

Note: Important introductory section on use of manual

1.0 PURPOSE & APPLICABILITY

This Section outlines Auckland City's on-site stormwater management programme. Sub-sections cover:

- 1.1: The purpose and applicability of the Manual
- 1.2: Explanation as to the relationship of this Manual to other manuals and documents

The material is for guidance only: please refer to the disclaimer statement in the Preface of this Manual.

Urban growth catered for by increased density & site coverage

1.1 Purpose and Applicability

Urban growth in Auckland City is to be catered for by increased population densities. In the process, modern "water sensitive urban development" practices are to be applied to ensure that sustainable development occurs. To achieve increased population densities, site coverage may be allowed to increase in certain circumstances. The resulting increased quantity of stormwater and water quality issues will need to be managed through the use of "at source" methods set out in this Manual.

Manual for design professionals to manage increased stormwater runoff effects "at source"

This OSM Manual provides design professionals with specific requirements for reducing the impacts of stormwater runoff (water quantity) and pollution (water quality) resulting from applications to exceed the impermeable surface controls in the City. The Manual's requirements apply only in the case of developments where the proposed impervious area coverage exceeds a figure of 60% (ie the design basis for sizing of the public stormwater reticulation system) and up to the maximum figures set out in the Table 1.1. For areas with adequate soakage, no OSM device is required, unless one is used to attenuate flows prior to disposal by soakage.

The Manual applies to all types of development.

The applicant will be required to select, from a range of options, an appropriate on-site stormwater management (OSM) device and implement it as an integral part of the development.

**Table 1.1
Maximum Allowable Impervious Area Coverage**

Zones	Upper Limit of Impervious Surface *
Residential 8a/8b	70% site coverage
Residential 8c	80% site coverage

* Note: limits are set by amenity criteria rather than stormwater management considerations

Typical OSM devices

Typical OSM devices include (refer Section 3.2 for details):



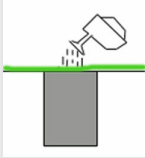
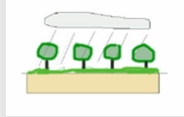

Typical OSM Devices	Applicability
<p>Rainwater tank</p>  <p>Stormwater planter</p> 	<p>Areas with Impermeable Sub-Surface Conditions</p>
<p>Soakholes (various types)</p>  <p>Filterstrip soakage trench</p> <p>Rain garden</p>  <p>Porous paving</p> 	<p>Areas with Adequate Soakage</p>



Photo 1 Rain Tank: Plastic Type with First-Flush Diverter



Photo 2 Rainwater Tank: Corrugated Steel Type



**Photo 3
Stormwater
Planter:
Conventional
Above-Ground
Type**



**Photo 4 Stormwater Planter: Above-
Ground "Rock Garden" Type**



Photo 5 Stormwater Planter: Sunken Type



Photo 6 Grass Swale on Urban Street



Photo 7 Swale & Gravel Trench System on Divided Road



Photo 8 Rock Swale

Photo 9 Gravel Swale In Car Park



Photo 10 Car Park Kerb-Cut (feeding gravel swale)



Photo 11 Roof Garden



Photo 12 Eco-Roof



**Photo 13 Wet-Type
Detention Pond**

Photo 14 Depression Storage



1.2 Relationships to Other Manuals and Documents

This OSM Manual forms part of a regulatory matrix for stormwater issues. Most important are the Resource Consent and Building Consent processes, which frequently raise stormwater issues. In some cases, it will be appropriate to require compliance with the Manual through a condition of a Land Use Resource Consent or a Subdivision Resource Consent. In other cases, use of the Manual will be a means of complying with parts E1 and E2 of the Building Code, for the purposes of a Building Consent. In addition, the Council has various powers under the Local Government Act and Consolidated Bylaw 1998 to inspect and monitor stormwater systems, and to require certain works to be carried out.

The following documents should also be taken into account::

(a) Auckland City Council / MetroWater:

Auckland City/Metrowater Development & Connection Standards

- i. **Development and Connection Standards** (Ref. 2): Section 4 of this document sets the City-wide standards for stormwater, to which all developments must comply. As such, this OSM Manual is designed to complement these standards and to detail the specific provisions where OSM devices are required. (Note that in the event of conflict between this OSM Manual and the Development and Connection Standards, the latter shall take precedence).

Stormwater Soakage Design Manual

- ii. **Stormwater Soakage Design Manual:** Guideline for the sizing and design of stormwater in areas where there is adequate soakage; includes details on the test procedure for mandatory percolation testing (an updated version of this manual – Ref. 9 - has prepared concurrently with this OSM Manual). Section 7 of this OSM Manual explains how the Soakage Design Manual is to be applied in the OSM context.

(b) Auckland City Council:

District Plan

- i. **District Plan** (current version – Ref. 1): sets out zonings and should be referred to, to establish the consent process required depending on the location of the development; also proposed flood level freeboard requirements

Stormwater Bylaw

- ii. **Consolidated Bylaw, 1998 (and amendments): Part 18 – Stormwater Management** (Ref. 6): Sets out statutory provisions in relation to: stormwater drainage works, development and flood areas, development and stormwater discharge, maintenance and fees

Liveable Communities Plan

- iii. **Growing Our City Through Liveable Communities 2050** (Ref. 5): Presents background to the City's plan for managing where and how more people will be housed in the future; namely in defined "Strategic Growth Management

**Code of Urban
Subdivision**

Areas”

- iv. **Code of Urban Subdivision** (Ref. 7): A “non-statutory” document which sets out the full range of planning, technical and financial issues to be accounted for in respect to subdivisions; in the context of stormwater, it requires that the “Development and Connection Standards” per a(i) above be complied with

**Residential Design
Guide**

- v. **Residential Design Guide** (Ref. 8): Presents design guidelines for proposed developments in residential zones in (SGMA’s) Strategic Growth Management Areas (the need for OSM devices in Residential 8 zones is noted)

**ARC Design
References**

(c) Auckland Regional Council (refer Section 4.1 for a commentary on the interdependence between the City’s OSM programme and ARC’s requirements):

- i. **Stormwater Treatment Devices – Design Guideline Manual (TP 10)** (Ref. 11; 2002 issue): Sets out guidelines for water quality control measures
- ii. **Low Impact Design Manual (TP 124)** (Ref. 10): Addresses how water sensitive urban development should be applied in the Auckland region
- iii. **Guidelines for Stormwater Runoff Modelling in the Auckland Region (TP 108)** (Ref. 12): Provides a procedure for generating flow hydrographs for design storms
- iv. **Erosion & Sediment Control – Guidelines for Land Disturbing Activities (TP 90)** (Ref. 13): Sets out principles and practices applying to erosion and sediment controls on development sites