

# ROADS & STORMWATER DEPARTMENT

Catchment, Stormwater and River  
Management Branch

# Management of Urban Stormwater Impacts Policy

Version 1.1

Approved by Council  
27 May 2009  
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CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD



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# 1 Preamble

Well-managed urban water bodies are valuable resources providing environmental and recreational services which require protection and enhancement. This is particularly important in the context of changing weather patterns and the associated local, national and international strategies targeting sustainability, climate and energy issues. However it is a world-wide phenomenon that such water bodies rapidly deteriorate under the impact of urbanisation with a resultant loss of aquatic ecosystems, biodiversity, and amenity value, as well as the creation of significant health risks.

This Policy is intended to minimise the undesirable impacts of stormwater runoff from developed areas by introducing Water Sensitive Urban Design principles to urban planning and stormwater management in the Cape Town metropolitan area.

# 2 Definitions

In this policy, unless inconsistent with the context:–

“**Best Management Practices (BMPs)**” are devices, practices or methods for removing, reducing, or retarding runoff flows, or preventing targeted stormwater runoff constituents, pollutants and contaminants from reaching receiving waters. BMPs include structural and non-structural controls and devices as well as operation and management procedures;

“**bioretention cell or basin**” consists of an excavated basin or trench that is filled with porous media layers and planted with vegetation. Water quality treatment of stormwater runoff occurs through removal of sediment, trace metals, nutrients, bacteria and organics as the water percolates downwards;

“**brownfield**” means a site or land that is or was occupied by a permanent structure, which may have become vacant, under-used or derelict and has the potential for redevelopment;

“**catchment**” means the area from which any rainfall will drain into a watercourse or wetland (or part thereof) through surface flow to a common point or common points;

“**Council**” means the City of Cape Town;

“**development**” means any man-made change to property, including but not limited to construction or upgrading of buildings or other structures, filling, paving, municipal services, etc, or the associated preparation of land;

“**directly connected impervious area**” means impervious areas (i.e. areas covered by buildings and other impervious surfaces) which drain directly into stormwater drains without first infiltrating or flowing across permeable land;

“**floodplain**” means the land adjoining a watercourse which Council considers susceptible to inundation by floods up to the one hundred year recurrence interval;

“**greenfield**” means a site or land such as parkland, open space and agricultural land which have previously been undeveloped. Development on such land generally requires a change of land use / zoning;

“**impervious surface**” is land where water cannot infiltrate to the subsurface but is conducted by gravity on the surface as overland flow. Roads, parking lots, sidewalks and rooftops are examples of impervious surfaces in urban areas.

**“non-structural measures”** are planning, institutional and pollution prevention practices designed to prevent or minimize pollutants from entering stormwater runoff and/or reduce the volume of stormwater requiring management;

**“pre-development”** means prior to any development on that property;

**“receiving waters”** are natural or man-made aquatic systems which receive stormwater runoff e.g. watercourses, wetlands, canals, estuaries, groundwater and coastal areas;

**“recurrence interval”** or **“RI”** means the average interval in years between rainfall or flood events equaling or exceeding a specified severity;

**“redevelopment”** includes the creation, replacement, or addition/expansion of impervious area and/or structures on an already developed site;

**“retrofitting”** means the process of modification or installation of additional or alternative stormwater management devices or approaches in an existing developed area in order to achieve best management of stormwater;

**“sensitive receiving water”** means a watercourse, wetland or coastal area which has been or is deemed by Council to be sensitive or important from an ecological, social and/or economic perspective/s;

**“source controls”** are non-structural or structural best management practices to minimize the generation of excessive stormwater runoff and/or pollution of stormwater at or near the source;

**“stormwater”** means water resulting from natural precipitation and/or the accumulation thereof and includes groundwater and spring water ordinarily conveyed by the stormwater system, as well as sea water within estuaries, but excludes water in a drinking water or waste water reticulation system;

**“stormwater system”** means both the constructed and natural facilities, including pipes, culverts and watercourses, whether over or under public or privately owned land, used or required for the management, collection, conveyance, temporary storage, control, monitoring, treatment, use and disposal of stormwater;

**“structural measures (controls, best management practices)”** are permanent, engineered devices implemented to control, treat or prevent stormwater pollution and/or reduce the volume of stormwater requiring management;

