Given that this dam will not be built, Hunter Water must manage this land. Giant Parramatta Grass is a major weed species that reduces the productivity of grazing land and needs to be continually controlled to limit its spread to adjacent properties. Due to the extensive area of land affected by this weed Hunter Water carried out aerial spraying via helicopter. Treatment of this weed will require ongoing remediation in future years.

- Blackberry was treated in the upper Chichester catchment on Hunter Water property, which is adjacent to the Barrington Tops National Park.

Hunter Water budgeted $55,000 for 2011-12 and expended $41,012. The variation was due to a contingency to carryout follow up treatment of Pine Trees initially done in 2009-10, however this follow up was strategically deferred to allow for maximum germination of pine seed under the cleared trees, which will maximize the efficiency of the next round of treatment by slashing.

Hunter Water plans to spend $50,000 in 2012-13 for weed control other than Balickera Canal aquatic weeds.
4.2.1.8 Medowie Floodplain Management Plan

Medowie was identified in the NSW Government’s Lower Hunter Settlement Strategy as a major area of urban growth. Medowie was formally a rural locality but has transformed into a higher density rural residential and residential area in recent years. This transformation has increased stormwater runoff rates and, with increased pressure from current and planned developments, stormwater runoff is expected to continue to increase. Hunter Water’s interest in this issue is that Campvale Canal is the only drainage point for approximately 60 per cent of Medowie and all water that flows along the Campvale Canal must be pumped into Grahamstown Dam via Hunter Water’s Campvale Water Pump Station. Port Stephens Council, OEH and Hunter Water have collaborated to commission the Medowie Floodplain Management Plan. Conceptual development of the plan commenced in early 2009 and after a tendering process coordinated by Port Stephens Council, a contract was awarded to WMA Water to complete stage one of two stages of this plan.

It has been estimated that the Medowie Floodplain Management Plan will take up to three years to complete and will comprise two stages. Stage one developed a hydrological model of the catchment and this plan went on public exhibition in late 2011 and was approved by Port Stephens Council in early 2012. Stage two of the study will use the model developed in stage one to compare options to mitigate current and future flooding issues. A budget of $55,000 was included in the 2011-12 year as an estimate of Hunter Water’s contribution to stage two of this plan, however due to delays (additional studies, e.g. floor level survey) in completion of stage one, this money was not expended. Port Stephens Council are currently in the process of finalising the scope of works for stage-2, which will then go out as an invited tender. Hunter Water has budgeted $15,000 in 2012-13 for stage two of this project.

Hunter Water will continue to work closely with all stakeholders to develop a sustainable strategy so that both drainage and water quality risks in the catchment are effectively managed.

4.2.1.9 Crime Prevention

Hunter Water continued working closely with NSW Police (Port Stephens Local Area Command) and utilising police trail bikes sponsored by Hunter Water in the 2010-11 reporting period. This initiative helped provide the Police with the tools to carry out proactive crime prevention on Hunter Water property and catchment area for the detection of and deterrent to illegal access, vandalism and illegal dumping.

4.2.1.10 Lead Investigation Project

A review of Hunter Water landholdings in 2010 identified the Chichester Trunk Gravity Main (CTGM) as a site with a high risk of localised soil contamination due to lead joints and the previous use of lead in associated maintenance practices. During 2011-12, following on from previous inspection of all properties along the CTGM, additional works are now being or have been undertaken to further reduce potential risks, particularly to residents and the general public.

As part of restoration works following removal of the lead jointed main adjacent to the Hexham Swamp National Park, additional topsoil and grass will be put down to ensure a stable ground cover prior to handover of the land to National Parks. Testing of lead blood levels in cattle from representative farms along the welded pipeline has been undertaken by NSW Livestock Health and Pest Authority (LHPA) at the instruction of Department of Primary Industry (DPI), to determine if there is a risk to cattle from lead exposure. Soil and water testing done by LHPA and Hunter Water has shown that there are generally low levels of lead in the soil under the welded pipeline, however there are isolated locations where high levels of lead exist under the pipe. Testing has shown that lead levels in grass are at safe levels. Blood testing of cattle on the welded pipe to date has seen more
than 500 cattle tested. Correspondence has continued with DPI and LHPA to formulate a suitable management strategy for the welded pipeline.

