G4 Water Management

Contents

1.0 INTRODUCTION

This Part contains planning controls relating to the management of all aspects of the water cycle in an integrated and consistent manner. The planning controls promote the need for long-term sustainable social, ecological and economic outcomes.

This Part applies to all residential, mixed use and commercial development (excluding minor alterations and additions, retro-fits, and the like).

1.1 Objectives of this Part

(a) Ensure that an integrated and consistent approach to water cycle management is achieved;
(b) Preserve and protect the health, amenity and property of residents and the community;
(c) Protect and conserve the environment, specifically the receiving waters of catchments;
(d) Plan, implement and maintain the storm water system in accordance with the principles of Ecologically Sustainable Development (ESD); and
(e) Support best planning management practices.

This Part is supported by the 'Water Management Technical Guidelines' (WM Technical Guidelines).

1.2 What sections apply to my development?

Information that must be submitted with a development application (DA) and a construction certificate are outlined in Part B.

Table 1 provides an overview of the application of this Part and is intended to direct the reader to the relevant sections in both Part and the WM Technical Guidelines. WM Technical Guidelines can be found on Councils website from 'Publications, Policies and Major Reports'.

Table 1. Water Management References and Application

	DCP Ref	Application	Technical Guideline Ref
Stormwater Disposal Methods			
Infiltration	2.1.2	Any development application except exempt development or where the increase in impervious area is less than 10m2 where: identified on the Infiltration Map, or on a merit basis.	3.1, 2.0 & 4.0
Gravity	2.1.3	Any development application except exempt development or where the increase in impervious area is less than 10m2.	3.2, 2.0 & 4.0
Charged	2.1.4	Single dwelling residential development only except exempt development or where the increase in impervious area is less than 10m2.	3.3, 2.0 & 4.0

Pump	2.1.5	Any development application except exempt development or where the increase in impervious area is less than 10m2 where: gravity system or infiltration system cannot be used, and downstream easement cannot be obtained.	3.4, 2.0 & 4.0
Stormwater Systems			
On-site detention (OSD)	2.2	New development Increase in impervious area ≥ 30m2 Additional storey	5.0
OSD offsets	2.2.2	One third the volume of a rainwater tank may be used as an OSD offset. The storage volume of an infiltration system may be used as an OSD offset. New impermeable area may be offset through the replacement of proposed or existing impermeable surfaces with permeable surfaces/paving.	6.0 3.1 8.0
Roofwater harvesting	2.3	Where roofwater harvesting is proposed.	6.0
Stormwater re-use	2.4	Where stormwater re-use is proposed.	7.0
Permeable paving	2.5	Where permeable paving is proposed.	8.0
Stormwater quality	2.6	All development applications.	9.0
Floor level control	3.0	All development applications except exempt development or where the increase in impervious area is less than 10m2.	4.5
Seepage / dewatering	4.0	All development applications.	10.1 & 10.2
Other Systems			
Groundwater extraction & use	4.0	Where groundwater extraction and use is proposed.	10.3
Greywater & blackwater re-use	5.0	Where greywater or blackwater re-use is proposed.	11 & 12

2.0 STORMWATER SYSTEMS

2.1 Stormwater Disposal Methods

Methods of disposal of stormwater from the site must be provided using one or a combination of the following (listed in order of preference):

(a) Infiltration;
(b) Gravity connection to Council's stormwater system;
(c) Charged system; and / or
(d) Pump system.

A stormwater system must be constructed in accordance with AS/NZS 3500:2003 National Plumbing & Drainage and WM Technical Guidelines.

2.1.1 Infiltration

Infiltration systems such as gravel filled trenches and sand filters may be used to retain and infiltrate stormwater on site. These systems are most effective in areas where the soil has a high infiltration rate. If the underlying soil is found to have very low infiltration capacity, the use of infiltration systems is discouraged:

(a) Infiltration may be proposed in areas:
  (i) where infiltration is permissible according to the Infiltration Map (refer to Figure 1).
  (ii) outside those shown as permissible on the Infiltration Map. These will be assessed on their merits.
(b) Infiltration systems are NOT permitted in areas with:
  (i) land slip or geotechnical problems associated with reactive soils;
  (ii) existing seepage problems;
  (iii) where contamination of ground water is possible;
  (iv) where the site is known or suspected of being contaminated;
  (v) exposed bedrock at surface;
  (vi) shallow soil over rock or shale;
  (vii) steep terrain (>10%); or
  (viii) high water table.
(c) The storage volume of an infiltration system may be used to reduce the on-site detention storage volume.
(d) Infiltration systems are to be designed in accordance with Australian Runoff Quality Guidelines (Institution of Engineers) and WM Technical Guidelines.