**“sustainable urban drainage systems (SUDS)”** is a branch of Water Sensitive Urban Design which focuses specifically on stormwater management;

**“treatment train”** means a combination of different methods implemented in sequence or concurrently to achieve best management of stormwater. These methods include source control, non-structural and structural measures;

**“watercourse”** means a river, stream, channel, canal, vlei, wetland, dam or lake in or into which water flows regularly or intermittently. Reference to a watercourse includes, where relevant, its bed and banks;

**“wetland”** means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil. This definition thus includes, but is not necessarily limited to, water bodies such as lakes, salt marshes, coastal lakes, estuaries, marshes, swamps, vleis, pools, ponds, pans and artificial impoundments;

“**Water Sensitive Urban Design (WSUD)**” is an approach which seeks to ensure that development in urban areas is holistically planned, designed, constructed and maintained so as to reduce negative impacts on the natural water cycle and protect aquatic ecosystems. Sustainable water supply, sanitation and stormwater management are encompassed within the WSUD approach.

### 3 Introduction

Watercourses and wetlands are integral to the stormwater management system, are an important component of the City’s biodiversity network, and represent an essential element within the urban fabric of the City by providing both recreational and economic opportunities.

This Policy supports the Roads and Stormwater Department objectives incorporated in the Integrated Development Plan for the City of Cape Town, namely to;

- Reduce the impact of flooding on community livelihoods and regional economies
- Safeguard human health, protect natural aquatic environments, and improve and maintain recreational water quality

The deleterious impacts of urbanisation on receiving waters, that is rivers, streams, wetlands, groundwater and coastal waters, are a worldwide phenomenon. Such impacts include:

- Declining water quality;
- Diminishing groundwater recharge and quality;
- Degradation of stream channels;
- Increased overbank flooding;
- Floodplain expansion;
- Loss of ecosystem integrity and function;
- Loss of biodiversity.

In the last 20 years, increasing emphasis internationally has been placed on addressing urbanisation impacts on natural water bodies, and the guiding principles that have evolved have become known as Water Sensitive Urban Design (WSUD).

WSUD recognises that the primary reason for deterioration of urban waters is the disruption of the natural water cycle. From the stormwater management perspective this is a result of the creation of impervious surfaces, and the concentration and acceleration of stormwater runoff through pipe and canal networks. Absorption, attenuation, and quality improvement of runoff through natural processes are lost. Sustainable Urban Drainage Systems (SUDS) is a branch of WSUD dealing specifically with stormwater management measures which attempt as far as possible to maintain or mimic the natural flow systems as well as prevent the washoff of urban pollutants to receiving waters. These measures, referred to as Best Management Practices (BMPs), fall into two groups, viz. structural controls and non-structural controls:

Structural controls are engineered devices implemented to manage runoff quality and quantity. Examples include litter traps, infiltration devices, bioretention cells or basins, detention ponds and constructed wetlands

Non-structural controls are institutional and pollution-prevention practices designed to prevent or minimise pollutants from entering stormwater runoff and/or reduce the volume of stormwater requiring management. Non-structural controls include, *inter alia*, town planning incentives, stormwater masterplans, pollution prevention maintenance practices, and public education.

It is seldom that a single measure is adequate for water quality treatment and a “treatment train” approach is more often necessary. This is a combination of different methods implemented sequentially or concurrently, and varying typically from preventative measures at source, through development site controls to regional controls, before discharge to the receiving waters.

Over the past decade the City of Cape Town has experienced unprecedented development, both in greenfield areas as well as within existing developed / brownfield areas. The City’s Roads and Stormwater Department, in recognition of the threats to already degraded rivers and wetlands, responded by introducing development guidelines which would limit these impacts, viz.:

- **Stormwater Management Planning and Design Guidelines for New Developments, adopted by the City’s Transport Roads and Stormwater Portfolio Committee on 4 September 2002.**

In essence this document promotes the principles of Water Sensitive Urban Design. It emphasizes planning and design solutions that are cost effective, sustainable in terms of future maintenance requirements, environmentally sensitive and that maximise, within these constraints, social as well as amenity value.

- **Floodplain Management Guidelines, adopted by the Mayoral Committee on 19<sup>th</sup> November 2003.**

This document provides a framework for the management of land use, development, and activities near watercourses in a manner that minimises potential flood damages and protects and enhances the environment.