NSW EPA has confirmed in July 2012, that the investigations and reports submitted by Hunter Water have adequately addressed the potential risks from lead contamination. Guidelines and procedures are being developed to ensure that the Lead Management Plan is implemented on an ongoing basis. The guidelines will ensure that existing procedures are updated where necessary to address lead contamination issues and CTGM lead contamination information is readily accessible when needed.

Under our extensive drinking water monitoring program, Hunter Water conducts fortnightly tests of the water quality at 68 points along the delivery network, representative of water supplied to customers. Hunter Water’s drinking water supplies consistently record high level compliance with the Australian Drinking Water Guidelines and there is no risk to drinking water supplied through the CTGM from the lead pipe joints.

During the 2011-12 reporting period Hunter Water estimated that $1,500,000 would be spent with actual expenditure being $1,128,000. Under spending in 2011-12 was due to underestimated difficulties in delivering this project in the predicted timeframe. Hunter Water plans to spend $441,000 in 2012-13 on ongoing planned work and further monitoring.

4.2.2 Catchment Management – Strategic

4.2.2.1 Development Applications

Hunter Water provides comments on notable development projects within, or that potentially effect, water catchments (Special Areas). Large projects on which Hunter Water provided comment during 2011-12 are included in Table 4-1.

Table 4-1 Development Applications

<table>
<thead>
<tr>
<th>Development Application</th>
<th>Drinking Water Catchment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rezoning, Pacific Highway, Ferodale</td>
<td>Tomago Sandbeds</td>
</tr>
<tr>
<td>Woolworths Supermarket, Medowie</td>
<td>Grahamstown Dam</td>
</tr>
<tr>
<td>Sandvik Machinery and Maintenance Facility, Heatherbrae</td>
<td>Tomago Sandbeds</td>
</tr>
<tr>
<td>142 Lot Industrial Subdivision - Kinross, Heatherbrae</td>
<td>Tomago Sandbeds</td>
</tr>
<tr>
<td>Extension to Boral Quarry, Seaham</td>
<td>Grahamstown Dam</td>
</tr>
<tr>
<td>AGL Gas Storage facility, Tomago</td>
<td>Tomago Sandbeds</td>
</tr>
<tr>
<td>Williamtown Aerospace Park, various industrial developments</td>
<td>Tomago Sandbeds</td>
</tr>
</tbody>
</table>
Development Application | Drinking Water Catchment
---|---
Coal Seam Gas Exploration, Fullerton Cove | Referred under Hunter Water Regulation 2010
Williamtown Wastewater Transfer Scheme | Tomago Sandbeds

As in previous reports there were many other smaller developments referred to Hunter Water for comment. It should be noted that the Tomago Sandbeds (Special Area) experienced increased development pressure during this reporting period and this will continue most notably from the ongoing and future expansion of the RAAF Base and the Newcastle Airport.

**4.2.2.2 Catchment Management Plan (CMP)**

As discussed in section 2 of this report, Hunter Water has adopted a “catchment to tap” approach to manage the risks associated with drinking water quality. To effectively address catchment risks, a Catchment Management Plan (CMP) has been written to benchmark Hunter Water’s methods against current best practice catchment management. The CMP also reflects best practice management according to the Australian Drinking Water Guidelines (ADWG).

Current Australian and international leaders in catchment management effectively implement eight principles, and these will be progressively implemented over time; these principles are:

1. Identify the top hazards
2. Have effective legislation
3. Work with stakeholders
4. Monitor high risk areas
5. Foster research
6. Perform proactive surveillance
7. Engage the community
8. Plan for emergencies (fire)

Refer to Section 8 for a summary of status of actions under the CMP. All costs to date associated with development and implementation of the CMP document has been covered by existing internal labour. Hunter Water has included ongoing funding of the CMP in its 2013-17 submission to IPART. The CMP is a dynamic document and will be revised periodically and as required.

