

11.5 Policy (Review) - Backflow Prevention.DOC

POLICY NAME: DRAFT REVIEW
BACKFLOW PREVENTION

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OBJECTIVE

The purpose of this policy is to outline council's commitment to appropriate levels of backflow prevention, cross-connection prevention and protection of our water supply. It specifies Council's position where the **Plumbing Code of Australia**, Plumbing and Drainage and AS/NZS 3500 provide scope for the local authority's requirements. It also defines Council and stakeholder responsibilities for backflow prevention.

This Policy:

- Provides clear guidelines to assist Council staff in making decisions relating to protecting the drinking water & **recycled water** supply via backflow prevention.
- Provides information to members of the public, plumbers and other stakeholders about the selection and installation of backflow prevention devices and the Council's role in backflow prevention.
- Ensures that the legislative requirements and methods for the prevention of contamination of the drinking water & recycled water within the water services and the water mains are known and implemented.

BACKGROUND

Drinking Water Supply Services

Ballina Shire Council as a *Local Water Utility* (LWU) operates three separate drinking water supply schemes. Treated water from Marom Creek is provided to Wardell, Meerschaum Vale, Cabbage Tree Island and some rural customers. For these systems Council is responsible for the complete distribution and reticulation of the drinking water supply up to and including individual property meters. As a LWU Council is required to ensure that it provides a safe and good quality drinking water supply. Backflow prevention is one important step in achieving this outcome.

Rous Water supplies bulk drinking water for the Ballina/Lennox Head and Alstonville/Wollongbar systems. For these systems, Council is responsible for the distribution and reticulation systems from the bulk drinking water supplier.

Recycled Water Supply Services

Ballina Shire Council also supplies reticulated recycled water to a number of residential, commercial and open space areas in the shire. The areas supplied with both drinking and recycled reticulated water are known as dual reticulation water supply.

Some residential areas with dual reticulation are:

- Coastal Grove Estate
- Some areas of Greenfield Rd
- Aspects Estate
- Elevations Estate
- North Angels Beach estate

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- Aspens Estate
- Ferngrove Estate
- Cumbalum
- Ballina Heights Estate

Some Commercial areas and parks with dual reticulation are:

- Fripp Oval
- Saunders Oval
- Kingsford Smith Oval
- Chickiba Sporting fields
- Skennars Head Sporting fields
- Ballina Racecourse

Recycled water is derived from wastewater from residential area. This wastewater undergoes a rigorous treatment process using state-of-the-art treatment. It is treated to a safe level which allows it to be used to flush toilets, wash clothes, water the garden, wash cars and pathways and use in ornamental ponds. For more information on the treatment processes go to; ballina.nsw.gov.au – *water and waste water*.

Like the drinking water supply the recycled water supply also requires suitable protection to prevent backflow of harmful substances into the supply and cross connections with the drinking water supply.

Backflow is the flow of liquids in a direction contrary to the normal or intended direction of flow or the unintended flow of water from a potentially polluted source into a drinking or a recycled water supply.

A cross-connection is any connection or arrangement, physical or otherwise, between any water supply system connected to any water authority's supply and any storage tank, which permits backflow of water or other contaminated/polluted liquids to enter the potable water supply. All cross connections are deemed to be non compliant.

Council conducts plumbing checks of all new houses and developments with dual reticulation to ensure the safety of both water supply systems. These checks will then be ongoing and undertaken every five (5) years.

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DEFINITIONS

Authorised Type Authorised and Approved by Water Industry Codes, Standards and Bodies as fit for connection to a reticulated water supply.

Back Siphonage A condition where the water or other contaminated/polluted liquid enters the water supply by siphonage caused by a negative pressure (vacuum or partial vacuum) in the reticulation system. Back siphonage can be created when there is a stoppage of the water supply due to fire-fighting, repairs or breaks.

