

PROTECTING OUR DRINKING WATER CATCHMENTS

2016

Guidelines for developments in the drinking
water catchments

HUNTER WATER



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Disclaimer:

This information is provided for general guidance only. It is not intended to replace legal advice for specific circumstances. Consult your local Council or Hunter Water for development advice in the first instance.

Document Control:

Date: 04.04.2016

Version: 3

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1 OVERVIEW

Hunter Water is a State Owned Corporation within the meaning of the *State Owned Corporations Act 1989* (NSW) responsible for providing water and wastewater services for over half a million people in the Lower Hunter. Hunter Water's commitment to supplying safe, high quality drinking water begins with healthy drinking water catchments. Catchment management and source water protection provide the first barrier for the preservation of high quality drinking water.

Hunter Water's operations are regulated by the NSW Government on behalf of the community through a number of regulatory instruments. The main regulatory instrument, Hunter Water's Operating Licence, issued by the NSW Independent Pricing and Regulatory Tribunal (IPART) requires Hunter Water to comply with the Australian Drinking Water Guidelines (ADWG).

The ADWG advocate a 'catchment to tap' approach to managing drinking water quality that includes proactive catchment management as an effective barrier against threats to water quality. Hunter Water participates in the planning and assessment process for development proposals that may impact on drinking water supplies by referral from the relevant consent authority.

Hunter Water's drinking water catchments are located within the Port Stephens and Dungog local government areas. Under Section 51 of the *Hunter Water Act 1991* (NSW) ('the Hunter Water Act'), consent authorities, including Dungog Shire Council, Port Stephens Council and the NSW Department of Planning and Environment, are required to refer Development Applications that may significantly impact on water quality in the drinking water catchments to Hunter Water for comment. The consent authorities are then required to take Hunter Water's comments into consideration when assessing and determining applications.

The NSW Department of Planning and Environment forecasts that an additional 130,000 people will reside in the Lower Hunter in the next two decades, and that most housing will be developed on 'greenfield' sites. Some of these locations will be within drinking water catchments, such as the Medowie, Clarence Town and Dungog areas. It is recognised that increasing development and land use within drinking water catchments has the potential to cause a decline in water quality, increasing both the risks to water quality and the costs of treating water.

2 WHO DO THESE GUIDELINES APPLY TO

Following the introduction of a new *Hunter Water Regulation* in September 2015, this document has been prepared to provide guidance to anyone proposing to undertake development activities within the drinking water catchments and to consent authorities about matters of concern to Hunter Water regarding protection of drinking water quality. The guidelines describe Hunter Water's expectations of how these matters should be addressed in development applications.

The purpose of this document is to ensure that development and land use activities within the drinking water catchments are planned and undertaken so that they do not adversely affect drinking water quality. The guidelines are not intended to replace existing council planning processes and policies, rather they are intended to complement existing planning processes.

The objectives of these Guidelines are to:

- 1 Provide a greater level of certainty and transparency for consent authorities, key agencies and land owners/developers wishing to develop their land about the risks to drinking water quality from development and what constitutes appropriate development;

2 Clearly explain Hunter Water's expectations for proposed developments to prevent or mitigate unacceptable impacts to water quality in the drinking water catchments, and provide advice on how proponents can best meet these expectations using established local, NSW and national government guidelines and standards; and

3 Promote partnerships with local government, key State agencies and the development community for more effective management of drinking water catchments. These Guidelines are intended to support and complement policies and planning instruments of local and state government, in order to ensure the protection of drinking water supplies into the future.

3 OUR CATCHMENTS

3.1 What is a Catchment?

A catchment is an area where water is collected by the natural landscape. In a catchment, all rain and run-off water eventually flows to a dam, lake or ocean via a creek or river, or into a groundwater system.

In the Lower Hunter drinking water is harvested from three types of catchments - rivers, dams and groundwater systems. These are shown on the catchment map overleaf. Anyone planning a development or activity in any of these catchments should read these Guidelines and consult with the local council.

3.2 Our River Catchments

Williams River

The Williams River catchment has its headwater in the forests of the Barrington Tops. The remainder of the catchment is primarily agricultural land and rural townships, including the communities of Dungog and Clarence Town. Water harvested from the Williams River at the Seaham Weir is a major source of water for Grahamstown Dam, providing around half of its inflows. Therefore, impacts on the Williams River may also have an impact on water quality in the dam. The Williams River catchment is located within both the Dungog Shire and Port Stephens local government areas. The catchment of the Williams River is formally gazetted as the Williams River Catchment Area.

Paterson and Allyn Rivers

The Paterson and Allyn River catchments comprise forested land in the headwaters and mainly agricultural land in the remainder of the catchments. The townships of Gresford and Vacy are also located along these rivers, which have their confluence at Vacy. The water supply system for Gresford is harvested from these rivers, according to the availability and quality of water, with the Allyn River being the primary source (approximately 75% of volume). Lostock Dam is located on the Paterson River upstream of Gresford and is used to support agricultural production. The Paterson and Allyn River catchments are not protected as Special Areas.

