18. WATER EFFICIENCY

18.1 PRELIMINARY

Date of Commencement

Council adopted this plan on the 17th February 2004.

Name of this Plan

This Plan is Part C, Section 18 within the *Shire Wide Development Control Plan No. Water Efficiency.*

Parent Local Environment Plan

The parent Local Environmental Plan is *Dungog Local Environmental Plan 2006* as amended.

Where this Development Control Plan applies

This Development Control Plan applies to the following zones within the Dungog Council local government area:

- Rural 1(a)
- Rural Enterprise 1(e)
- Rural Lifestyle 1(l)
- Residential 2(a)
- Village 2(v)
- Business 3(a)
- Employment 4(a)

Status of the Plan

This plan has been prepared and exhibited in accordance with the provisions of the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulation 2000*.

18.2 INTRODUCTION

18.2.1 WHAT IS A DEVELOPMENT CONTROL PLAN?

A Development Control Plan (DCP) is a commonly used town planning instrument which provides detailed guidelines for the assessment of new developments.

18.2.2 WHY A WATER EFFICIENT DCP?

This Development Control Plan (DCP) has been developed as part of the growing community desire to achieve greater efficiency in water use. It stems from a general concern about the local environment, particularly localised flooding, issues of water use and water quality, and the effects of greenhouse gases generated by energy use (in the provision of potable water).

18.2.3 WHAT IS THE AIM OF THE DCP?

To promote and create buildings which:

- are sustainable;
- are affordable to purchase;
- use less water from the potable (town) water supply;
- cost less to occupy;
- impact less on the local environment; and
- contribute to an overall reduction in greenhouse gas emissions.

18.2.4 WHAT IS MEANT BY WATER EFFICIENCY?

Efficiency is a term generally used to describe how to gain advantages or benefit from performing a task in the best possible way. We need to improve the efficiency with which we collect, obtain, use and dispose of natural resources for energy and water products. Many current methods waste natural resources, create relatively expensive consumption costs, and result in serious global environmental problems. Local councils have been called upon to encourage more efficient practices through encouraging more efficient performance in new developments.

18.2.5 WHERE DOES THIS DCP APPLY?

This DCP applies to the following types of development that may only be carried out with development consent or a complying development certificate:

- commercial buildings;
- industrial buildings

This DCP does not contain provisions relating to subdivision design and layout.

18.2.6 DEVELOPMENT APPLICATIONS

Under Section 79C of the *Environmental Planning and Assessment Act 1979*, the contents of this DCP must be considered by the Council (or other consent authority) when determining development applications.

18.2.7 COMPLYING DEVELOPMENT CERTIFICATES

The contents of this DCP must be considered by either the Council or an accredited certifier when determining applications for complying development certificates.

18.2.8 VARIATIONS TO THE DCP

An application to vary any of the provisions of this plan must be in writing and clearly demonstrate:

- that the application meets the aims and objectives of this plan; and
- compliance with the relevant provision, or criteria contained in this plan, is unreasonable or unnecessary in the circumstances that apply.

18.2.9 DEFINITIONS

Building

A structure including a shop, workshop, industrial and commercial etc.

DCV

Dual check valve is a device that may be used for backflow prevention in accordance with the requirements of Australian Standard 3500 and the NSW Code of Plumbing Practice.

Ecologically Sustainable Development (ESD)

A commonly accepted definition of ESD in Australia is development which "uses, conserves and enhances the community's resources so that ecological processes on which life depends are maintained and the total quality of life, now and in the future, can be increased" (*ref. National Strategy for Ecologically Sustainable Development).*

Habitable Room

Means a room used for normal domestic activities, and:

(a) includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room and sunroom; and
(b) excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.

Hardstand Areas

Hardstand areas include the area of:

- the building footprint; plus
- garages, carports/awnings and outbuildings; and
- non-porous driveways, paths and courts,

but exclude the water surface area of swimming pools.

Mains Top-up

This is an available method to ensure continuity of water to internal plumbed areas of the house that are connected to the rainwater tank. When the rainwater tank is at least 80% empty an automatic system or manual system can be used to partially refill the rainwater tank from Council's potable water supply. This refilling of the rainwater tank is not to exceed 50% of the rainwater tanks capacity and it is recommended to only refill to 35% of the rainwater tanks capacity.

Major Alteration and Addition

Any alteration or addition where the area of the building, the subject of the application, equals or exceeds 50% of the floor area of the existing building when measured to the outside surface of the building walls. This includes areas of the existing building such as kitchens and bathrooms, when these are included in the works within the application.

Minor Alteration and Addition

Any alteration or addition where the area of the proposed building the subject of the application is less than 50% of the floor area of the existing building when measured to the outside surface of the building walls.