The CMP and summary document can be downloaded from the Hunter Water website ([www.hunterwater.com.au](http://www.hunterwater.com.au)).
4.2.2.1 Grahamstown Dam Adaptive Management Strategy

The Grahamstown Dam Adaptive Management Strategy (AMS) was implemented as part of the recommendations of an external expert panel. The strategy is comprised of the following two main catchment related components:

*Algal Nutrient and Sediment Nutrient Source Study*

This investigation has been extended into a doctorate research project and is a combination of two water quality components of the Grahamstown Dam AMS implemented from recommendations of an external expert panel. The study investigates the limiting nutrient concept controlling algal growth in Grahamstown Dam as well as the importance of internal nutrient source from sediments derived from the catchment. Originally commissioned as a Masters level investigation approval was gained to extend to a doctorate level study due to unusual and unique results. This will aid Hunter Water in determining catchment priorities for nutrient and sediment control to maintain good quality water in Grahamstown Dam. Additional funding of $25,000 pa over the next two financial years (2012-13 & 2013-14) has been allocated from refinement studies identified from the algal growth model discussed below. Completion of additional results analysis and PhD thesis write up will extend into the end of calendar year 2014.

*Predictive Algal Growth Model (probabilistic bayesian network model for predicting algal growth in Grahamstown Dam)*

The multiple components of the Grahamstown Adaptive Management Strategy were designed to fill knowledge gaps to enable development of a modelling management tool. This tool would allow Hunter Water to assess risks from catchment and operational activities in promoting harmful and nuisance algal blooms in Grahamstown Dam. Development of this model commenced in 2009-10 with Stage 1 (a functioning basic model) delivered in June 2010 and a broader Stage 2 “dynamic” model delivered during 2011-12. Trialling the tool is underway to assess sensitive factors to identify any further investigations to increase its accuracy and precision.

4.2.2.2 Catchment and Water Quality Model (SWISS) (formerly CDSS)

Around Australia, water authorities and catchment management bodies employ a range of methods to identify and rank catchment risks. Most authorities view the identification of the level of risk and the location of these problems as the foundation data upon which to build a catchment management plan. During 2011-12, Hunter Water used a Geographic Information System (GIS) model of the drinking water catchments called the Source Water Improvement Support System (SWISS) to better inform how to prioritise catchment improvements. A version of this model has been successfully implemented by the Sydney Catchment Authority (SCA) over the past seven years.

The provision of a safe and reliable drinking water supply begins in the catchments. As the Hunter’s drinking water catchments have multiple uses, it is important that land uses are made as low impact as possible. In order to rank and address the more problematic areas the location of highest land use risks is needed. This model is a major adjunct to the implementation of Hunter Water’s Catchment Management Plan.

Our catchments were first divided into approximately 250 five square kilometre drainage units based on locally identifiable streams. Figures 1, 2 & 3 are examples of the output from the model.
Large amounts of catchment data was assimilated into Geographic Information System software package, ArcGIS, using methods such as software scripting, digitising aerial photography and interviewing experts from various fields. For example, workshops were held with DPI, LHPA and council to record animal stocking density throughout the catchments. Example outputs are shown below.
After collation of more than 50 data sets, the contribution of each to source water nutrients (nitrogen, phosphorus), turbidity (TSS) and pathogens was calculated in the model using parameters and scaling factors that SCA took more than 5 years to determine. A final risk map output example is shown below for phosphorus.
Fifteen high priority areas were identified using this model, which were then shortlisted to eight. This was done by asking a panel of Hunter Water experts to consider:

- Ability to demonstrate benefits
- Any possible uncertainties regarding the Lower Hunter Water Plan outcomes
- The potential to build Hunter Water’s environmental credentials

A final three priority areas were then chosen from the eight shortlisted. These were:

1. Improving dairy farm management in the Williams River catchment,
2. Improving riparian areas of the Tillegra landholdings,
3. Working with councils to better inspect and rectify failing septic tanks.

The final selection was achieved with the assistance of the SCA, which has the broadest experience in administering drinking water catchment management programs of any NSW agency. Importantly, SCA prices are determined by IPART and therefore IPART is familiar with their prioritisation process.
An important component of the priority selection process has also been stakeholder engagement. The Department of Primary Industries, Dairies NSW, The Hunter-Central Rivers Catchment Management Authority (CMA) and local councils are having significant input into the design of the Catchment Improvement Program. The CMA has recently devoted resources to working with Hunter Water on this project and, together Hunter Water and CMA are working towards formalising our parallel objectives with a Memorandum of Understanding.

Working closely with our catchment partners will realise the following benefits:

- Build common goals and ensure commitment to shared outcomes
- Combine Hunter Water’s proposed programs with existing programs
- Tap into specialised skills and existing relationships
- Leverage other potential funding

Hunter Water will maintain continued engagement with Sydney Catchment Authority and our other catchment partners as we deliver this project.