Back Pressure A condition where the pressure downstream of the cross connection becomes greater than the pressure upstream of the cross connection, thus allowing water or other contaminated/polluted liquid to reverse its normal flow and enters the water supply.

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LWU Local Water Utility (for the purposes of this policy; Ballina Shire Council)

GDD Greywater Diversion Device; a device/plumbing fitting approved and installed in sewerred areas used to divert greywater to an approved subsurface or subsoil disposal area within the property.

Plumber Is a *NSW Department of Fair Trading* licensed plumber with certification to test and install backflow prevention devices.

SCOPE OF POLICY

This policy applies to:

- Property owners
- Water customers
- Council employees
- Committees of Council
- Consultants/Contractors
- NSW Licensed Plumbers

RELATED DOCUMENTATION

Related documents, policies and legislation:

- Local Government Act 1993 (NSW)
- Local Government (General) Regulation 2005
- Environment Planning and Assessment Act 1979 (NSW)
- Public Health Act 2010 (NSW)
- Public Health Regulation 2012
- Protection of the Environment Operations Act 1997 (NSW)
- Protection of the Environment Operations Regulation (General 2009) (Waste 2005) (Administration 2012) (NSW)
- National Wastewater Source Management Guideline 2008 - Water Services Association of Australia (WSAA)

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- Integrated Water Cycle Management Guidelines for NSW Local Water Utilities 2004 - NSW Department of Energy, Utilities and Sustainability (DEUS)
- Plumbing Code of Australia (PCA)
- Australian & New Zealand Standards AS/NZS 3500
- Liquid Trade Waste Regulation Guidelines 2009 - NSW Department of Water and Energy
- NSW Government's Best-Practice Management of Water Supply of Sewerage Guidelines, 2007
- Dual Water Supply Plumbing Policy 2013 (BSC) D10 281113/23
- Enforcement Policy 2103 (BSC) E02 191213/13
- Water Meter Policy 2012 (BSC) W02 230212/34
- Drinking Water Policy 2011 (BSC) D08 220911/27
- Drinking Water Management System (BSC)
- Recycled Water Management System (BSC)

POLICY

As a supplier of water to the public, Council undertakes to provide safe drinking water to customers' properties that is free from contamination or pollution. This will be achieved by implementing backflow prevention devices within the service area as follows:

1. General

- 1.1** All properties within Ballina Shire connected to the drinking water and or the recycled water reticulation systems require a backflow prevention device. The device required will be identified by the hazard rating of the processes conducted onsite defined by AS/NZS 3500:1 section 4, table 4.1 and table F1, F2 and F3 or detailed below.
- 1.2** Boundary containment will have equal too or higher rated protection than any individual or zone requirement. A containment backflow prevention device is required regardless of zone or individual protection. As Council cannot guarantee the integrity of zone or individual protection on a customer's site, we cannot guarantee the protection of the drinking water supply from backflow unless; the site is contained at the boundary, and if applicable the backflow prevention device is regularly serviced and tested in accordance with AS/NZS 3500:1 (or any subsequent amendment to this standard by the appropriate authority) and the manufactures requirements. The device to be installed on the property is determined by the hazard rating of the processes on site. If the hazard rating varies due to multiple business processes, the highest hazard rating should be applied.
- 1.3** Council may, at any point in time, require any residential or non residential premises connected to the drinking water supply and or the recycled water supply to be fitted with a backflow prevention device(s) for containment at the boundary.
- 1.4** Where, in the opinion of Council, a potential or physical cross-connection is found in the water service at or within any property the property owner shall, upon written advice by Council, ensure that such a cross connection is immediately disconnected or altered to comply with Council's requirements or otherwise be removed. Failure to comply within the period nominated by the Council, may at the Council's discretion, result in the immediate restriction or disconnection of the property from Council's water supply.
- 1.5** All properties must comply with the requirements of the *Plumbing Code of Australia, and the Australian and New Zealand Standards AS/NZS 3500* or this policy which ever requires the highest protection level.
- 1.6** Customers are to meet the full cost of complying with this policy.