These guidelines are currently being reviewed and updated to a policy entitled “Floodplain and River Corridor Management Policy”.

- **Draft Policy for Provision of Stormwater Services to Informal Areas, March 2003.**

This document provides a framework for flood control and management to at least minimum levels within informal areas on public land, until such time as the settlements are upgraded to full services, or relocated to alternative sites if the land is not suitable for development.

## **4 Legislative Context and Legal Mandate**

Land use, development and associated activities influenced by this Policy are dealt with in terms of the statutes and planning frameworks highlighted in the following sections.

### **4.1 National**

- National Building Regulations & Building Standards Act, 1977 (Act 103 of 1977)
- Conservation of Agricultural Resources Act (Act 43 of 1983)
- National Water Act (Act 36 of 1998)
- National Environmental Management Act (Act 107 of 1998)
- Disaster Management Act (Act 57 of 2002)
- National Environmental Management: Biodiversity Act (Act 10 of 2004)

### **4.2 Provincial**

- Western Cape Planning & Development Act (Act 7 of 1999) (This Act will apply upon its coming into operation).

- Land Use Planning Ordinance, 1985 (Ordinance 15 of 1985)

### **4.3 City of Cape Town**

- Integrated Development Plan (2007/8 to 2011/12)

The Roads and Stormwater Department objectives are incorporated in the Integrated Development Plan for the City of Cape Town:

Reduce the impact of flooding on community livelihoods and regional economies;

Safeguard human health, protect natural aquatic environments, and improve and maintain recreational water quality.

- By-law relating to Stormwater Management (Promulgated September 2005 – PG 6300) together with which this policy is to be read and interpreted.

In addition, a number of other documents have been produced over the years which have referred to the management of development and this Policy is generally consistent with these. Some of the more pertinent are listed.

- Greening the City Open Space and Recreation Plan of Cape Town (1982)
- Roads and Stormwater Department: Catchment, Stormwater and River Management Strategy (2002)
- Biodiversity Strategy for the City of Cape Town (2003)
- Coastal Zone Strategy (2003)
- CMOSS – An Open Space Strategy (2005)
- Planning for Future Cape Town (2006)

## **5 Policy Rationale and Principles**

Whilst the Roads and Stormwater Department's Stormwater Management Guidelines for New Developments are generally adhered to in respect of limiting peak flows off new developments, the measures to limit other impacts on receiving waters have been less successful. The Guidelines do not prescribe under what circumstances water quality treatment and other best management practices (BMPs) must be applied to new developments, nor do they specify the parameters and required outcomes to enable detailed town planning and engineering design of BMPs.

The City's By-law Relating to Stormwater Management, approved by Council on 30 August, 2005, prohibits discharge of anything other than stormwater into the stormwater system (Clause 3), and Clauses 4 and 5 of the By-law deal with protection of the stormwater system (including damage and prevention of pollution), and the prevention of flood risk. The By-law further enables Council to impose conditions with regard to these matters. This Policy is intended to support the By-law and strengthen the City's ability to introduce and implement measures which will arrest the deterioration of, and in the longer term improve, the state of its natural water assets as part of the stormwater system.

A fundamental principle is that the person or body, whether private enterprise or an organ of state, who creates a development should do so responsibly and should ensure that such development does not adversely impact on present and future communities and on natural ecosystems.

This Policy is important in achieving the service outcomes as highlighted in Section 3 above. It furthermore ensures administrative actions with respect to land use planning applications that are lawful, reasonable and procedurally fair.

## **6 Policy**

### **6.1 Policy Statement**

In order to reduce impacts of urban stormwater systems on receiving waters, all stormwater management systems shall be planned and designed in accordance with best practice criteria and guidelines laid down by Council, to support Water Sensitive Urban Design principles and the following specific sustainable urban drainage system objectives:

- Improve quality of stormwater runoff;
- Control quantity and rate of stormwater runoff;
- Encourage natural groundwater recharge.

### **6.2 Policy Implementation**

#### **6.2.1 Application of Water Sensitive Urban Design Principles in Stormwater Management**

Water Sensitive Urban Design principles will be incorporated into urban development through the application of sustainable urban drainage systems as follows:

##### **A. New Developments**

New developments, including both greenfield areas and redevelopment in brownfield areas, as well as additional development on an already developed site, shall be planned and designed to incorporate sustainable urban drainage systems generally in accordance with the City's Stormwater Management Planning and Design Guidelines for New Developments as well as with local and international best practice.