On-Site Detention (or OSD)

On-site detention systems in the context of this DCP provide storage for reuse of stormwater runoff from developments.

RPZ

An RPZ or Reduced Pressure Zone device is an approved backflow prevention device in accordance with AS3500 and the NSW Code of Plumbing Practice.

18.3 BACKGROUND

Water efficiency involves both reducing the use of expensive and scarce potable water as well as controlling and using rainwater and wastewater from the site.

There is a great deal that individuals can do to reduce water usage and minimise impacts of their buildings on stormwater runoff, including:

- Minimising water use in the home and garden.
- Retaining stormwater for reuse or on-site disposal.

Water efficiency measures are cost effective especially since water charges require that you pay for each litre used. It is usually more costly to fit water controls after a dwelling is built, so they should be incorporated in each new development or when major alterations or additions are being carried out.

In Dungog approximately 50% of the town water use on residential premises is for external uses, such as garden irrigation, car washing, topping up swimming pools and the like.

Internally, it is estimated that 30% of water is used for laundry uses and toilet flushing. It is envisaged that the introduction of the water efficiency measures in this DCP will substantially reduce potable water demand in the area.

Water consumption can be reduced within buildings through the following measures:

- Installing AAA or better rated fixtures, fittings and appliances, including washing machines and dishwashers.
- Installing dual flush toilets.
- Composting toilets can serve the dual purpose of lowering water use and sewage output.
- More efficient management of hot water systems can be achieved through the insulation of piping.
- Installing a rainwater tank to provide a water source for a range of household uses, including toilet flushing, laundry needs, garden irrigation and other external uses such as car washing.

18.3.1 OBJECTIVES OF WATER EFFICIENCY

- Building design and site management adopts practices are 'water smart': complementary to the natural water cycle and other ecological processes.
- To promote water-efficiency measures that will cumulatively contribute to:
    - More efficient use of potable water;
    - Reduced stormwater runoff volumes and peaks;
    - Reduced local flooding;
    - Reduced demand on downstream drainage infrastructure;
    - Reduced pollutants in streams and groundwater;
    - Improved viability of aquatic and riparian ecosystems;
    - Reduced sewer overflows in wet weather.
    - Operational cost savings on infrastructure management.

18.4 HOW TO COMPLY WITH THE REQUIREMENTS OF THIS DCP

There are four elements of compliance that are required to be met when development involves the construction of a new building or major alterations or additions to a building (as defined) in zones identified as covered by this DCP. These elements are water usage, rainwater tanks, hardstand limits, and on-site detention (OSD). The next section "Design Principles and Performance Criteria" provides detailed information on compliance requirements.

18.4.1 WATER USAGE

- Dual flush toilets must be installed.
- New or replacement bathroom or kitchen taps, showerheads, toilet cisterns are minimum AAA rated.
- AAA rated fixtures to achieve:
    - Shower Heads – 9 litres or less per minute;
    - Basins – 6 litres or less per minute; and
    - Kitchen Sinks – 9 litres or less per minute.

18.4.2 RAINWATER TANKS

Commercial and industrial buildings shall install rainwater tanks that have a minimum capacity of 1,000 litres for every 10m² in ground floor area. It is recommended that the rainwater tanks be internally plumbed.

18.4.3 HARDSTAND

All commercial and industrial properties shall conform to hardstand limits of a maximum of 65% of the lot area and 40% of the front setback area.

18.4.4 ON-SITE DETENTION

All developments are to conform to on-site detention (OSD) requirements where a minimum of 15% of the rainwater tanks are to be airspace capacity to allow for OSD. Commercial and industrial developments shall be designed in accordance with Council requirements, which will be established on a case by case basis, by an appropriately qualified person.

18.5 DESIGN PRINCIPLES AND PERFORMANCE CRITERIA

18.5.1 Water Usage

Design Principles

- The use of water efficient fixtures in both the bathroom and kitchens of a household will result in substantial reductions in water use.

Performance Criteria

- The most efficient water fixtures are:
    - AAA rated or better water efficient shower heads.
    - AAA rated or better flow regulators for bathroom basins and kitchen sinks.
- Fixtures with AAA rating must achieve the following flow rates:
    - Shower heads – 9 litres or less per minute.
    - Basins – 6 litres or less per minute.
    - Kitchen Sinks – 9 litres or less per minute.
- Dual flush toilets should be used, and are required if new or replacement toilets are to be used.
- AAA rated or better washing machines and dishwashers are recommended.
- Piping between hot water sources and taps should be insulated.