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2. Domestic/Residential Services

- 2.1** All domestic meters will have a dual check device as a minimum requirement as supplied by Council. These are contained within the water meters provided by Council for 20mm and 25mm meters, larger meter will require separate devices **to be installed at the meter set on the customer's side of the meter.**
- 2.2** Council is responsible for the installation of containment protection for new services which is priced into the application fee/estimate if required; see Council's *Water Meter Policy 2012* for details. On a drinking water service and or a recycled water service, the device shall be installed on the customer's side of the water meter with no other connections between the water meter and the device.
- 2.3** For residential Dual reticulation services the dual check device supplied within the Council provided meter is required as a minimum level of containment protection. No interconnection with the drinking water supply is permitted - **for further information refer to Councils *Dual Water Supply Plumbing Policy 2013.***
- 2.4** Council may at any point in time require any residential or non-residential premises connected to any water supply to be fitted with a higher level of backflow prevention device(s) for containment at the property boundary. The containment backflow prevention device(s) and individual or zone backflow prevention devices shall be suitable for the degree of cross connection hazard rating deemed applicable by Council. Where required by Council backflow prevention devices shall be:
- 2.4.1** registered with Council where the backflow prevention device is a break tank, registered air gap, reduced pressure zone device, pressure vacuum breaker or testable double check valve assembly;
- 2.4.2** of an authorised type;
- 2.4.3** installed according to the provisions under the ***Plumbing Code of Australia, and the Australian and New Zealand Standards AS/NZS 3500.***
- 2.4.4** **maintained in a satisfactory operating condition which may include annual testing of the device at the property owners expense;**
- 2.4.5** as required by Council as part of the registration process, subject to an agreement between the Council and the property owner regarding their installation and maintenance.
- 2.5** All backflow prevention devices and associated costs are the responsibility of the owner. **They must be installed by a NSW licensed plumber with a minimum clearance of 150mm under the meter for residential premises, and a minimum of 300mm clearance under the meter for commercial and industrial premises. These minimum clearances are required to facilitate testing and maintenance of the meter set and any device fitted.**
- 2.6** Meters and backflow prevention devices shall not be installed below ground. Valve boxes, pits, and any other type of enclosure should not be used to install new meters or backflow prevention devices below ground.

3. Fire Services

- 3.1** On a separate hydrant and sprinkler fire service on a non-residential property, the device shall be installed close to where the water service crosses the property boundary, prior to any booster assembly.

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- 3.2 Separate hydrant and sprinkler fire services require the installation of a double check detector assembly.
- 3.3 In accordance with Council's *Water Meter Policy* 2012 a hydraulic design is required for any; fire service assembly, unit demand of 4 and greater, and 32mm services or greater. All designs are to be submitted by a competent person in accordance with the **Plumbing Code of Australia** and the Australian and New Zealand Standards AS/NZS 3500, along with Council's design/compliance pressure certificate. Backflow prevention devices reduce pressure and must be taken into account during the design process.