A budget of $150,000 for 2011-12 was approved and $123,000 was spent. The small underspend was due to Phase 1 of the project not requiring any of the contingency estimated in the original budget. Phase 2 in 2012-13 will involve further refinements to GIS datasets and collection of additional information, with an estimated budget of $50,000.

### 4.2.2.3 Pesticide Usage Survey

The aim of this investigation was to undertake a desktop review and survey of pesticide usage within Hunter Water Corporation’s Drinking Water Catchments, review current monitoring programs and make recommendations to enable Hunter Water to strategically re-align its pesticide monitoring in line with directives made by NSW Department of Health. No estimates were included in the 2010-11 report, however $36,000 was spent. Hunter Water has budgeted $23,300 for finalisation of this project in 2012-13. The study will be completed by August 2012.

### 4.2.2.4 Irrawang SEPP 14 Wetland Rehabilitation Project

Irrawang Wetland contains State Environmental Planning Policy 14 (SEPP 14) Wetland number 804 and is close to the junction of the Williams and Hunter Rivers. Levy banks, drainage lines and flood gates were installed many years ago in the area that has prevented natural tidal fluctuations within the wetland. These structures are owned and operated by the NOW.

Hunter Water Corporation owns Irrawang Wetland and the surrounding land. In the past 12 months flood modelling has revealed the complexity of determining the impact of simultaneous spills from Grahamstown Dam and flooding from either the Hunter River or Williams River. Although not quantified, the modelling undertaken has enabled it to be determine that the permanent opening of the flood gates could only increase the likelihood of residential impacts in the event of a simultaneous spill from Grahamstown Dam and flooding of either the Hunter River or Williams River. Further modelling has therefore been deemed unnecessary and the flood gates will not be permanently opened. Hunter Water budgeted $60,000 for this project in 2011-12, and spent $40,000. The under spend was due to a large contingency for variation in the original budget, which was not needed – the project has been completed now.
4.2.2.1 Engaging the Community – Tocal Field Days

This activity was additional to Hunter Water’s sponsorship of the Tocal Field Days and involved a catchment awareness display at the Field Days, which was fully staffed by Hunter Water catchment staff. Costs associated with this activity were for staff overtime wages for coverage over the weekend. Hunter Water budgeted $1,000 in 2011-12 which was fully expended. Hunter Water has again budgeted $1,000 for this activity in 2012-13.

4.2.3 Community Sponsorship

4.2.3.1 Tocal Field Days Sponsorship and Student Scholarship

The Tocal Field Days are the largest agricultural field exhibition in the Hunter Valley and are held annually over three days. Hunter Water is a major sponsor of the ‘Land Management’ section of the event and more specifically sponsors the Tocal Field Days Education Program which promotes environmentally sustainable farming and living practices in rural and urban settings.

This sponsorship covers two components, the Best Land Management Exhibit Awards and Tocal student education scholarships. The exhibits in the Land Management area provide education and free advice about salinity, water-saving plants, floods and drought management and strategies to save water. The 2011-12 budget of $10,000 was fully spent on this program. Hunter Water planned to fund the Tocal Field Days for $5,000 in the 2012-13 budget, however Tocal did not apply for funding of the scholarships.

4.2.3.2 CMA Waterwatch and CMA Catchment Crawl

The Hunter-Central Rivers CMA’s Waterwatch program carries out water quality monitoring including physical, chemical and biological parameters at local waterways while educating the community and schools on the importance of protecting our environment.

The 2011-12 catchment crawl took school students from Glenbawn Dam to the Hunter River at Bengalla. The theme of this activity was to compare the health of the top of a catchment to that of the bottom of the catchment by examining sites along the way. Students produced individual reports as well as a group report at the end of the day.

Hunter Water budgeted and expended $25,000 for the Water Watch program and budgeted and expended $5,000 for the Catchment Crawl in 2011-12 and has budgeted the same amount for each project in 2012-13.

4.2.3.1 Hunter Wetlands Centre Education Program

The Hunter Wetlands Centre Australia plays a central role in the conservation and management of the Shortland Wetlands with important work in environmental education and building capacity within the community. The RAMSAR\(^1\) protected site provides habitat for a wide variety of birds, mammals, frogs and reptiles.