2.1.2 Gravity Systems

Gravity systems allow for the discharge of stormwater from the site directly to the Council kerb or underground drainage system via gravity:
(a) Gravity systems are encouraged where feasible.
(b) Gravity systems must be designed, installed and maintained in accordance with the WM Technical Guidelines.

2.1.3 Charged Systems

Where all reasonable efforts to establish a gravity drained system have

been unsuccessful, charged (or pressure) lines may be permitted, subject to:

(a) Charged systems may be proposed for single dwelling residential development only.

(b) Charged systems being designed, installed and maintained in accordance with the WM Technical Guidelines.

2.1.4 Pump Systems

A pump system is a system to convey stormwater where gravity drainage to either overland flow paths or the stormwater system cannot be achieved. Pump systems must be designed, installed and maintained in accordance with the WM Technical Guidelines.

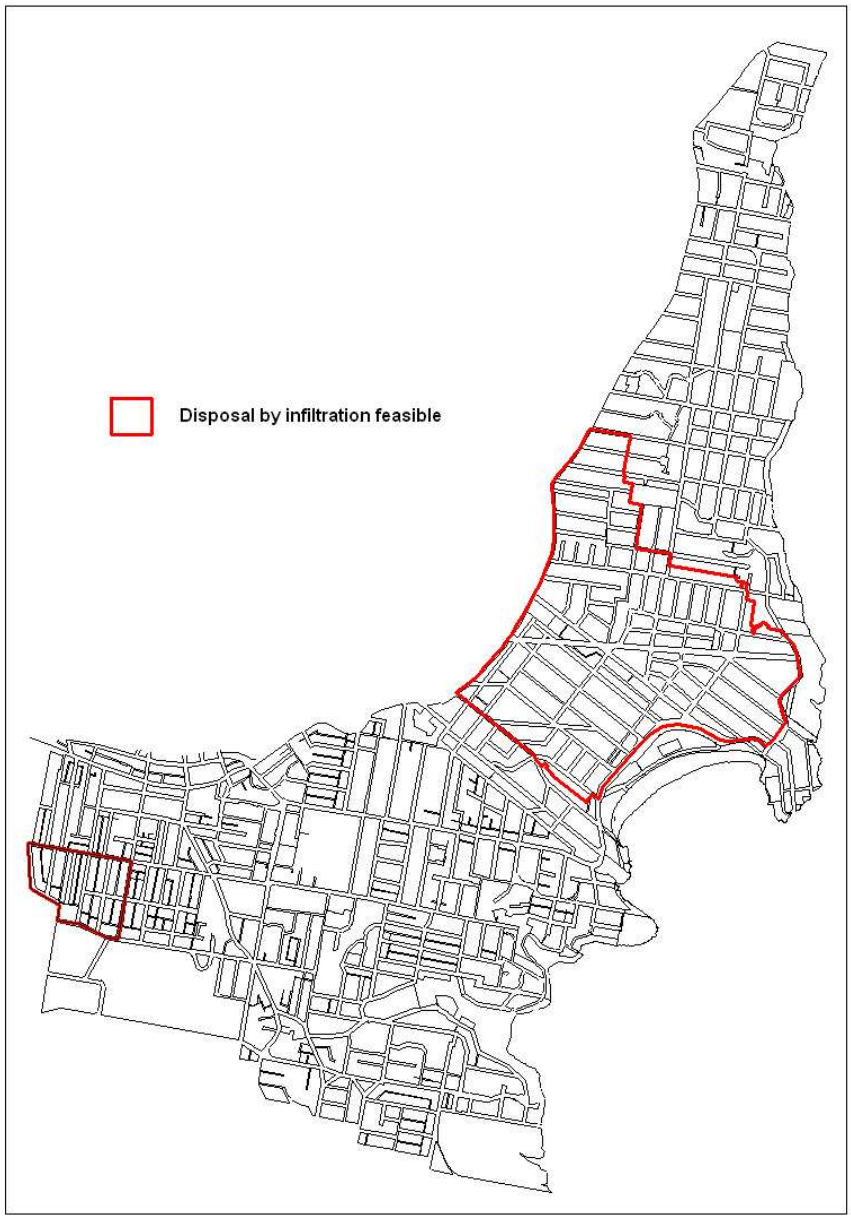

Figure 1: Infiltration Map

2.2 On-site Detention of Stormwater

On Site Detention (OSD) systems ensure that stormwater flow from the site is temporarily detained on site and the discharge is restricted to a rate that can be accommodated by Council's existing stormwater drainage system.