4. **Maintenance and Testing**

- 4.1 Customers are responsible for arranging for the installation, annual testing and maintenance of all backflow prevention devices in accordance with AS/NZS 3500:1: 2003.
- 4.2 Testable backflow prevention devices shall be commissioned and tested after installation and prior to service by the plumber. They shall be maintained in working order and tested for operational function at intervals not exceeding 12 months. Copies of Certificates of Annual testing must be submitted to Councils Water Quality & Trade Waste Officer at Council.
- 4.3 The maintenance and testing of backflow prevention devices shall be carried out by an authorised **NSW Licensed plumber**, who is accredited to carry out testing procedures AS/NZS 3500:1: 2003.
- 4.4 Hose taps within 18m of a zone protected area within the same premises shall have a backflow protection device of the same hazard rating as the zone protection adjacent to which it is installed AS/NZS 3500:1 : 2003
- 4.5 All hose taps are to have a vacuum breaker device AS/NZS 3500:1: 2003.
- 4.6 The accredited **Plumber** shall ensure that backflow testing gauges/test units are certified fro calibration every year by a qualified instrument maker, and details are affixed to the unit.
- 4.7 The property owner shall arrange for all devices to be tested and a "Backflow Prevention Inspection/Testing Maintenance Report" be provided with the prescribed fee to Council at least on an annual basis. Council may require more frequent testing.
- 4.8 Council may register, inspect, test, and carry out maintenance on backflow prevention devices for a fee. Council may also impose a late fee on the property owner where the testing of backflow prevention devices, submission of the required "Backflow Prevention Inspection/Testing Maintenance Report" and/or payment of the prescribed fee is not completed by the date specified.
- 4.9 The installation of a backflow prevention device(s) may significantly reduce the pressure and flow rate of the water supply within the premises. The potential for this to occur needs to be taken into consideration by the licensee when fitting backflow prevention devices and the property owner/occupier advised in writing accordingly by the licensee. It is the property owner's/occupier's responsibility to undertake at their cost, any works on the premises necessary to provide an adequate water flow rate.

One of the greatest risks of contamination of the drinking water supply is from cross connections with rainwater tanks. Whilst the majority of people's rainwater tanks are well cared for, there is a risk of cross connections between rainwater pipework on a property and pipework that may be connected to Councils water supply.

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Zone Backflow protection is required to be provided by installation of an authorised backflow prevention device, suitable for the degree of hazard and sized to suit the water service. The zone backflow prevention device shall be fitted immediately upstream on the drinking water service at the point of connection to all rainwater tanks.

Containment protection is required to be provided by installation of an authorised backflow prevention device, suitable for the degree of hazard and sized to suit the water service. The containment backflow prevention device shall be fitted with an isolation valve both sides of the device, and installed immediately upstream of the water meter on the Council water meter set.

Where rainwater tank installations have been designed and installed so as to allow a top up connection with an approved water supply the following is required:

5. Rainwater Tanks

5.0.1 Council reserves the right to require greater backflow prevention or to disallow connection of a water supply to the rainwater tank if rainwater tanks are not installed or operated in strict compliance with Council requirements.

5.0.2 Any top up mechanism shall incorporate a device to limit the flow rate to 4.0 litres per minute.

5.0.3 The connection to rainwater tanks shall be by a visible air gap external to the tank, or an approved auto change over device.

5.0.4 Manual change over devices are strictly not permitted.

5.0.5 Any topping up from a non-reticulated drinking water supply (if permitted by Council) shall be clearly marked/labelled and visible.

5.0.6 All permitted outlet points supplied by the rainwater tank shall be clearly marked/labelled as "Rainwater"

5.0.7 All water supply systems for rainwater tanks shall be installed as per the Plumbing Code of Australia and the *Australian and New Zealand Standards AS/NZS 3500*

5.0.8 Council does not permit the interconnection of rainwater tanks with reticulated drinking water, non drinking water, private water supply or recycled water supply. It should be noted that the *NSW Department of Health* does not recommend consumption from rainwater tanks where a potable water supply is provided.

In addition to the above requirements the following shall apply:

5.1 Above ground rainwater tanks

5.1.1 For a tank to be above ground it must be clear of any embankment, fill or the like.

5.1.2 Above ground rainwater tanks are to have as a minimum a Dual Check Valve (DCV) as zone and containment protection as required under the *Plumbing Code of Australia and the Australian and New Zealand Standards AS/NZS 3500*

Council may permit a non-testable backflow prevention device to be used as zone protection for above ground rainwater tanks, only when installed with a water meter

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that has an integral dual check valve for containment provided the drinking water service is DN 20 - DN 25 only in size.