18.5.2 RAINWATER TANK

Rainwater Tanks – Design Principles

- Rainwater is a valuable natural resource that should be collected for household use.
- The use of a rainwater collection system is a way of conserving potable water supplies, as it can provide a water source for a range of household tasks, including toilet flushing, laundry and external uses such as garden watering, topping up swimming pools and car washing.
- Using rainwater will reduce water bills and reduce community infrastructure costs.
- Using rainwater can also aid self-sufficiency, providing a back-up supply in case of water restrictions caused by drought, peak supply shortage, or water quality problems.
- Rainwater tanks provide for on-site detention of stormwater, which lowers the storm run-off and so decreases local flooding.
- Rainwater tanks can supply water during emergencies such as fire.

Rainwater tanks – Performance Criteria

Rainwater tanks – General requirements

- The rainwater tank is to be attached to a physical structure that has a roof that will discharge into the tank.

- The rainwater tank shall be of an earth tone colour and blends into the surroundings. The rainwater tank shall be non-reflective.
- Rainwater tanks are to be placed behind the dwelling house unless suitably screened from the road.
- Tank stands shall have a maximum height of 450mm above ground. Area below shall not be enclosed or used for storage.
- Maximum installed height above ground level of 1.8 metres, including any stand if less than 900mm from side boundary, otherwise maximum height is 3 metres.
- All tanks and associated structures, including stands shall be installed in accordance with manufacturer's/designer's specifications.
- Tank stands shall not rest on footing of building or rely upon wall for support.
- Design of the rainwater tank should make provision for:
    - a rainwater storage volume, and
    - an air space for additional stormwater management, which will be 15% of the capacity of the tank.
- An upper overflow equal to the inflow in capacity is to be installed at the top of the tank and a middle outlet of 20 mm diameter set at the point representing 85% of the capacity of the tank. To allow for the emptying of 15% of the tank as detention water.
- The overflow is to be piped to the stormwater reticulation system, being the street or interallotment drainage. Where no stormwater reticulation system exists disposal is to be to a rubble drain prior to disposal in the natural water drainage. The rubble drainage (trench) shall have a cross sectional area of 600mm x 600mm and being one (1) metre long for every 25m^2 of roof area drained thereto. Trenches are to be located three (3) metres clear of any building or lot boundary.
- Overflow connections are to be at sufficient height to ensure backflow does not occur and shall be vermin proofed.
- Any required pump is to be enclosed in a noise attenuating enclosure and shall not create a noise problem, which is typically regarded as being 5 dB above background noise levels. The pump must not be audible at the nearest residential property boundary between the hours of 8.00 pm and 7.00 am Monday to Saturday and 8.00 pm and 8.00 am Sundays and public holidays.

Rainwater tanks (internally plumbed) – Additional requirements

- The tank must be fitted with a 'first flush' diversion to remove surface contamination, and a facility for periodic de-sludging.
- Lilac coloured polypipe is to be used for internal plumbing of rainwater.
- The tank must have sufficient capacity and be connected so as to supplement water for the following services on the site:
    - toilet flushing;
    - laundry;
    - garden irrigation; and
    - external washing (cars, paved areas, etc).
- All plumbing works shall be in conformance with the Committee on Uniformity of Plumbing and Drainage Regulations in NSW (CUPDR) Circular P&D No 18, which is referred to as "Guidelines for Plumbing Associated with Rainwater Tanks in Urban Areas". This circular specifies the requirements of cross connection control and backflow prevention, installation requirements, proximity to other services, marking and labelling, and maintenance.
- Supplemental inflow should not take place until the tank is at least 80% empty. This allows for the tank to buffer stormwater flows to local drainage. Topping up should not exceed 50% of the tank capacity and it is preferable that it be less than 35% (20%). The supplemental inflow is to be automated.
- All rainwater tanks internally plumbed shall be registered with Council. Rainwater tanks (used for external uses only) – do not require registration with Council although

SEPP4 stipulates that rainwater tanks greater than 10,000 L in capacity require a DA. Schematic diagrams of all plumbing is to be included in registration documents.

18.5.3 HARDSTAND

Design Principles

By limiting the hardstand area of a development (that is concrete and roofed surfaces that do not allow water penetration into the ground), stormwater run-off is lowered and water can infiltrate into the soil of the site. This lowers the impact of the development on local drainage infrastructure, and decreases impacts on the environment through the reduction of surface runoff.

Performance Criteria

Hardstand areas (refer to definition):

- shall be limited to a maximum of 65% of the lot area; and
- hardstand areas within the front setback shall not exceed 40% of the setback area.

Porous concrete or plastic modular pavers placed on a sand base are recommended for car parks, car wash area, driveways, paths and courtyards. Such materials will not be included in the calculation of hardstand area for the lot.

On-Site Detention (OSD)

Design Principles

A rainwater tank can be designed to provide water supply and stormwater management benefits to the individual and community. The performance of OSD is dependant on the size of the impervious area contributing to the storage. Sizing of the site storage component should be related to impervious areas rather than allotment areas.