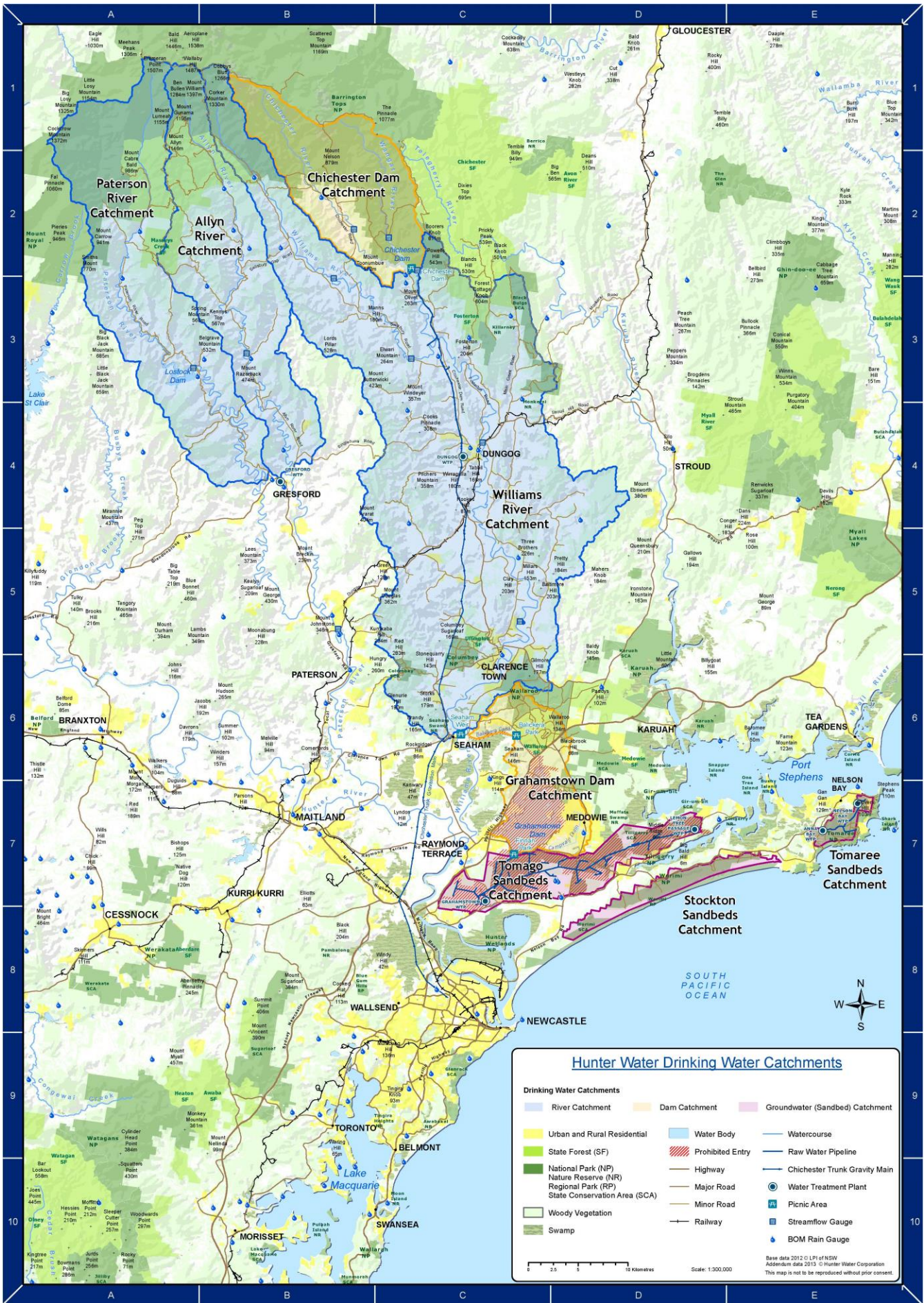
Key Threats to the River Catchments

Key threats to water quality in the river catchments include runoff from agricultural lands, which can include chemicals (such as pesticides, herbicides and fertilisers) as well as contamination from livestock faeces and urine, which contain pathogens and nutrients (particularly nitrogen and phosphorus).

Onsite sewage treatment and disposal systems (such as septic tanks and infiltration trenches) on unsewered properties are also a major potential source of pathogens and nutrients in river catchments. Excess nutrients in waterways can cause problematic algal blooms in rivers and dams, and can make the water more difficult and costly to treat.

Both human and animal wastes can contain pharmaceutical compounds, which are often persistent in the environment for long periods of time and can be difficult to remove from water.

Increasing residential and commercial/industrial development also increases stormwater runoff in the catchments. Stormwater runoff from urban areas contains a broad range of contaminants which pose risks to water quality in the drinking water catchments.