2.2.1 Controls

(a) OSD systems must be designed, installed and maintained in accordance with the WM Technical Guidelines.
(b) Up to one third of the storage volume of a rainwater tank may be used to reduce the OSD storage volume.
(c) The storage volume of an infiltration system may be used to reduce the on-site detention storage volume.
(d) New impermeable area may be offset through the replacement of proposed or existing impermeable surfaces with permeable surfaces/paving. This will enable some developments to reduce or offset their OSD storage volume requirements.
(e) A Positive Covenant and Restriction must be placed on the Property Title to ensure that the OSD system remains in place and adequately maintained. This will be undertaken at the owners' expense. An example Positive Covenant template is included in the WM Technical Guidelines.

2.3 Roofwater Harvesting

Roofwater harvesting systems keep the rainwater on site (retained) to be reused again for such things as irrigation, toilet flushing etc.

2.3.1 Controls

(a) DA's for non-exempt (State Environmental Planning Policy Exempt and Complying) rainwater tanks will be considered on their merits;
(b) rainwater tanks should be designed, installed and maintained in accordance with the supporting WM Technical Guidelines; and
(c) up to one third of the storage volume of a rainwater tank may be used to reduce the on site detention storage volume.

2.4 Stormwater Harvesting & Re-use

Stormwater harvesting and re-use refers to the collection, treatment, storage and use of stormwater run-off from urban areas. The harvesting and re-use of stormwater may complement other approaches to integrated water cycle management.

2.4.1 Controls

(a) Stormwater harvesting and re-use will be considered on merits in accordance with the WM Technical Guidelines, current Government requirements and in consultation with relevant Government agencies.
(b) Stormwater reuse is permitted for non-potable purposes and is

generally limited to toilet flushing, outdoor irrigation and car washing provided it is treated to a suitable for the reuse application. Other uses will be considered on a merit basis.

(c) DA must demonstrate that human health, groundwater resources, neighbouring properties, the stormwater system and the environment will not be compromised as a result of stormwater use.

2.5 Permeable Surfaces/Paving

Any land area that allows infiltration into the soil is considered permeable. Permeable paving allows infiltration into the soil while still allowing vehicles or pedestrians to use the area.

2.5.1 Controls

(a) New impermeable areas may be offset through replacement of proposed or existing impermeable surfaces with permeable surfaces/paving. This will enable some developments to reduce or offset their OSD storage volume requirements.

(b) Permeable paving shall be considered 100% permeable for the purpose of calculating OSD storage volume requirements.

(c) Permeable paving shall be designed, installed and maintained in accordance with the manufacturer's recommendations.

(d) Permeable paving is not suitable for areas of high traffic volumes or vehicle weights, high sediment loads, steep terrain (greater than 5%), high water tables, and non-engineered fill or contaminated land.

(e) Permeable surface materials installed on ground with low infiltration shall be drained using an effective subsoil drainage system to a rainwater tank or the site stormwater system.

(f) Permeable paving must be drained using an effective sub-soil drainage system for either infiltration into the ground or discharged to the stormwater system. Stormwater may also be captured for re-use provided it is treated to an adequate level suitable for the reuse application.

2.6 Stormwater Quality

This section refers to the management of all water leaving the site including infiltrated water, surface and piped flows. Stormwater treatment measures minimise erosion and the loss of soil, and protect receiving waters and downstream catchments from polluted runoff.

2.6.1 Controls

(a) Council strongly encourages that stormwater treatment measures as outlined in the *'Managing Urban Stormwater: Treatment Techniques'* (NSW EPA 1997) be incorporated into the design of a development in order to avoid polluted runoff.

(b) A plan to manage erosion and sedimentation must be prepared in accordance with Part B and the WM Technical Guidelines and submitted with the development application. Erosion and sedimentation control measures are to be installed and maintained during construction.

3.0 FLOOR LEVEL CONTROL

Floor levels should be at a level that will ensure that they are not subject to stormwater inundation or nuisance flooding.

3.1 Controls

(a) For areas identified as potential stormwater ponding areas and water flow paths in Ponding Areas Map (refer to Figure 2), habitable floor levels must be set at a minimum of 300mm above the predicted design flood level for a 1 in 100 year storm event.

(b) For all other areas habitable floor levels must be set at a minimum of 150mm above the level of adjacent ground for habitable areas.

(c) Designs must be undertaken in accordance with the WM Technical Guidelines.

