
on-site stormwater management manual



AUCKLAND CITY

ON-SITE STORMWATER MANAGEMENT MANUAL

PREFACE

This On-Site Stormwater Management Manual (“OSM Manual”) provides applicants/developers and/or their professional advisers with guidelines for the reduction of impacts of stormwater runoff (water quantity) and pollution (water quality) resulting from intensive development throughout the City.

Urban growth in Auckland City is to be catered for by increased population densities. To cater for this there may be situations where developments require increased site coverage. Modern “water sensitive urban development” practices must be applied to ensure that development is sustainable. Particular emphasis must be placed on controlling the increased quantity of stormwater generated by intensified development. Also, given the high amenity values of Auckland’s marine receiving waters, and their sensitivity to pollution, close attention must be paid to controlling stormwater quality.

Modern international “best practice” emphasises the importance of implementing “at-source” controls on stormwater. Matching both this and the quantity and quality imperatives, this OSM Manual marks an important step in Auckland City’s commitment to a sustainable future.

This OSM Manual has been prepared by for the Auckland City Council by a team of consultants led by Water Resources Consultancy Group Ltd and Mitre Consultancy.

DISCLAIMER

The information regarding on-site stormwater management (OSM) systems in this Manual has been prepared for the purpose of assisting applicants to deal with the typical stormwater problems which occur in the Auckland City area. This Manual represents a significant amount of analysis about the problems of stormwater management in Auckland City, and can help you in dealing with the adverse effects of stormwater on your own and neighbouring properties.

The Manual is a useful consolidated summary of information about common stormwater issues and the regulatory requirements for sites within Auckland City. In particular, the Manual details a suggested design approach complete with worksheets and design charts to assist applicants to determine which on-site stormwater system should be adopted.

However, you as the applicant are responsible for the application of the Manual to your site and making the decision regarding which OSM system is adopted as required. While this Manual can assist you, the Council is not responsible for any consequences or effects of any system that may be installed solely as a result of the application of the Manual. The Council encourages applicants to obtain specific advice (in addition to the general advice contained in this Manual) to confirm that the OSM system you choose is efficient and adequate for your site and that it is installed correctly.

AUCKLAND CITY COUNCIL
ON-SITE STORMWATER MANAGEMENT PROGRAMME
OSM MANUAL

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LIST OF ABBREVIATIONS

ACC	Auckland City Council
ACE	Auckland City Environments
AEP	*Annual exceedance probability
ARC	Auckland Regional Council
BMP	*Best management practice
CMP	*Catchment management plan (or planning)
LID	*Low impact design (or development)
MPD	Maximum probable development
OSM	*On-site stormwater management
O&M	Operation and maintenance
RMA	Resource Management Act, 1991
SGMA	*Strategic growth management area
Tc	*Time of concentration
TP	Technical Publication (by ARC)
WSUD	*Water sensitive urban design (or development)
(Ref. no.)	Denotes document reference, as listed in Appendix A

* the "List of Definitions" (below and overleaf) explains the terminology

LIST OF DEFINITIONS

Note: definitions apply to the context in which they are used in this Manual

Aquifer	Underground water body
Annual exceedance probability	The probability, expressed as a percentage, that a flood of a given magnitude will be equalled or exceeded in any one year (as an example, the "10% AEP" is a flood expected to occur on average once in a 10 year period)
Best management practice	Method (of controlling stormwater) that meets sustainable water quantity and quality objectives
Body Corporate	Legal entity responsible for the operation and maintenance of a mutli-unit dwelling complex
Catchment	Area contributing flow at a point on a drainage system
Catchment management plan	Plan for dealing with the runoff generated in a catchment (normally to meet specified water quantity and quality objectives)
Catchpit	Small chamber incorporating a sediment trap that runoff flows through

Cluster housing	Multi-unit development on one or more lots, normally with some communal facilities and amenities
Combined sewer	A piped system to convey both stormwater and sewerage
Depression storage	Low-lying area detaining and attenuating flows
Detention	Storage to provide flow attenuation
Detention basin	A ponding area to detain and attenuate flows
Detention tank	Tank which temporarily stores water to attenuate flows
Eco-roof	As “roof garden” (as defined below), but with a thinner soil layer
Erosion	The process of waterborne soil/sediment removal from the ground surface
Filter drain	Linear drain consisting of a trench filled with a permeable material, designed to detain and convey runoff
Filter strip	Broad grassed surface conveying runoff
Flood frequency	The probability that a flood discharge rate will be equalled or exceeded in any year (refer also “annual exceedance probability” above)
Groundwater	Water stored and/or moving under the ground surface
Impermeable surface	Surface through which water cannot pass (eg roof, concrete)
Infiltration	The passage of water through soil to reach groundwater
Low impact design	Design approach for site development that protects and incorporates natural site features into erosion and sediment control and stormwater management plans
On-site stormwater management	The detention and/or retention of runoff on a site before discharging it to a disposal system
Orifice	A hole of a specified size designed to discharge flow at a pre-determined rate (it is normally machine-drilled in a plate and attached at the entry to a pipe)
OSM device	An on-site stormwater management system, designed to meet water quantity and/or quality goals, which utilises detention and/or retention of runoff before discharging it to a disposal system
Overland flow path	Route taken by flood runoff not able to be contained in the main pipe or channel stormwater conveyance system

Permeable surface	Surface through which water passes by infiltration
Pond	An area that stores runoff and attenuates flows
Porous pavement	A paved surface through which water can infiltrate
Rainwater tank	A tank that stores roof runoff (normally for re-use and flow attenuation purposes)
Rain garden	A device that receives and filters runoff and then disposes of the water by infiltration
Retention	A system that temporarily retains runoff and then disposes of it by infiltration
Roof garden	Roof system with a soil/vegetation cover that captures and then evaporates a proportion of the incipient rainfall, thereby attenuating the runoff rate
Runoff	The flow of water across the ground or an artificial surface generated by rain falling on it
Source control	The control of runoff at or near the point where it was generated
Soakage pit (or trench)	Sub-surface structure into which runoff is conveyed for disposal by infiltration
Stormwater planter	A device that receives and filters runoff and then conveys water to a formal stormwater system
Strategic growth management area	Area(s) proposed by Auckland City for intensified/infill development (refer Ref. 5 for details)
Swale	Grass-lined channel conveying runoff
Time of concentration	Time taken for rain falling at the head of the catchment to reach a designated point as runoff
Watercourse	Natural or artificial channel which conveys runoff
Water sensitive urban design	“Low impact development” (as defined above), with added emphasis on sustainable vegetation practices and a low-level of water usage
Wetland	Pond with a high proportion of emergent vegetation (normally intended to achieve a water quality improvement function)