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\(^1\) A ‘declared RAMSAR wetland’ is an area that has been designated under Article 2 of the Ramsar Convention or declared by the Minister to be a declared Ramsar wetland under the Environment Protection and Biodiversity Conservation Act 1999.
Hunter Water budgeted and expended $15,000 in 2011-12 and has budgeted $15,000 again in 2012-13.

### 4.2.3.2 Schools Education Program

This program is targeted at school children and provides an overview and increased awareness of the importance of catchment management for the provision of clean drinking water, natural resource management and also the importance of saving water. This service is supplied by a local clown troop known as ‘Ship-O-Fools’. Throughout the year Ship-O-Fools visited primary schools to present this light-hearted and enjoyable but informative show. Hunter Water budgeted $30,000 for 2011-12 and expended $30,000 on this project and has budgeted $30,000 again in 2012-13.
5 Water Act 1912 and Water Management Act 2000

5.1 Background

Hunter Water’s Water Management Licence is now fully issued under the Water Management Act 2000, reporting under Part 9 of the Water Act 1912 is now redundant and does not require discussion in subsequent reports. The Water Management Act 2000, makes provision for ‘Water Sharing Plans’. Water sharing plans and how they apply to Hunter Water are discussed in greater detail later in section 6 of this report. As water sharing plans are completed for each specific river system or group of river systems in accordance with the Water Management Act 2000, the existing water management licences issued under Part 9 of the Water Act 1912, are converted to “Access Licences”. This is the approval mechanism under the Water Management Act 2000 and was fully applicable to Hunter Water in late 2011 after being issued with the revised Water Management Package. The following are brief descriptions of activities carried out during the reporting period, that directly or indirectly relate to this legislative framework.

5.2 Activities Carried Out

5.2.1 Balickera Tree and Silt Management

The Balickera Canal is a man made canal of approximately 10 kilometres in length, designed to transfer water from the Williams River at Seaham (Seaham Weir) by pumping to the Grahamstown Dam. In order to maintain the efficient flow of water through this canal it is necessary to continually control the growth or removal of woody vegetation within the banks of the canal or fallen into the canal. Forecast expenditure is a contingency as this activity is necessarily largely reactive. In 2011-12 Hunter Water budgeted for expenditure of $15,000 and actual expenditure was $1,225. The budget for 2012-13 is again $15,000.

5.2.2 Flood Gate and Levee Bank Maintenance

Hunter Water owns and maintains 33 flood gates and several constructed levee banks throughout the Seaham Weir Pool to mitigate flooding of farmland due to the operation of the Seaham Weir. Hunter Water conducts six-monthly inspections of all flood gates and carries out repairs as required, and also responds to landholder complaints in a timely manner. An amount of $300,000 was budgeted in 2011-12 for the maintenance of these flood gates and levee banks. Actual expenditure during the year amounted to $310,700. Due to the nature of the system it is difficult to predict maintenance requirements; however the unusually large expenditure in 2011-12 was due to previously identified and costed work. The budget for 2012-13, is set at $50,000 with no major works expected.
6 Water Sharing Plans

6.1 Background

The following is an extract from the NSW Office of Water website to provide background to water sharing plans (www.water.nsw.gov.au/default.aspx):

“A water sharing plan is a legal document prepared under the Water Management Act 2000. It establishes rules for sharing water between the environmental needs of the river or aquifer and water users, and also between different types of water users such as town supply, rural domestic supply, stock watering, industry and irrigation.

By setting the rules for how water is allocated for the next ten years, a water sharing plan provides a decade of security for the environment and water users. This not only ensures that, for the first time, water is specifically provided for the environment through a legally binding plan, but also allows licence holders, who require fairly large quantities of water such as irrigators, to better plan their business activities. Irrigation accounts for about 80% of all water used in NSW.

In addition, water sharing plans set rules for water trading, that is, the buying and selling of water licences and also annual water allocations. For most new commercial purposes, water trading remains the only way that water can now be obtained as in most areas of the state as the available water is fully allocated.”

The purpose of a water sharing plan is:

- to protect the fundamental environmental health of the water source
- to ensure that the water source is sustainable in the long-term
- to provide water users with a clear picture of when and how water will be available for extraction”.