Hunter Water Drinking Water Catchments

<p>Drinking Water Catchments</p> <ul style="list-style-type: none"> River Catchment Dam Catchment Groundwater (Sandbed) Catchment Urban and Rural Residential State Forest (SF) National Park (NP) Nature Reserve (NR) Regional Park (RP) State Conservation Area (SCA) Woody Vegetation Swamp 	<ul style="list-style-type: none"> Water Body Prohibited Entry Highway Major Road Minor Road Railway Watercourse Raw Water Pipeline Chichester Trunk Gravity Main Water Treatment Plant Picnic Area Streamflow Gauge BOM Rain Gauge 	<ul style="list-style-type: none"> Watercourse Raw Water Pipeline Chichester Trunk Gravity Main Water Treatment Plant Picnic Area Streamflow Gauge BOM Rain Gauge
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Scale: 1:300,000

Base data 2012 © LPI of NSW
Additional data 2013 © Hunter Water Corporation
This map is not to be reproduced without prior consent.

3.3 Our Dam Catchments

Grahamstown Dam

Grahamstown Dam is the Lower Hunter's largest drinking water supply, providing around half of the drinking water needs of the region. Grahamstown Dam is an off-river storage located between Raymond Terrace and Medowie. Stormwater runoff from the Medowie/Campvale area drains to Campvale Canal, where it is pumped into Grahamstown Dam, making up around 10% of its annual inflows. Approximately half of the water supplied to the dam is pumped from the Williams River at Seaham Weir. Direct rainfall onto the dam and runoff from the dam's local catchment makes up the remaining inflows. The catchment of Grahamstown Dam is formally gazetted as the Grahamstown Catchment Area.

Chichester Dam

Chichester Dam, located at the base of the Barrington Tops National Park World Heritage Area, is a major drinking water supply for the Lower Hunter. The dam is supplied by flows from both the Chichester River catchment (mixed use, including farmland) and the Wangat River catchment (largely pristine forested land). The catchment of Chichester Dam is formally gazetted as the Chichester Catchment Area.

Key Threats to the Dam Catchments

Similar to the river catchments, agriculture, on-site sewage systems and increasing development density are key threats to water quality within both dams. Grahamstown Dam is under particular pressure from increased urban and commercial development. Water quality in the dam has been declining in recent years. The broader Medowie area is earmarked for increased urbanisation, with local and state government anticipating an additional 3,100 dwellings and 6,500 people over the next two decades. Increased stormwater runoff, potential discharges from on-site sewage systems and land use intensification are major threats to water quality in Grahamstown Dam, particularly the direct hydrological catchment, unless stringent development conditions are implemented (as discussed in Section 5.3).

3.4 Our Groundwater Catchments

Tomago Sandbeds

The Tomago Sandbeds catchment provides an important source of water for the Lower Hunter, supplying up to 20% of annual consumption, and is used to supplement our dams during times of drought or water quality issues. A significant proportion of this area is protected land, the majority comprising formally gazetted reserves managed by the NSW National Parks and Wildlife Service. Other land uses include Defence facilities, agriculture and urban areas. The Tomago Sandbeds are formally gazetted as the Tomago Sandbeds Catchment Area.

Tomaree Sandbeds

The Tomaree Sandbeds are primarily covered by the Tomaree National Park and exclusively supply the Tomaree Peninsula, a significant resident population and major tourism destination, with visitor numbers peaking during the summer holiday season. The catchment area also incorporates the Shoal Bay urban area. The Tomaree Sandbeds are formally gazetted as the Nelson Bay Catchment Area.

Stockton Sandbeds

The Stockton Sandbeds catchment is primarily covered by various land tenures comprising the Worimi Conservation Lands, managed by the NSW National Parks and Wildlife Service, with some freehold land. Other land uses include sand extraction and tourism activities. This area largely comprises coastal forest and mobile sand dunes and is formally gazetted as the North Stockton Catchment Area.

Key Threats to the Groundwater Catchments

Sand is highly permeable; consequently, any spills or contamination tend to move through to the groundwater table quickly in the form of pollutant plumes. Lateral groundwater movement through sands can also be rapid, spreading contamination and threatening drinking water supplies, even if the source of pollution is not close to the extraction bores.