##### **B. Existing Developed Areas**

Sustainable urban drainage systems will be incorporated into existing developed areas through retrofitting of appropriate structural best management practices as well as through non-structural measures. These will generally be implemented by the City based on needs identified at a regional level through Catchment and River Management Planning and in accordance with Stormwater Masterplans.

The extent to which the various best management practices are selected for implementation will depend on criteria laid down by the City Council as annexed to this policy.

#### **6.2.2 Criteria for achieving Sustainable Urban Drainage System Objectives in Various Development Scenarios (Annexure)**

Criteria for the application of sustainable urban drainage systems shall indicate:

- Where and under what circumstances the objectives of WSUD must be incorporated into design and planning of new developments or into existing developed areas, and
- The extent and target requirements of best management practices applicable to the development area concerned.

In determining the criteria, Council will consider, *inter alia*:



- The size of the development site;
- The type of development (e.g. residential, industrial, commercial);
- The location of the development site;
- The sensitivity, importance and the potential for rehabilitation of the receiving waters;
- Existing Catchment and River Management Plans for the area;
- Existing Stormwater Masterplans for the area.

The criteria shall be reviewed from time to time by Council according to changing local circumstances and new advances in the field of WSUD and SUDS. The criteria are provided in the annexure to this policy, and revisions to the criteria may be adopted by Council without re-adoption of the entire Policy.

### **6.2.3 Approval of Stormwater Management Systems**

Stormwater management systems for new development planned and designed in terms of this Policy must be approved by Council.

In certain circumstances, Council will require a stormwater management plan to be submitted.

### **6.2.4 Low Income and Informal Settlement Areas**

Best management practices must be adapted to suit local circumstances, in particular in low income and informal areas where there is often a shortage of land making treatment at source impractical. Regional measures may be appropriate in these areas.

### **6.2.5 Planning Process**

#### Metro-wide Spatial Development Framework

Issues relating to water, in particular receiving waters, must be included in the planning process in order to achieve sustainable outcomes. Sustainable use of water resources should consider water as an asset and within the context of the total urban water cycle. Stormwater drainage, nutrient management, WSUD, protection of water resources, water efficiency, recycling and re-use thus must form elements of holistic and integrated planning for the City; as such the aforementioned should be embodied in the Metro-wide Spatial Development Framework as well as into other regional spatial planning approaches and mechanisms.

#### Local Planning

Catchment and River Management Plans should be developed in order to inform regional and local planning processes. Close liaison is required between stormwater management practitioners and local area planners in preparing stormwater masterplans, as well as in the promotion of WSUD in urban subdivisions.

#### Catchment Management Overlay Zones

Protection and specific management needs of receiving waters (which include WSUD requirements), may be indicated by means of Catchment Management Overlay Zones in terms of Council's proposed Integrated Zoning Scheme.

### **6.2.6 Non-structural Measures**

Non-structural measures (e.g. public awareness, education programmes, operating and maintenance practices) will supplement structural design and planning measures.

### **6.2.7 Integration into the Environment**

Best management practices should promote urban biodiversity, and enhance the amenity and aesthetics of the development site and its surroundings.

### **6.2.8 Incentive Schemes**

Council may introduce incentive schemes to promote and facilitate adoption of WSUD measures by private developers and individual households where appropriate.

### **6.2.9 Operation and Maintenance**

Structural best management practices must be designed and constructed to facilitate and minimize operational and maintenance requirements.

### **6.2.10 Monitoring**

The performance of stormwater treatment BMPs should be monitored on an ongoing basis and appropriate action taken where performance is unsatisfactory.

### **6.2.11 Water Sensitive Urban Design on Private Developments**

Council may require BMP measures to be constructed and remain located within the boundaries of a private development. This is particularly applicable to private single erf developments or private enclosed and/or gated office parks, industrial parks, blocks of flats, group housing estates, or similar developments where the infrastructure within the boundary of the development site remains in private ownership.

Unless otherwise agreed by Council, where BMPs are located on such private land, responsibility for the operation, maintenance, monitoring (see 6.2.9 and 6.2.10 above) and continued effective functioning of the BMPs, including meeting the costs thereof, will lie with the property owner, body corporate or other appropriate legal representative body.