Hunter Water extracts raw water under three Water Sharing Plans, being;

1. Water Sharing Plan for the Tomago Tomaree Stockton Groundwater Sources 2004

All water sharing plans are in force for a period of ten years, at which time they are reviewed and revised by the NSW Office of Water.

Conditions for extraction of water under these plans are defined under an all encompassing document called “Hunter Water Corporation – Water Licences and Approvals”, which is a “package” of licences, here on referred to as the Water Management Package (WMP). Hunter Water’s WMP, and activities carried out under such, is discussed in greater detail in section 7.1 in this report.

Hunter Water currently extracts water from all water sources mentioned above with the exception of the Stockton groundwater source, which has no infrastructure in place to do so. The Stockton aquifer is an emergency drought contingency source that would be developed if needed.

Hunter Water’s current WMP is now issued entirely under the Water Management Act 2000. The current WMP was issued by the NSW Office of Water in November 2011 and therefore Hunter Water operated for part of the current reporting period under the previous Water Management Licence of
2004. There were no significant changes to Hunter Water’s operational activities or regulatory requirements as a result of issuing of the new WMP.
7 Water Management Package (Licence) and Dams Safety Act

7.1 Water Management Package 2011

Hunter Water holds seven Water Access Licences under the Water Management Act 2000 and these are combined into one document known as the Water Management Package 2011 (WMP). These licences are summarised as follows;

<table>
<thead>
<tr>
<th>Combined Water Supply Work And Water Use Approval</th>
<th>Associated Water Access Licence Number</th>
<th>NOW Reference Number</th>
<th>Category of Water Access Licence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Sharing Plan for the Tomago Tomaree Stockton Groundwater Sources 2004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20CA203131 Tomago</td>
<td>11332</td>
<td>20AL203129</td>
<td>Major Utility</td>
</tr>
<tr>
<td>20CA203132 Tomaree</td>
<td>11333</td>
<td>20AL203130</td>
<td>Major Utility</td>
</tr>
<tr>
<td>20CA2111175 Paterson</td>
<td>20212</td>
<td>20AL211033</td>
<td>Regulated River High Security</td>
</tr>
<tr>
<td>Water sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20CA211018 Chichester</td>
<td>23976</td>
<td>20AL110006</td>
<td>Major Utility</td>
</tr>
<tr>
<td>20CA212238 Williams</td>
<td>27368</td>
<td>20AL212239</td>
<td>Major Utility</td>
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<tr>
<td>20CA211019 Newcastle</td>
<td>23880</td>
<td>20AL211005</td>
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<tr>
<td>20CA212237 Allyn</td>
<td>27427</td>
<td>20AL212261</td>
<td>Major Utility</td>
</tr>
</tbody>
</table>

7.1.1 General Requirements of Water Access Licences

Recording Data

"Hunter Water Corporation must maintain, in a form that can be readily accessible by NOW, all information and records required by monitoring and reporting conditions in the licence."

A broad range of data is collected and maintained in a database and is available on request. This data is also used to compile the annual report for this licence.
Incident Notification Reporting

“Hunter Water Corporation must notify all events which result in non-compliance with the conditions of the licence to NOW as soon as practicable after it becomes known to Hunter Water Corporation.”

During the 2011-12 reporting period all incidents that had the potential to be a non-compliance of the licence were reported to NOW within the designated timeframe. A brief description of these incidents is provided in Section 7.1.2 in this report.

Annual Reporting

“Hunter Water Corporation must, within 90-days of the end of each financial year, submit an Annual Water Licence Report.”

Data collected for the purpose of this licence was presented to NOW in September 2011 in an annual report as required by the licence within the designated timeframe.

7.1.2 Notification Reports to NSW Office of Water (NOW)

In accordance with the legislation mentioned in Section 7.1.1 (General requirements of the licence) Hunter Water reported one incident to NOW in regard to potential non-compliance with the Water Management Package (or Licence) during the 2011-12 reporting period. This was a minor non-compliance with licence conditions and is summarised below.