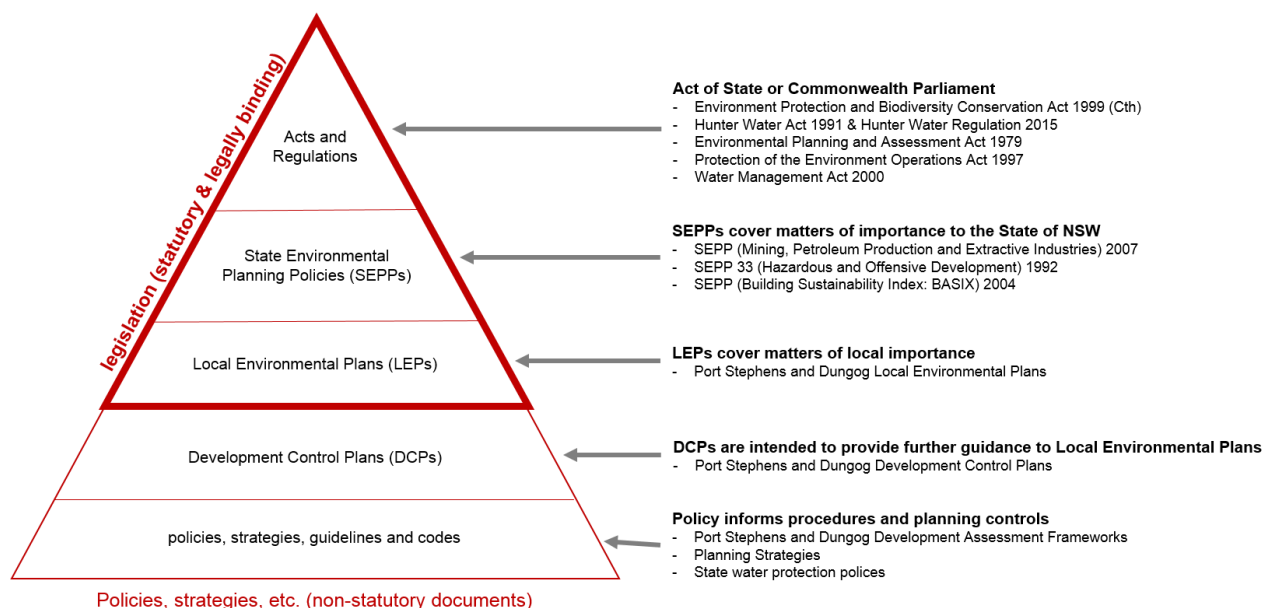
The Tomaree Sandbeds are largely within the Tomaree National Park, which provides a good level of protection. Conversely, the Tomago Sandbeds catchment contains expanding industrial/commercial areas, RAAF Base Williamtown, Newcastle Airport, a small area of agriculture, and residential areas, some of which are not sewered. Increasing areas of impervious surfaces in the catchment (buildings, roads and paved or concrete hardstand areas) interfere with aquifer recharge as well as increasing stormwater flows, which carry contaminants.

Sand mining and mineral extraction also present potential risks to groundwater quality within the groundwater catchments.

Onsite sewage systems in and around the groundwater catchments are also of concern as unsewered residential development continues to expand in these areas, increasing the potential for the discharge of effluent directly to land within or close to the drinking water catchments.

4 THE REGULATORY CONTEXT

Development in the drinking water catchments is regulated by a number of local and state planning instruments (and Commonwealth instruments when triggered). These are illustrated in the diagram below.



The following is an overview of legislation and key planning instruments that may be relevant to most developments. Please note this is not an exhaustive list and is intended as a guide.

At the Commonwealth level, the principal instrument relating to development within the drinking water catchments is:

- The *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)*, which includes protections for native ecosystems, and includes water resources as a matter of national environmental significance in relation to coal seam gas (CSG) and coal mining developments, known as the 'water trigger'.

At the State level, the principal instruments relating to development within the drinking water catchments are:

- *Hunter Water Act 1991 (NSW)*
- *Hunter Water Regulation 2015*
- *Environmental Planning and Assessment Act 1979 (NSW)*
- *Environmental Planning and Assessment Regulation 2000*
- *Protection of the Environment Operations Act 1997 (NSW)*
- *Protection of the Environment Operations (General) Regulation 2009*
- *Water Management Act 2000 (NSW)*
- *Water Management (General) Regulation 2011*

The NSW government has also published various policies and guidance documents to assist the protection of water resources and water quality.

In the *Hunter Water Act 1991* and the *Hunter Water Regulation (2015)*, the catchments (except the Allyn & Paterson River catchments) are referred to as **Special Areas**.

At the Local Government level, the principal instruments are:

- The Local Environmental Plan (LEP) of each Council, which provides zoning information declaring which development types and activities are permissible in each zone;
- The Development Control Plans (DCPs) of each Council, which provide more detailed guidance on how developments and activities are to be planned and carried out; and
- Other ancillary plans or policies (such as the Onsite Sewage Management Policy of Council including the Development Assessment Framework, or DAF, for unsewered development), which specify assessment and reporting benchmarks for development applications, or planning strategies, which direct the type and scale of development in respective locations.

Pursuant to the *Conveyancing Act 1919 (NSW)*, Hunter Water as a prescribed authority may, with the consent of the landowner, create covenants over parcels of land within Hunter Water's Special Areas to protect water quality from inappropriate development or activity. A covenant is a legally binding instrument which restricts the uses of the land on a case-by-case basis, in response to specific circumstances. Covenants are either 'positive,' whereby the land owner is directed to undertake a specified activity on that land; or 'restrictive,' whereby the land owner is not permitted to undertake specified activities on that land.