An agreement between the developer and Council to this effect will need to be concluded, or alternatively included in the body corporate/home owners' association constitution and approved by Council, before transfer of any property on the development site may take place. Such agreement will be made binding on the owner, and successors-in-title, or on the representative body concerned, as applicable. The agreement shall include, inter-alia, that monitoring results must be made available to Council, and that Council will have the right to undertake auditing of the facilities (which may include its own monitoring and inspections), and require remedial measures to be implemented by the property owner should any facility fail to perform as required.

## **6.2.12 Alignment with Other Sustainability Programmes**

Wherever possible, sustainable urban drainage systems should be combined with other WSUD programmes (such as reduction of potable water use through re-use of wastewater effluent, rainwater harvesting, stormwater re-use, etc.), and with other broader sustainability initiatives.

## **7 Scope and Application**

This Policy is applicable to any land use, development or activity proposals within the metropolitan area of Cape Town draining to any watercourse, wetland or coastal area. It is further binding for both private individuals and businesses as well as for all organs of state.

This Policy relates to minimizing the impact of stormwater on receiving waters and is not intended to deal with all other aspects of stormwater management such as, *inter alia*, protection of property and community health and safety.

## **8 Outcomes**

Application of this Policy in newly developing and existing areas will lead to:

- Minimisation of the impacts of stormwater from new developments on receiving waters such as watercourses, wetlands, coastal waters, etc
- Prevention of further degradation of receiving waters by stormwater draining from existing developments, as well as in the long term the reversal of current undesirable stormwater impacts.

## **9 Commencement Date**

Unless otherwise specified, the commencement date for this Policy will be the date of adoption by Council.

## **10 General**

### **10.1 Statutory Permits and Approvals**

Certain WSUDS developments may be subject to approvals in terms of legislation by Provincial and National Government Departments.

Examples include, but are not limited to:

- Storing water
- Impeding or diverting the flow of water in a watercourse
- Altering the bed, banks, course or characteristics of a watercourse

## **10.2 Indemnity**

This policy shall not create liability on the part of the City of Cape Town or any officer thereof, for any damage that may result from reliance thereon.

## **10.3 Copyright**

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**ANNEXURE: INTERIM CRITERIA FOR ACHIEVING SUSTAINABLE URBAN DRAINAGE SYSTEM OBJECTIVES IN VARIOUS DEVELOPMENT SCENARIOS**

<p align="center"><b><u>SUDS</u></b> <b><u>OBJECTIVES</u></b></p>	<p align="center"><b>Greenfield Developments</b>  <i>and</i> <b>Brownfield and Existing Development Sites located in catchments of sensitive receiving water systems</b></p>	<p align="center"><b>Brownfield and Existing Development Sites</b>  <b>&gt; 50 000 m<sup>2</sup></b></p>	<p align="center"><b>Brownfield and Existing Development Sites</b>  <b>4000 m<sup>2</sup> – 50 000 m<sup>2</sup></b>  <i>and</i> <b>Total impervious area (exist &amp; new) &gt; 15% of site</b></p>	<p align="center"><b>Brownfield and Existing Development Sites</b>  <b>&lt; 4000 m<sup>2</sup></b>  <i>and</i> <b>Total impervious area (exist and new) &gt; 600m<sup>2</sup></b></p>
<p align="center"><b><u>IMPROVE QUALITY OF RUNOFF</u></b></p> <p><i>Remove pollutants through combination of reducing and/or disconnecting impervious areas, and the use of BMPs which infiltrate or capture and treat stormwater runoff</i></p>	Design storm event for water quality treatment: 1/2-year RI, 24 h storm			
	<p>Pollutant removal target:</p> <p>Reduction of post-development annual stormwater pollutant load discharged from dev. site:</p> <p align="center">SS &amp; TP - reduce to undeveloped catchment levels, <i>or</i> SS - 80% reduction TP - 45% reduction</p> <p align="center"><i>whichever requires higher level of treatment</i></p>	<p>Pollutant removal target:</p> <p>On-site reduction of post-development annual stormwater pollutant load discharged from development site:</p> <p align="center">SS - 80% reduction TP - 45% reduction</p>	<p>Pollutant removal target:</p> <p>Combination of on-site and regional off-site measures to achieve target reductions:</p> <p align="center">SS - 80% reduction TP - 45% reduction</p>	<p>On-site stormwater treatment not required but encouraged where practicable.</p> <p>Regional off-site treatment measures to achieve target reductions:</p> <p align="center">SS - 80% reduction TP - 45% reduction</p>
	All developments are required to trap litter, oil, grease at source			

Table continued on next page....

