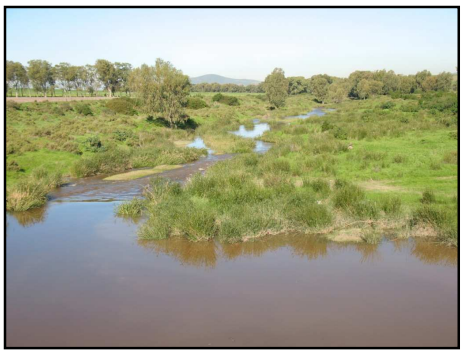
MANAGEMENT OF URBAN STORMWATER IMPACTS POLICY

APPROVED BY COUNCIL : 27 MAY 2009

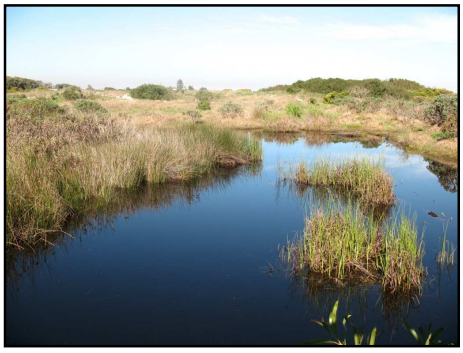
C 58/05/09



ROADS & STORMWATER DEPARTMENT

Catchment, Stormwater and River Management Branch

Management of Urban Stormwater Impacts Policy



Version 1.1

Approved by Council
27 May 2009
C 58/05/09

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 19th 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, 1997 (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 to 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

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

<table>
<tr><th><u>SUDS</u>

<u>OBJECTIVES</u></th><th>Greenfield Developments

and

Brownfield and Existing Development Sites located in catchments of sensitive receiving water systems</th><th>Brownfield and Existing Development Sites

> 50 000 m^2</th><th>Brownfield and Existing Development Sites

4000 m^2 – 50 000 m^2

and

Total impervious area (exist & new) > 15% of site</th><th>Brownfield and Existing Development Sites

< 4000 m^2

and

Total impervious area (exist and new) > 600m^2</th></tr>
<tr><td rowspan="3"><u>IMPROVE QUALITY OF RUNOFF</u>

Remove pollutants through combination of reducing and/or disconnecting impervious areas, and the use of BMPs which infiltrate or capture and treat stormwater runoff</td><td colspan="4">Design storm event for water quality treatment:
1/2-year RI, 24 h storm</td></tr>
<tr><td>Pollutant removal target:

Reduction of post-development annual stormwater pollutant load discharged from dev. site:

SS & TP - reduce to undeveloped catchment levels,
<u>or</u>
SS - 80% reduction
TP - 45% reduction

whichever requires higher level of treatment</td><td>Pollutant removal target:

On-site reduction of post-development annual stormwater pollutant load discharged from developmenrt site:

SS - 80% reduction
TP - 45% reduction</td><td>Pollutant removal target:

Combination of on-site and regional off-site measures to achieve target reductions:

SS - 80% reduction
TP - 45% reduction</td><td>On-site stormwater treatment not required but encouraged where practicable.

Regional off-site treatment measures to achieve target reductions:

SS - 80% reduction
TP - 45% reduction</td></tr>
<tr><td colspan="4">All developments are required to trap litter, oil, grease at source</td></tr>
</table>

Table continued on next page….

SUDS OBJECTIVES		**Greenfield Developments** ***and*** **Brownfield and Existing Development Sites located in catchments of sensitive receiving water systems**	**Brownfield and Existing Development Sites** **> 50 000 m^2**	**Brownfield and Existing Development Sites** **4000 m^2 – 50 000 m^2** ***and*** **Total impervious area (exist & new) > 15% of site**	**Brownfield and Existing Development Sites** **< 4000 m^2** ***and*** **Total impervious area (exist and new) > 600m^2**
CONTROL QUANTITY AND RATE OF RUNOFF	*Protect the stability of downstream channels*	24 hour extended detention of the1-year RI, 24h storm event	24 hour extended detention of the1-year RI, 24h storm event	Combination of on-site and regional off-site measures to achieve requirements as for development sites >50 000m^2	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^2
	Protect downstream properties from fairly frequent nuisance floods	Up to 10-year RI peak flow reduced to pre-development level	Up to 10-year RI peak flow reduced to pre-development level		
	Protect floodplain developments and floodplains from adverse impacts of extreme floods	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			
ENCOURAGE NATURAL GROUNDWATER RECHARGE		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.