5 TRIGGERS FOR REFERRAL TO HUNTER WATER

Section 51 of the Hunter Water Act states:

51 Consent authority to notify Corporation of certain applications etc

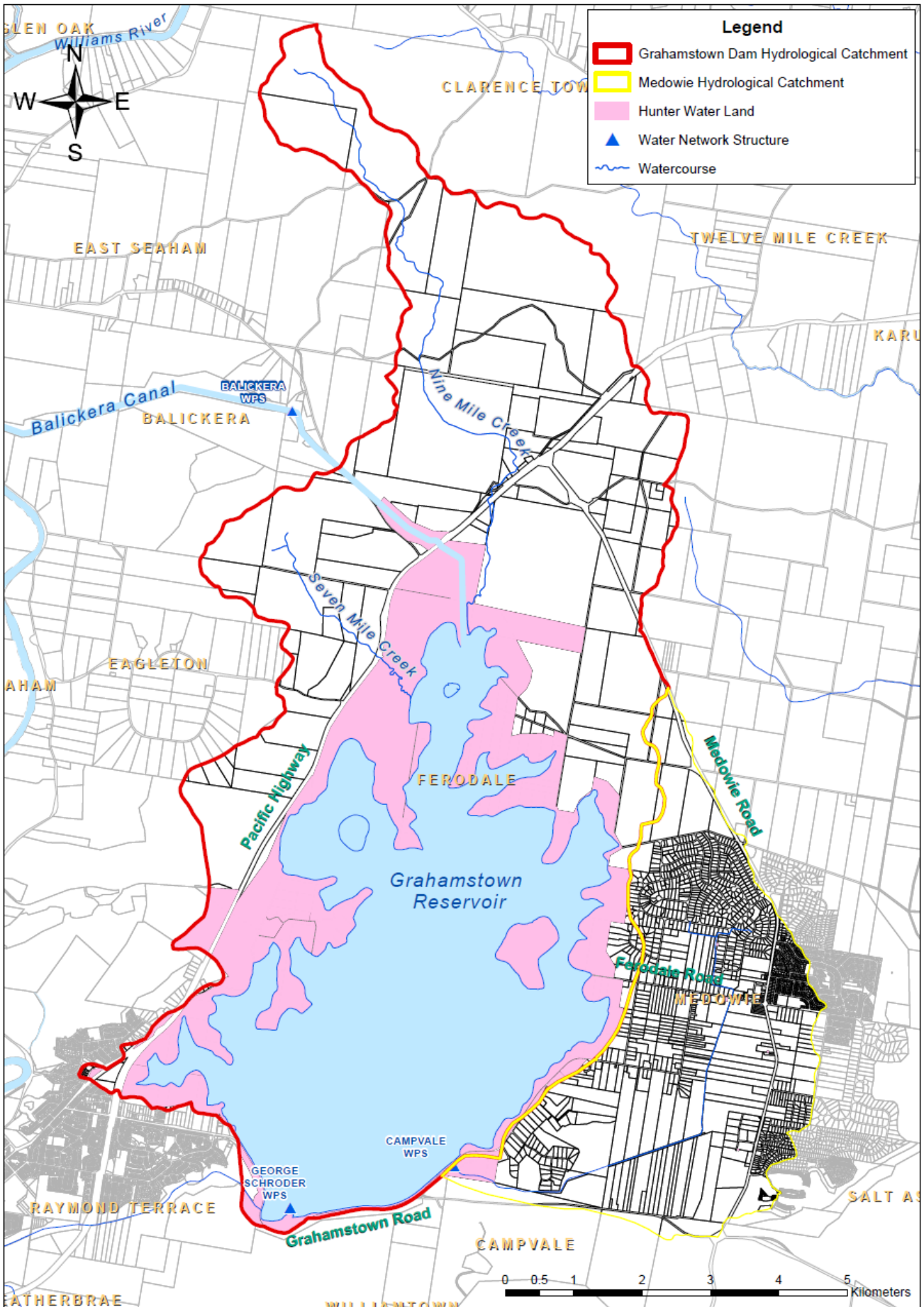
- (1) In this section, **consent authority** has the meaning given in the *Environmental Planning and Assessment Act 1979* and includes a council to which an application for approval to erect a building under Part 1 of Chapter 7 of the *Local Government Act 1993* may be made.
- (2) If a consent authority within the area of operations or a special area receives a development application or building application in relation to any matter that, in the opinion of the consent authority, may:
 - (a) significantly damage or interfere with the Corporation's works, or
 - (b) significantly adversely affect the Corporation's operations, or
 - (c) significantly adversely affect the quality of the water from which the Corporation draws its supply of water in a special area,the consent authority must, within 7 days of the receipt of the application, give the Corporation notice of the application.
- (3) The consent authority must take into account any submissions made by the Corporation in relation to the development application or building application in determining whether to consent to the development application or building application or to attach conditions to any such consent.

Developments or activities which pose unacceptable risks to drinking water catchments are not likely to be supported by Hunter Water. Hunter Water may request further information, modifications to the proposal, or make recommendations for additional development consent conditions to ensure drinking water supplies continue to be adequately protected.

The types of development proposals that have the potential to significantly affect water quality in the drinking water catchments without appropriate mitigation and management are:

- a subdivision of more than four lots; or
- agriculture, livestock or industrial/commercial development, multiple dwelling sewage treatment, or large-scale land clearing, earth works, infilling or concreting (affecting more than 2,000m²); or
- extractive industry (including mining, quarrying and gas exploration or extraction).
- certain development within the direct hydrological catchment of Grahamstown Dam or the draw zone of groundwater extraction wells for which consent is required, such as subdivision, new dwellings or commercial development.