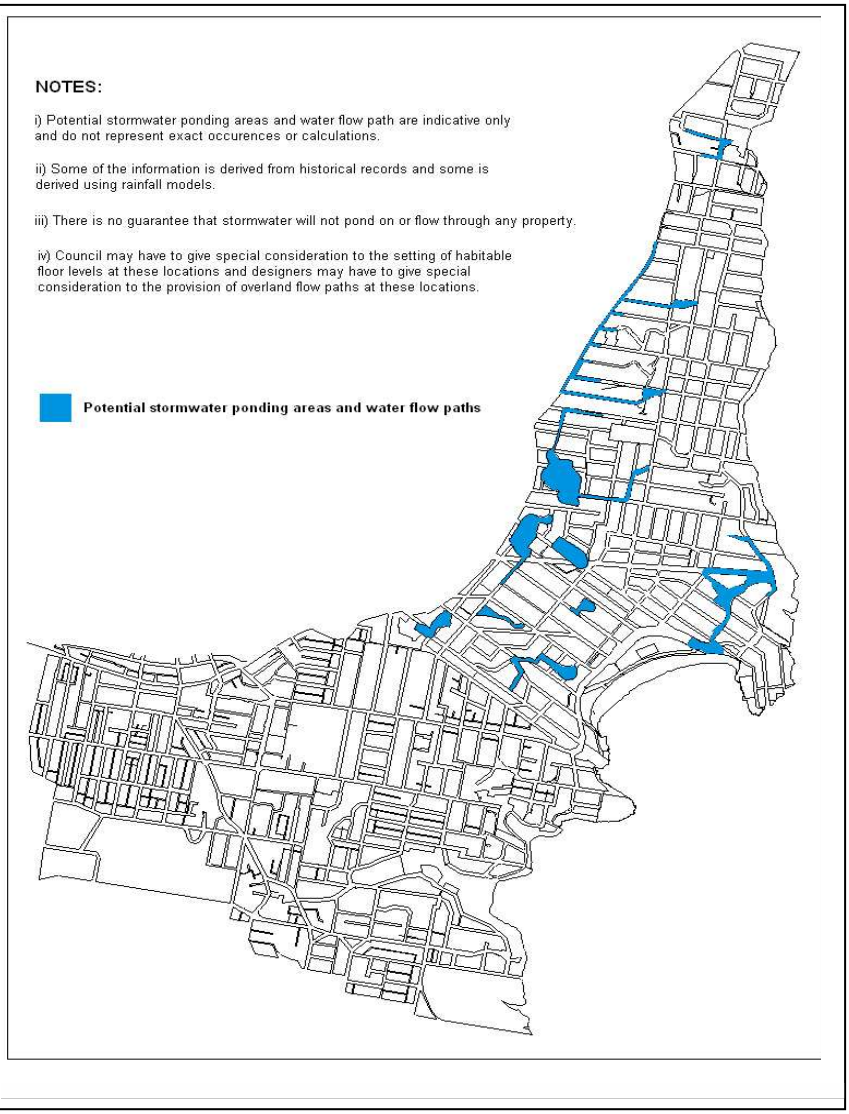

Figure 2: Ponding Areas Map

4.0 SEEPAGE WATER, DEWATERING, GROUNDWATER EXTRACTION AND USE

4.1 Controls

(a) Works connected to a source of underground water and used for water supply, groundwater monitoring, dewatering or other specified purposes must be licensed. Any bore drilling contractor must be licensed.

(b) Seepage water from basement car parks and sub surface flows from structures that intersect high ground water flows:
   (i) shall be harvested and reused on site; or
   (ii) piped to the underground stormwater drainage system. Piped connections to Council's kerb are not permitted.

(c) DA is required for temporary/permanent dewatering and groundwater extraction and use prepared in accordance with the WM Technical Guidelines. The proposal is assessed on merits and where appropriate, referred by Council to the relevant Government department for an access licence. If successful, the licence will be issued.

5.0 GREYWATER & BLACKWATER RE-USE

5.1 Controls

(a) Manual collection and re-use of greywater by means of a bucket or similar receptacle does not require a DA but must be undertaken in accordance with the WM Technical Guidelines.

(b) Greywater diversion device complying with *Local Government (General) Regulation* 2005 does not require a DA but must be installed by a licensed plumber. All greywater diversion devices must be registered with Council upon installation.

(c) DA is required to install a greywater diversion device not complying with *Local Government (General) Regulation* 2005*.* A DA is required to install/operate greywater/blackwater system.

(d) Greywater or blackwater treatment system must be designed, installed, maintained and monitored in accordance with NSW Government requirements and the WM Technical Guidelines.

(e) DA's for greywater or blackwater treatment systems will be assessed on merit in accordance with the WM Technical Guidelines, Government requirements and consultation.

(f) Greywater sourced from kitchens must be treated in a greywater treatment system and cannot be utilised via manual bucketing or a greywater diversion device. Greywater reuse is permitted for non-potable purposes only and is limited to toilet flushing, outdoor irrigation and laundry use provided it is treated and suitable for reuse. Other uses will be considered on their merits

(g) Blackwater reuse is permitted for non-potable purposes only provided it is treated to an adequate level for reuse.

(h) DA's must demonstrate that human health, groundwater resources, neighbouring properties, the stormwater system and the environment will not be compromised. A Positive Covenant must be placed on the Property Title to ensure the system is adequately maintained, this is conducted at the owner expense.