5.2 Below ground rainwater tanks

5.2.1 Where any sides of the rainwater tank are buried, or have soil or other such material in contact with the walls of the tank, the tank shall be treated as a fully buried tank for backflow prevention requirements.

5.2.2 Fully or partially buried rainwater tanks are to have as a minimum a Testable Double Check Valve (TDCV) or a Vented Check Valve (VCV) as zone and containment protection, as required under the *Plumbing Code of Australia and the Australian and New Zealand Standards AS/NZS 3500*

5.2.3 Council may permit a non-testable (Vented Dual Check Valve (VDCV)) backflow prevention device to be used for containment protection and a non-testable device for zone protection for any fully or partially buried rainwater tank(s) installation provided the drinking water service is DN 20 - DN 25 only in size.

5.3 Rainwater tanks with a private water supply top up

5.3.1 Containment protection – where a rainwater tank is permitted to be connected (either directly or via an air gap), with the on-site private drinking water supply, the mains supply shall be protected by installation of an authorised backflow prevention device, suitable for the degree of hazard and sized to suit the water service, fitted immediately downstream of the water meter or integral with the water meter.

5.3.2 Where a hot water service is fed by a rainwater supply, or any alternative water supply (e.g. bore or dam water), and a temperature control device is installed and connected to the mains drinking water supply then, a backflow prevention device shall be fitted upstream on the drinking water service at the point of connection.

5.4 Rainwater tanks installed in areas with a reticulated recycled water supply (e.g. Cumbalum Heights etc.) are not permitted to have any type of top up device for the rainwater tank. This must be strictly complied with and all top up devices from any water supply be it drinking water or reclaimed shall not be permitted.

5.5 Interconnection from a rainwater tank to any other water supply or plumbing fixture is not permitted in areas with a reticulated reclaimed water supply (e.g. Cumbalum Heights etc.).

6. **On-Site Sewage Management Systems (OSSMS) & Grey Water Diversion Devices (GDD's)**

6.1 All properties that have an OSSMS (i.e. Septic systems, Grey Water Treatment System (GTS), Aerated systems etc) and which are also connected to the Council's reticulated water supply shall have a testable backflow prevention device installed at the boundary on the customers' side of the meter at the property owners cost. (Plumbing Code of Australia)

6.2 Where a greywater diversion device fitting (GDD) is installed on a single residential property, the licensee or property owner shall notify Council to ensure that a meter with an integral dual check valve is installed on the water service for the property.

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7. Standpipes

7.1 There are Four (4) *Rous Water Authority* Overhead Fill Stations in the Ballina Shire Council area which are located;

- at Kay's Lane Russellton Industrial Estate Alstonville,
- in front of the Ballina Shire Council depot located at Southern Cross Drive,
- in front of the Wardell Recreational Grounds Bath St Wardell.
- **Ross Lane Lennox Head**

Council recommends that persons/companies wishing to access these fill stations contact the *Rous Water Authority*.

7.2 An application under *Section 68 of The Local Government Act 1993* may be made to Council for permission to draw water from Council mains via a Private non-fixed metered standpipe. An application form (*Draw Water From A Council Hydrant*) is available from Councils website;

http://www.ballina.nsw.gov.au/cp_themes/default/page.asp?p=DOC-ASU-44-38-10

7.3 Each application will require a fee to be submitted along with detailed information of the applicant and their proposed use of the water. The application will be determined and assessed on a merit based approval process.