The figure below shows both the direct hydrological catchment of Grahamstown Dam (red boundary) and the Campvale Drain hydrological catchment (yellow boundary) which includes the majority of Medowie. Water in Campvale Drain is pumped into Grahamstown Dam.



Hunter Water has an ongoing relationship with the local councils to ensure that, as a minimum, the above types of developments are referred for comment. However, if the consent authority deems a smaller-scale development proposal or a development outside a special area as likely to pose a significant impact on water quality, it will refer it to Hunter Water for comment.

If planning is being undertaken for any development or activity in the drinking water catchments, the local Council should be consulted in the first instance. Hunter Water may be contacted for advice.

6 MINIMUM EXPECTATIONS FOR DEVELOPMENT IN THE CATCHMENTS

This section provides guidance on Hunter Water's expectations for developments and activities in the drinking water catchments. These minimum standards can also be beneficially applied to small-scale developments to improve environmental and public health outcomes. For larger-scale development proposals, more stringent controls may be required.

It is important to note that different aspects of the same development or activity can impact surface water and groundwater over the lifetime of the project, from initial construction and ongoing operation, to decommissioning and rehabilitation (where relevant). Pollution and changes to hydrology that occur as a result of land clearing, erosion, runoff, increasing impervious surfaces (such as roofs and hardstand areas), diffuse-source and point-source contamination are the largest threats to our water supplies. Proposed developments and activities should be designed to avoid, minimise or mitigate these potential impacts, with appropriate supporting evidence to accompany the DA to the consent authority.

It is an offence under the *Hunter Water Regulation 2010* to pollute waters in the drinking water catchments without an Environment Protection Licence (EPL) issued by the EPA.

Hunter Water expects that all development in drinking water catchments will demonstrate Neutral or Beneficial Effect (NorBE) on water quality. A development is considered to demonstrate NorBE if the development:

- (a) has no identifiable potential impact on water quality, or
- (b) will contain any water quality impact on the development site and prevent it from reaching any watercourse, waterbody or drainage depression on the site, or
- (c) will transfer any water quality impact outside the site where it is treated and disposed of to standards approved by the consent authority.

Hunter Water may request further information from the proponent, or recommend additional measures or conditions for the project, in order to ensure that the risks to drinking water are appropriately managed.

Assessment of risk does not generally prescribe minimum water quality targets or set thresholds for contaminant concentrations. Rather, it is a holistic assessment of whether the predicted water quality impacts are likely to be acceptable, and helps to inform what mitigation or management measures should be implemented.

The level of assessment required is commensurate to the level of risk of the development - developments with a greater potential risk to water quality will require more detailed assessment and design. Detailed computer modelling may be requested for some projects, and/or follow-up water quality monitoring once the project is approved and underway.

As a minimum, Hunter Water expects the following management issues to be addressed in DA submissions where potential impacts on water quality are identified (note that Council may require additional matters to be addressed and should be consulted for further information and advice):

- 1. Vegetation management (including clearing and revegetation)**
- 2. Erosion and sediment control (for earthworks, construction and extractive industries)**
- 3. Water sensitive urban design (stormwater management)**
- 4. Wastewater management (domestic and trade wastes)**
- 5. Management of potentially contaminating activities or hazardous materials or goods.**

6.1 Vegetation Management

Vegetation, particularly native vegetation, is very effective at improving runoff quality and helping protect our water supplies from pollution, as well as improving other environmental outcomes. Erosion in the catchments due to exposure of bare soil and rock as a result of vegetation clearing is a major contributor to suspended sediments, leading to poor source water quality.

For every development, Hunter Water encourages the retention of existing vegetation (not weeds) and improve it where possible, through regeneration works and ongoing weed management. This is particularly important for riparian vegetation, as vegetated creek and river banks are far more resistant to erosion and bank failure, compared with cleared or otherwise disturbed banks. Landscaped areas can form protective buffers around developments, and can be integrated into the water sensitive urban design aspects of a site (such as vegetated swales, raingardens and wetlands for stormwater management). If native vegetation is to be cleared, it is recommended that topsoils are stockpiled for later use in landscaped areas as this retains the endemic native seed bank present at the site for natural regeneration (where native species are considered appropriate for landscaped areas).

Depending on the scale and scope of the development, as well as the ecological sensitivity of the site and surrounds, a detailed Vegetation Management Plan may be required by the consent authority. The Plan should demonstrate how proposed changes to vegetation will be managed (including soil stockpiling and revegetation, where relevant). Erosion and Sediment Control Plans may also be required in conjunction with proposals for substantial vegetation clearing (see Section 8.2 below). Consult with Council or Hunter Water for further information.

6.2 Erosion and Sediment Control

All development that involves construction or earthworks of any kind has the potential to create water-borne sediment (suspended solids) and other pollutants as exposed soils (and rock) are susceptible to erosion. Erosion of soils and rock leads to contamination of runoff with elevated suspended solids, dissolved solids, nutrients (particularly nitrogen and phosphorus) and any pre-existing soil contaminants (such as chemicals or metals at industrial sites, naturally occurring acid sulphate soils, etc.). Unless it is appropriately managed (i.e. captured) on-site, the suspended sediment ultimately reaches waterways, where it increases turbidity, reduces water quality and ultimately smothers aquatic habitat as it settles out of suspension. Settled sediment can be resuspended and be further transported into streams, rivers, lakes and dams.