The effectiveness of rainwater tanks as a stormwater management measure increases with housing density due to greater proportions of the site area (roofs) contributing to rainwater tanks.

Additionally, OSD will be used on larger developments, such as villas, townhouses and residential units to provide temporary storage of stormwater on-site for re-use or gradual disposal to the stormwater system.

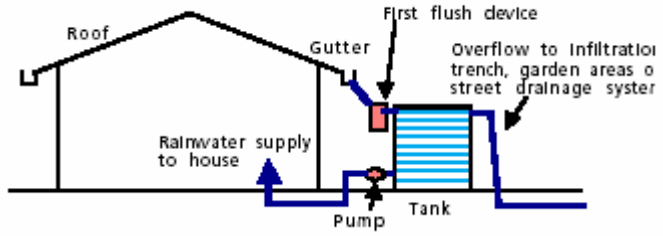
Performance Criteria

- All rainwater tanks installed on properties with single dwellings shall have a minimum 15% of the tank capacity as airspace to provide OSD.
- All other properties shall provide OSD in accordance with Council requirements and shall be designed by an appropriately qualified person.

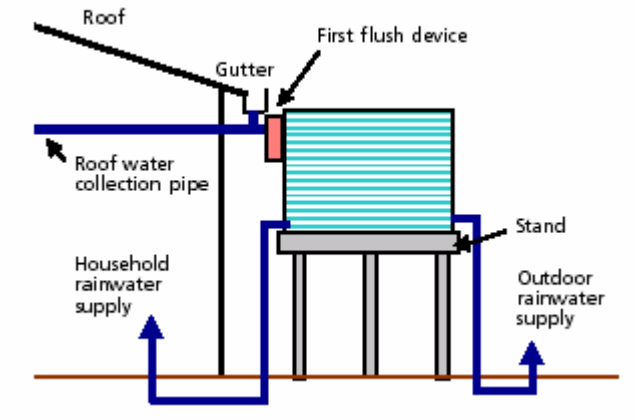
Web Links
http://www.lhccrems.nsw.gov.au/projects/wsud/

Appendix – Diagrams Showing Connection Detail Options

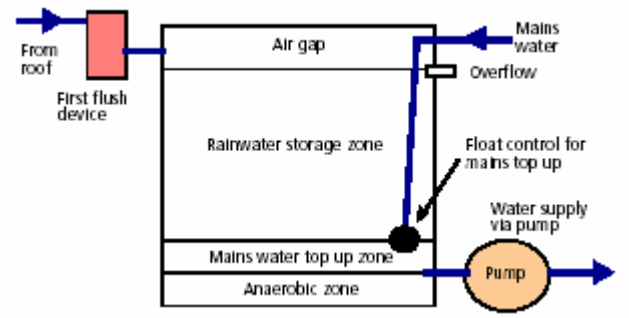
Key elements of a domestic rainwater system:



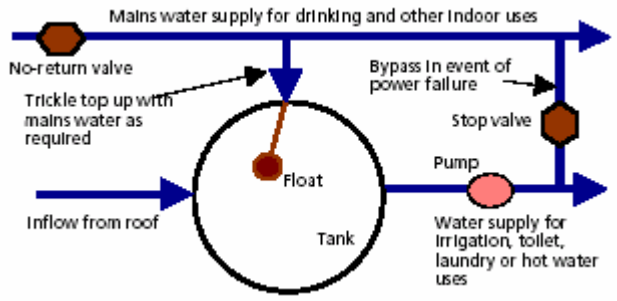
Configuration of a gravity system:



Storage components of a dual supply system:

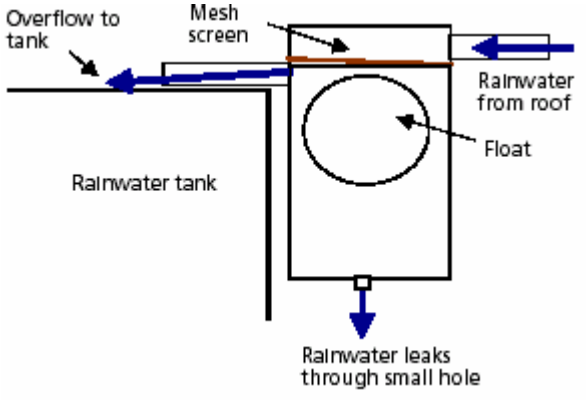


Configuration of a dual supply system:



Note that the non-return valve is to be a testable backflow prevention valve.

Basic design features of a first flush device:



Suggested plumbing configuration for rainwater tanks in urban areas with a reticulated supply – direct connection with potable supply.