Minor Non-Compliance

- September 2011 – Low Environmental Flow from Chichester Dam

A hydro-generator at Chichester Dam generates electricity and the flow through the generator provides a minimum average flow of 14ML/day to the Chichester River. Due to a severe electrical storm, mains power to the dam was lost, which caused the hydro-generator to fail and thereby stopping flow down the river. The power failure occurred at 1:30am and power was restored to the hydro-generator at 8:30am. Due to the minor nature of the incident and the prevailing weather conditions it was deemed unsafe to call out dam personnel at that time of the day. There were no observable or measurable environmental impacts due to this incident. Hunter Water has plans to install an automatically activated bypass of the hydro-generator to eliminate reoccurrences of this incident in the future.

The NSW Office of Water accepted this as an adequate response and no action was taken. (It should be noted that this non-compliance occurred under the now superseded Water Management Licence 2004, however rules for this parameter have not changed.

7.2 Dams Safety Act

Dam operation and maintenance in NSW is legislated under the Dams Safety Act 1978 and regulated by the Dams Safety Committee, which is a Constituted Corporation under this Act. The primary purpose of the Act is to define the membership, function and powers of the Dams Safety Committee. Only dams that are prescribed under the Act need to meet the requirements of the Act. It should be noted that there is no accompanying Regulation for this Act. Hunter Water has three prescribed structures, those being:

- Chichester Dam
• Grahamstown Dam
• Winding Creek Detention Basin

Hunter Water continues to satisfy the requirements of the Act as required by the Dams Safety Committee for its structures. The NSW Dams Safety Committee requires a surveillance report at intervals of not greater than five years. The last five-yearly surveillance report was completed in late 2008 and will be due again in 2013.

Under the Dams Safety Act 1978 Hunter Water holds a permanent position on the NSW Dams Safety Committee and is represented at all meetings where possible and practicable. This representation maintains close and ongoing contact with the Committee.
## Catchment Management Plan – Action Status

### Table 8-1 Catchment Management Plan – Action Status

<table>
<thead>
<tr>
<th>#</th>
<th>Action</th>
<th>Completion Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prepare a Bushfire Management Plan for the catchment regions</td>
<td>Jul-13</td>
<td>Ongoing</td>
</tr>
<tr>
<td>2</td>
<td>Determine data priorities for improving low resolution / quality CDSS data</td>
<td>Mar-13</td>
<td>Ongoing</td>
</tr>
<tr>
<td>3</td>
<td>Refine catchment model to determine high hazard areas</td>
<td>Mar-13</td>
<td>Ongoing</td>
</tr>
<tr>
<td>4</td>
<td>Continue and complete GAMS (excluding model)</td>
<td>Jul-12</td>
<td>Ongoing</td>
</tr>
<tr>
<td>5</td>
<td>Continue targeted sampling of faecal sterols at Campvale Canal</td>
<td>Jul-13</td>
<td>Ongoing</td>
</tr>
<tr>
<td>6</td>
<td>Continue targeted sampling of pathogens and nutrients at Campvale Canal</td>
<td>Jul-13</td>
<td>Ongoing</td>
</tr>
<tr>
<td>7</td>
<td>Continue to implement the new DA referrals process</td>
<td>Jul-11</td>
<td>Continual ongoing process</td>
</tr>
<tr>
<td>8</td>
<td>Continue to train council planners to reinforce regulation</td>
<td>Regular meetings by Jul-12</td>
<td>Continual ongoing process</td>
</tr>
<tr>
<td>9</td>
<td>Continue to train Hunter Water staff to recognise inappropriate development</td>
<td>Regular training by Jul-12</td>
<td>Training commenced &amp; ongoing process</td>
</tr>
<tr>
<td>10</td>
<td>Continue to work with councils for inclusion of catchment regulation in LEPs</td>
<td>Jul-12 (PSC), Jul-13 (DSC)</td>
<td>Continual ongoing process</td>
</tr>
<tr>
<td>11</td>
<td>Review CMP document</td>
<td>Jul-13</td>
<td>Periodic process</td>
</tr>
<tr>
<td>12</td>
<td>Develop communication plan with landholders and customers</td>
<td>Jul-13</td>
<td>In progress</td>
</tr>
<tr>
<td>13</td>
<td>Develop simple, catchment specific surveillance templates</td>
<td>Jul-13</td>
<td>In progress</td>
</tr>
<tr>
<td>14</td>
<td>Initiate regular interagency meetings, target one initial meeting with each stakeholder</td>
<td>Jul-13</td>
<td>To be commenced</td>
</tr>
<tr>
<td>15</td>
<td>Commission research into the source of high catchment risks using outputs of the CDSS</td>
<td>Sep-13</td>
<td>In progress</td>
</tr>
<tr>
<td>16</td>
<td>Develop and cost programs from CDSS outputs to address risk in catchments</td>
<td>Sep-12</td>
<td>In progress</td>
</tr>
<tr>
<td>17</td>
<td>Include outcomes of CDSS model in price path preparations</td>
<td>Sep-12</td>
<td>In progress</td>
</tr>
<tr>
<td>#</td>
<td>Action</td>
<td>Completion Date</td>
<td>Comments</td>
</tr>
<tr>
<td>----</td>
<td>------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>18</td>
<td>Ground truth the model, compare with monitored data and expert panel verification</td>
<td>Oct-12</td>
<td>In progress</td>
</tr>
<tr>
<td>19</td>
<td>Investigate pesticide use and develop a pesticide monitoring program</td>
<td>Jan-13</td>
<td>In progress</td>
</tr>
<tr>
<td>20</td>
<td>Implement a signage strategy for catchments</td>
<td>Jul-14</td>
<td>To be developed</td>
</tr>
<tr>
<td>21</td>
<td>Continue current regular committee meetings with catchment organisations</td>
<td>Ongoing</td>
<td>Ongoing</td>
</tr>
<tr>
<td>22</td>
<td>Continue to run slide show on TV in HWC Head Office foyer</td>
<td>Ongoing, every 3 months</td>
<td>Ongoing</td>
</tr>
<tr>
<td>23</td>
<td>Continue to use the templates for inspections of RAAF Williamtown</td>
<td>Ongoing, review annually</td>
<td>Ongoing</td>
</tr>
<tr>
<td>24</td>
<td>Continue to financially support and attend rural field days in catchments</td>
<td>Ongoing, yearly</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
9.1 Operating Licence Checklist: Section 7.3 – Catchment Report for 2011-12