<b><u>SUDS</u></b>		<b>Greenfield Developments</b>	<b>Brownfield and Existing Development Sites</b>	<b>Brownfield and Existing Development Sites</b>	<b>Brownfield and Existing Development Sites</b>
<b><u>OBJECTIVES</u></b>		<b>and</b> <b>Brownfield and Existing Development Sites located in catchments of sensitive receiving water systems</b>	<b>&gt; 50 000 m<sup>2</sup></b>	<b>4000 m<sup>2</sup> – 50 000 m<sup>2</sup></b> <b>and</b> <b>Total impervious area (exist &amp; new) &gt; 15% of site</b>	<b>&lt; 4000 m<sup>2</sup></b> <b>and</b> <b>Total impervious area (exist and new) &gt; 600m<sup>2</sup></b>
<b><u>CONTROL QUANTITY AND RATE OF RUNOFF</u></b>	<i>Protect the stability of downstream channels</i>	24 hour extended detention of the 1-year RI, 24h storm event	24 hour extended detention of the 1-year RI, 24h storm event	Combination of on-site and regional off-site measures to achieve requirements as for development sites >50 000m <sup>2</sup>	On-site runoff control measures not required but encouraged where practicable  Regional off-site runoff control measures to be provided to achieve requirements as for development sites > 50 000m <sup>2</sup>
	<i>Protect downstream properties from fairly frequent nuisance floods</i>	Up to 10-year RI peak flow reduced to pre-development level	Up to 10-year RI peak flow reduced to pre-development level		
	<i>Protect floodplain developments and floodplains from adverse impacts of extreme floods</i>	Up to 50-year RI peak flow reduced to existing development levels. Evaluate the effects of the 100-year RI storm event on the stormwater management system, adjacent property, and downstream facilities and property. Manage the impacts through detention controls and / or floodplain management	Up to 50-year RI peak flow reduced to existing development levels. Evaluate the effects of the 100-year RI storm event on the stormwater management system, adjacent property, and downstream facilities and property. Manage the impacts through detention controls and / or floodplain management		
		Developments adjacent to floodplains must adhere to the requirements of the Floodplain and River Corridor Management Policy			
<b><u>ENCOURAGE NATURAL GROUNDWATER RECHARGE</u></b>		Where appropriate, site specific requirements to be considered in consultation with Council			

## NOTES:

1. Council shall impose additional requirements where it is of the opinion that specific pollutant threats pertaining to the nature of the new development may arise or where warranted by particular catchment or receiving water conditions.
2. Stormwater runoff quality and quantity control is to be achieved by reducing directly connected impervious areas and/or measures outlined in Council's Stormwater Management Planning and Design Guidelines for New Developments, Version 1.0, July 2002 as amended, and or other approved methods. All measures (BMPs) are to be sized and designed to meet the targets specified using best practice methodologies, parameters and assumptions approved by Council.
3. On-site measures refer to measures within the development site as a whole but may include measures on each subdivision unit. In general a treatment train approach shall be required using a combination of smaller BMPs upstream in the development to larger pond type measures at the downstream discharge point from the development.
4. In certain areas, different requirements may exist in terms of a Council approved regional Stormwater Masterplan. It is at Council discretion as to which requirements will apply.
5. For formal, low-income, national government subsidized housing, on-site treatment and/or runoff peak reduction requirements may be reduced where a regional stormwater masterplan is in place and provides for regional measures to reduce pollution and runoff peaks. On-site measures should however be located in parks and other public open spaces of such housing schemes where feasible.
6. For informal settlement areas, stormwater management measures should be in accordance with the City's draft document: Policy for Provision of Stormwater Services to Informal Areas, Version 1, Draft 2, March 2003, as ammended.
7. BMPs should promote urban biodiversity and enhance amenity and aesthetics of the site and its surroundings.
8. Definitions: TP = Total phosphorus; SS = Suspended solids; "design storm" = the rainfall storm used to size the treatment facility; RI = Recurrence Interval means the average interval in years between rainfall or flood events equaling or exceeding a specified severity.