Erosion and sediment control is an ongoing issue for developments where large areas of soil and/or rock are permanently or frequently exposed, including (but not limited to) quarries, mines, landscape suppliers, unsealed roads and annual rotation crops.

Hunter Water expects DAs to be accompanied by supporting documentation that demonstrates how erosion and sediment control measures will be successfully implemented and managed to protect the drinking water catchments. Council's Development Control Plans and the selected references at Appendix A provide guidance in the first instance. Consult with Council or Hunter Water for further information.

6.3 Water Sensitive Urban Design (Stormwater)

Ongoing stormwater runoff post-construction can negatively impact water quality and increase flood volume and velocity. This includes runoff from impervious surfaces (urban areas and commercial/industrial developments) as well as pervious surfaces such as agriculture, mine sites, landfills, quarries, sports ovals and so on.

Water Sensitive Urban Design (WSUD) principles should be incorporated into the design, operation and maintenance of all new residential, commercial and industrial developments in the drinking water catchments. Harvesting roof rainwater for appropriate reuse is strongly encouraged as an important source control, in order to reduce stormwater flows as well as to reduce potable water demand. In areas serviced by reticulated water supply, harvested rainwater can be used for toilet flushing and cold water laundry supply without any treatment.

Similarly, stormwater conveyance systems should also follow WSUD principles by slowing and retaining stormwater to allow maximum infiltration (such as grassed swales, pervious pavements and so on); and there should be appropriate end-of-system controls (such as stormwater detention basins and/or wetlands).

Council's Development Control Plans and the selected references at Appendix A provide guidance in the first instance. Consult with Council or Hunter Water for further information.

6.4 Wastewater Management

Wastewater can include domestic (human) wastewater as well as trade wastewater from agricultural, commercial and industrial developments (including animal-derived wastes from agricultural and commercial operations). Where possible, Hunter Water encourages all new developments to connect to a reticulated sewerage system. Where sewer is not available, an onsite sewage management system must be installed in accordance with the Council's relevant plans and policies, including the Development Assessment Framework (DAF). Development Control Plan and Onsite Sewage Management Policy. On-site sewage management systems are regulated and managed by the local council.

The key threats from on-site sewage management systems are water-borne pathogens such as *Cryptosporidium* and *Giardia*. In addition, the high phosphorus and nitrogen content of effluent can pollute waterways and water supplies, and can cause problematic algal blooms. Furthermore, the effectiveness of on-site systems generally decreases with time, increasing the risk to the drinking water catchments.

The disposal of trade wastewater directly to Hunter Water's sewer system will require a trade waste agreement with Hunter Water. Contact Hunter Water's Trade Waste Team by phoning 1300 657 657.

The majority of commercial and industrial developments in the drinking water catchments that are remote from reticulated sewer services will require trade wastewater to be tankered to a licenced wastewater treatment facility. Discuss your development with Council's planning staff and Hunter Water's Developer Services Team to find out whether it is remote from sewer services and what options are available for wastewater management (contact numbers are provided at the end of these Guidelines).

Applications to improve or upgrade existing on-site sewage management systems on existing developed and inhabited lots are supported in-principle by Hunter Water, and are particularly important for small and/or heavily developed properties.

6.5 Management of Potentially Contaminating or Hazardous Materials or Goods

Hazardous or potentially contaminating substances can include physical, chemical or biological agents and are produced or handled by a very broad range of industries. They can pose human and environmental health risks, are often difficult and costly to remove from drinking water supplies and can persist in surface waters, soils and groundwater for a long time. Approvals for developments involving these substances are often subject to additional planning controls from relevant NSW government agencies (consult Council in the first instance). Hazardous and toxic materials must be dealt with in accordance with the relevant legislation and where relevant, an Environment Protection Licence issued by the EPA. Robust management systems and contingency/emergency plans will be required for such developments in any drinking water catchment.

Examples of developments involving potentially contaminating or hazardous materials include, but are not limited to:

- Service stations and fuel storage facilities
- Chemical production, processing or storage facilities (including fertilisers, explosives, fire-fighting chemicals and other chemicals)
- Intensive agriculture (particularly chemical use and storage)
- Wastewater treatment plants and water recycling plants
- Solid waste landfills and composting facilities
- Extractive industries including mines, gas wells and quarries
- Military bases or outposts (particularly chemical use and storage)
- Forestry operations (particularly chemical use and storage)
- Any facility that handles bio-hazardous wastes, including (but not limited to) hospitals, doctors' surgeries and general practices, veterinary clinics, medical research facilities, intensive animal facilities, and so on.

Hunter Water will assess referred developments that involve hazardous substances on a case-by-case basis in consultation with the appropriate regulatory authorities.

In addition, the transportation of dangerous or problematic substances by road within the drinking water catchments is an ongoing risk to water quality, which is managed by Hunter Water in partnership with NSW Roads and Maritime Services, the Environment Protection Authority, Fire and Rescue (Hazmat) and transportation companies and contractors.