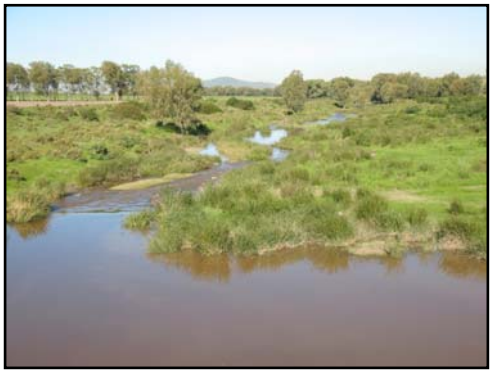
4. In certain areas, different requirements may exist in terms of a Council approved regional Stormwater Masterplan. It is at Council discretion as to which requirements will apply.

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.



DEPARTEMENT PAAIE & STORMWATER

Opvangsgebied-, stormwater-en-rivierbestuurstak

Beleid oor die bestuur van stedelike stormwaterimpakte

Weergawe 1.1

Goedgekeur deur die Raad
27 Mei 2009
C58/05/09

CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

Inhoudsopgawe

1 Aanhef

Goed bestuurde stedelike watermassas is waardevolle hulpbronne wat die lewering van omgewings- en ontspanningsdienste moontlik maak, en moet dus beskerm en versterk word. Dít is bepaald belangrik in die lig van veranderende weerpatrone en die verwante plaaslike, nasionale en internasionale strategieë gemik op volhoubaarheids-, klimaats- en energiekwessies. Dit is egter ‘n wêreldwye verskynsel dat sodanige watermassas weens die impak van verstedeliking vinnig agteruitgaan, wat op sy beurt tot ‘n verlies aan waterekosisteme, biodiversiteit en geriefswaarde sowel as ernstige gesondheidsrisiko’s aanleiding gee.

Hierdie beleid stel dit ten doel om die ongewenste impak van stormwaterafloop uit ontwikkelde gebiede te verminder deur watersensitiewe-stedelikeontwerpbeginsels deel van stedelike beplanning en stormwaterbestuur in die Kaapstad- metropolitaanse gebied te maak.

2 Omskrywings

In hierdie beleid, tensy uit die samehang anders blyk, beteken:–

“behandelingsketting” ‘n kombinasie van verskillende metodes wat opeenvolgend of gelyktydig toegepas word om stormwater so goed moontlik te bestuur. Hierdie metodes sluit bronbeheer sowel as niestrukturele en strukturele maatreëls in;

“bestaande watermassas” natuurlike of mensgemaakte watersisteme wat stormwaterafloop inneem, byvoorbeeld waterlope, vleilande, kanale, riviermondinge, grondwater en kusgebiede;

“bestebestuurspraktyke (BMPs)” toestelle, praktyke of metodes vir die verwydering, vermindering of vertraging van afloop, of die voorkoming dat geteikende stormwaterafloop-elemente, -besoedelende stowwe en -kontaminante bestaande watermassas bereik. BBP’s sluit strukturele en niestrukturele kontroles en toestelle sowel as bedryfs- en bestuursprosedures in;

“bioretensiesel of -kom” ’n uitgegrawe kom of sloot wat met poreuse medialae gevul is en met plantegroei beplant is; watergehaltebehandeling of stormwaterafloop geskied deur middel van die verwydering van sediment, spoormetale, voedingstowwe, bakterieë en organiese stowwe na gelang die water afwaarts deursypel;

“bronkontroles” niestrukturele of strukturele bestebestuurspraktyke om oormatige stormwaterafloop en/of -besoedeling by of naby die bron te verminder;

“bruinterrein” ’n perseel of grond waarop ‘n permanente struktuur staan of gestaan het wat dalk onbeset, ondergebruik word of vervalle geword het, en vir herontwikkeling geskik is;

“direk gekoppelde sypeldigte area” ‘n sypeldigte gebied (d.w.s. beboude gebiede en ander sypeldigte oppervlakke) wat regstreeks in stormwaterdreins dreineer sonder om eers in of oor deurdringbare grond te vloei;

“groenterrein” ’n perseel of grond, byvoorbeeld parkgrond, oop ruimte en landbougrond, wat voorheen onontwikkeld was. Ontwikkeling op sodanige grond vereis in die algemeen ‘n verandering in grondgebruik/sonering;

“herhalingsinterval” of **“HI”** die gemiddelde interval in jaar tussen reënval- en oorstromingsvoorvalle wat dieselfde of erger is as ‘n bepaalde hewigheidsgraad;