7.4 If approved to draw water from Councils mains, access shall only be by a Council fire hydrant in the BSC LG area only. The Approval will be issued for one financial year only. Any application made during the year will be for the remaining balance of that financial year, with the applicable fee unchanged. Standpipes must be provided by the applicant at their own cost, and shall meet the following minimum requirements:

7.4.1 In good working order with a water meter fitted to the standpipe; and

7.4.2 Be clearly labelled with the applicant's name, contact details, and individual identification numbered tag. This numbered tag will be supplied to the applicant by Council and must be fitted to the standpipe in such away so as not to be prone to be damaged or lost. Tags will be exclusive to each standpipe and financial year and must always be fitted to the standpipe. Old tags must be removed at the end of the financial year and a new tag fitted on renewal of the approval. Tags are not transferable between standpipes; and

7.4.3 Be fitted with a Council approved backflow prevention device suitable for the degree of risk; and

7.4.4 *Camlock* fittings are to be used to connect the standpipe to the outlet hose; and

7.4.5 The outlet hose must be in good condition with no leaks; and

7.4.6 If the standpipe is to be used for potable water supply all fittings including the outlet hose must be regularly cleaned and sanitised by the applicant; and

7.4.7 If the standpipe is to be used for potable water supply the outlet hose must be constructed of food grade quality material; and

7.4.8 Hoses used to draw water from Councils mains via the standpipe must not be used for any other purpose; and

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7.5 Applicants will be required to submit standpipe reads to Council:

- When applying for an approval to draw water, and/or
- When applying to renew an approval to draw water, and/or
- On request by a Council officer, and/or
- At the end of each financial year.

7.6 Each approval will be linked to the registration number of the applicant's water tanker/truck, details of which must be supplied on the application, and

7.7 The nominated vehicle must have the company's/business name clearly sign written on each side of the vehicle and at both the rear and front of the vehicle. Signage must be clearly visible and easily read with contact details listed, and

7.8 The approval will not be transferable to any other business or vehicle. Any variations will require another application and fee to be submitted to Council, and

7.9 All employees must be fully trained by the applicant in the correct and safe operation for accessing water from a hydrant with a standpipe. Costs associated with any damage to hydrants or any council infrastructure by the approved applicant or their staff/agents will be borne by the applicant and recovered by from the applicant by Council. Staff/contractors must be made aware by the applicant of all Council conditions and requirements within the approval, and

7.10 A copy of the approval document must be kept within the vehicle and produced upon request by a Council officer, and

7.11 Excess water usage not covered by the annual fee may be charged to the applicant upon receipt of the annual meter standpipe meter reads, This will be applied once a threshold greater than 20% of the application fee amount is exceeded, and

7.12 A list of approved persons/companies will be issued to Council's water and Sewer staff. Council staff may undertake random inspections, and check compliance with the approval at any given time. The approved standpipes relevant to the vehicle/approval must be presented for inspection upon request, and

7.13 Any breach of approval conditions or unsatisfactory performance as measured against this policy; Council may:

- Cancel the approval, and/or
- Issue an Order under Section 124 of the Local Government Act 1993, and/or
- Take action under the prevention of the Environment Operations Act 1997, and/or
- Issue an on the spot Penalty Infringement Notice (PIN) or Prosecution under *Section 637 of The Local Government Act 1993*, as outlined in Council's *Enforcement Policy 2009*.

8. Auditing of backflow prevention devices

8.1 Pro-active and reactive audits of commercial and industrial activities will be carried out by qualified Council staff from time to time.

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8.2 Where in the opinion of Council a potential or physical cross-connection is found in the water service at any property, or if the water service is installed in a manner that will enable backflow to occur, the property owner shall, upon written advice of the Council, ensure that such cross-connection is immediately disconnected or altered to comply with Councils requirements or otherwise removed. Failure to comply within the period nominated by Council may at the Council's discretion, result in the immediate restriction or disconnection of the property from the Council's water supply.

8.3 Audits will focus on the following;

8.3.1 The adequacy of the backflow prevention device and whether it satisfactorily meets all requirements in this policy.

8.3.2 Servicing of the backflow prevention device,

8.3.3 Whether or not the device has been tested and is currently in test.

8.3.4 Ensuring the customer takes the necessary steps to comply with all backflow prevention requirements.

COUNCIL CONTACT DETAILS

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REVIEW

This policy is to be reviewed every four years.