For further information about development in the drinking water catchments please contact:

Dungog Shire Council:

4995 7777

Port Stephens Council:

4980 0255

Hunter Water:

1300 657 657

Hunter Water Emergency Assistance After Hours:

1300 657 000

APPENDIX A – GUIDELINES AND STANDARDS FOR DEVELOPMENT & LAND USE

The list of documents will change as management practices and technology change, and more documents are updated or replaced. Consult with Planning staff at your Council.

Erosion and Sediment Control, Stormwater & Water Sensitive Urban Design (WSUD)

Managing Urban Stormwater: Soils and Construction Volume. 1, 4th edition (*the Blue Book Vol.1*) (NSW Landcom, 2004)

Managing Urban Stormwater: Harvesting and Reuse (NSW Department of Environment and Conservation, 2006)

Water Sensitive Urban Design Engineering Procedures: Stormwater (Melbourne Water, 2005)

Water Sensitive Design Guide for Rural Residential Subdivisions (Sydney Catchment Authority, 2011)

Australian Runoff Quality: A Guide to Water Sensitive Urban Design (Engineers Australia, 2006)

Maintaining Vegetated Stormwater Assets (Water by Design, 2012)

Construction and Establishment Guidelines: Swales, Bioretention Systems and Wetlands (Water by Design, 2010)

Adoption Guidelines for Stormwater Biofiltration Systems (Facility for Advancing Water Biofiltration, Monash University, 2009)

Managing Urban Stormwater: Soils and Construction Volume 2A: Installation of Services (NSW Department of Environment, Climate Change and Water, 2008)

Managing Urban Stormwater: Soils and Construction Volume 2C: Unsealed Roads (NSW Department of Environment, Climate Change and Water, 2008)

Managing Urban Stormwater: Soils and Construction Volume 2D: Main Road Construction (NSW Department of Environment, Climate Change and Water, 2008)

Managing Urban Stormwater: Soils and Construction Volume 2E: Mines and Quarries (NSW Department of Environment, Climate Change and Water, 2008)

Permeable Interlocking Concrete Pavements – Design and Construction Guide (Concrete Masonry Association of Australia, 2010)

Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 2) - Stormwater Harvesting and Reuse (Natural Resource Management Ministerial Council et al, 2009)

Environmental Management Plans, Controlled Activities & Contaminated Sites

Guideline for the Preparation of Environmental Management Plans (NSW Department of Infrastructure, Planning and Natural Resources, 2004)

Suite of Guidelines for Controlled Activities in waterfront land (NSW Office of Water, 2012)

Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (Office of Environment and Heritage, 2011)

Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination (NSW Department of Environment and Conservation, 2007)

Onsite Sewage Management

AS/NZS 1547:2012 On-site Domestic Wastewater Management (Standards Australia, 2012)

Designing and Installing On-Site Wastewater Systems (Sydney Catchment Authority, 2012)

Environment & Health Protection Guidelines: On-site Sewage Management for Single Households (*the Silver Book*) (NSW Department of Local Government, 1998)

Environmental Guidelines: Use of Effluent by Irrigation (NSW Department of Environment and Conservation, 2004)

Solid Waste Landfills and Composting Facilities

Environmental Guidelines for Solid Waste Landfills (NSW Environment Protection Authority, 1996)

Environmental Guidelines for Composting and Related Organics Processing Facility (NSW Environment Protection Authority, 2004)

Agriculture, Horticulture and Livestock

Herbicides: Guidelines for use in and around water (Cooperative Research Centre for Australian Weed Management, 2008)

Spray sense information for users of agricultural chemicals (NSW Department of Primary Industries, 2003)

Nursery Industry Water Management Best Practice Guidelines (Nursery and Garden Industry Australia, 2010)

Managing wastewater from Intensive Agriculture: A wetland system (NSW Agriculture, Agnote 381, 2002)

Guidelines for Environmental Assurance in Australian Horticulture (Horticulture Australia Limited, 2006)

Environmental Management Guidelines for the Dairy Industry (NSW Department of Primary Industries, 2008)

Effluent and Manure Management Database for the Australian Dairy Industry (Dairy Australia, 2008)

Stock and Waterways: A Manager's Guide (Australian Government - Land and Water Australia, 2006)

Horse Property Developments in the Sydney Drinking Water catchment (Sydney Catchment Authority, 2013)

Best Practice Management for Meat Chicken Production in NSW (NSW Department of Primary Industries, 2012)

Best Practice Guidelines for Using Poultry Litter on Pastures (NSW Department of Primary Industries, 2007)

National Environmental Guidelines for Piggeries (Australian Pork Ltd, 2010)

Winery Wastewater Management & Recycling: Operational Guidelines (Australian Government Grape and Wine Research and Development Corporation, 2011)

Forestry

Private Native Forestry Code of Practice - Field Guide for Southern NSW (NSW Department of Environment and Climate Change, 2010)

Private Native Forestry Code of Practice (interim) (NSW Department of Environment and Climate Change, 2008)