Table 9-1  Environmental Indicators and Management (7.3 Catchment Report)

<table>
<thead>
<tr>
<th>Section In Licence</th>
<th>Item Description</th>
<th>Location in Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.3.1</td>
<td>Hunter Water must report its performance by no later than 1 September each year against its catchment management activities for the immediately preceding financial year, in a report to be known as the Catchment Report. The Catchment Report must include:</td>
<td>Section 7.1.1</td>
</tr>
<tr>
<td></td>
<td>details of activities conducted by Hunter Water under the Hunter Water Corporation Limited (Special Areas) Regulation 2003, and approvals under the Water Act 1912 and the Water Management Act 2000, Water Sharing Plans and any other relevant land or water management activities carried out jointly with other authorities or landholders together with a comparison of: must publish on its internet website the latest those activities planned against those activities undertaken by Hunter water during the immediately preceding financial year; and the estimated cost of planned activities against actual costs incurred by Hunter Water relating to these activities;</td>
<td>Section 4.2</td>
</tr>
<tr>
<td></td>
<td>details of Hunter water’s performance against the Water Management Licence and the <em>Dams Safety Act 1978</em>; and</td>
<td>Section 3</td>
</tr>
<tr>
<td></td>
<td>details of activities proposed to be undertaken in accordance with clause 7.3.1 (a) for the next financial year including costs that Hunter Water estimates it will incur in undertaking these activities.</td>
<td>Section 7.1.2 &amp; Section 7.2</td>
</tr>
<tr>
<td>7.3.2</td>
<td>Hunter Water must also publicly display the Catchment Report on its website on the internet for downloading free of any charges imposed by Hunter Water, and make it available at its premises for access or collection by any member of the public free of charge.</td>
<td>✔️ Section 4.2</td>
</tr>
</tbody>
</table>
### 9.2 Catchment Performance Indicators Checklist

#### Table 9-2  NWI Element: Environment

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Indicator</th>
<th>Definitions &amp; interpretation (Hunter Water context)</th>
<th>Requirement source</th>
<th>Located in Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>OL CM-1</td>
<td>Total number of trees planted</td>
<td>Trees may be planted as part of revegetation projects, bush regeneration activities or for the purpose of carbon sequestration. Shrubs planted will be also be included in the number. 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. 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.</td>
<td>2008-13 EMP</td>
<td>Section 4.2.1.1</td>
</tr>
</tbody>
</table>