“herontwikkeling” ook die skep, vervanging of aanbouing/uitbreiding van sypeldigte area en/of strukture op ‘n reeds ontwikkelde terrein;

“niestrukturele maatreëls” beplannings-, institusionele en besoedelingsvoorkomingspraktyke wat ontwerp is om besoedelende stowwe uit stormwaterafloop te hou en/of die volume stormwater wat bestuur moet word te verminder;

“ontwikkeling” enige mensgemaakte verandering aan eiendom, wat insluit, maar nie beperk is nie tot die oprigting of opknapping van geboue of ander strukture, opvulling, plaveiwerk, munisipale dienste, ensovoorts, of die verwante grondvoorbereidingswerk;

"Raad" die munisipaliteit van die Stad Kaapstad;

“retropassing” die proses van aanpassing van stormwaterbestuurtoestelle of -benaderings, of die instel van bykomende of alternatiewe toestelle of benaderings, in ‘n bestaande ontwikkelde gebied ten einde stormwater so goed moontlik te bestuur;

“sensitiewe bestaande watermassa” ‘n waterloop, vleiland of kusgebied wat volgens die Raad uit ‘n ekologiese, maatskaplike en/of ekonomiese perspektief sensitief of belangrik is of geag word;

“stormwater” water uit natuurlike neerslag en/of die opgaring daarvan, wat grondwater en fonteinwater wat gewoonlik deur die stormwaterstelsel afgevoer word, sowel as seewater in ‘n riviermonding insluit, maar wat water in ‘n drink- of afvalwaterverspreidingsnetwerk uitsluit;

“stormwaterstelsel” sowel geboude as natuurlike fasiliteite, wat pype, duikslote en waterlope insluit, hetsy oor of onder openbare of privaat grond, wat vir die bestuur, opgaar, vervoer, tydelike berging, beheer, monitering, behandeling, gebruik en wegvoer van stormwater gebruik of vereis word;

“strukturele maatreëls (kontroles, bestebestuurspraktyke)” permanente, ontwerpte toestelle wat vir die beheer, behandeling of voorkoming van stormwaterbesoedeling en/of die vermindering van die volume stormwater wat bestuur vereis, aangewend word;

“sypeldigte oppervlak” grond waar water nie na die suboppervlak kan deurdring nie, maar deur swaartekrag as bogrondse vloei oor die oppervlak gevoer word. Paaie, parkeerterreine, sypaadjies en dakke is voorbeelde van sypeldigte oppervlakke in stedelike gebiede;

“opvangsgebied” die gebied waaruit enige reënval, deur oppervlakvloei na ‘n gemeenskaplike punt of punte, in ‘n waterloop of vleiland (of deel daarvan) sal dreineer;

“vleiland” grond wat tussen aard- en watersisteme geleë is, en waar die watertafel gewoonlik op of na aan die oppervlak is, of waar die grond van tyd tot tyd met vlak water bedek is, welke grond normaalweg plantegroei (sou) onderhou wat tipies in deurweekte grond gedy. Hierdie omskrywing sluit dus in, maar is nie noodwendig beperk nie tot watermassas soos mere, brak vleie, kusmere, riviermondinge, moerasse, kuile, poele, panne en kunsmatig opgedamde water;

“vloedvlakte” die grond wat aan ‘n waterloop grens en volgens die Raad tot en met die honderdjaar-herhalingsinterval vatbaar is vir oorstroming;

“volhoubare stedelike dreineerstelsels (SUDS)” ‘n vertakking van watersensitiewe stedelike ontwerp wat bepaald op stormwaterbestuur konsentreer;

“voorontwikkeling” voordat enige ontwikkeling op ‘n betrokke eiendom plaasvind;

“waterloop” ‘n rivier, stroom, kanaal, sloot, vlei, vleiland, dam of meer waarin of waarheen water gereeld of met tussenposes vloei. ‘n Verwysing na ‘n waterloop sluit waar van toepassing ook sy bedding en walle in; en

“watersensitiewe stedelike ontwerp (WSUD)” ‘n benadering wat dit ten doel stel om te verseker dat ontwikkeling in stedelike gebiede holisties beplan, ontwerp, gebou en in stand gehou word ten

einde die negatiewe uitwerking op die natuurlike watersiklus te verminder en waterekosisteme te beskerm. Volhoubare watervoorsiening, sanitasie en stormwaterbestuur word alles in die WSSO-benadering vervat.

3 Inleiding

Waterlope en vleilande is ‘n integrerende deel van die stormwaterbestuurstelsel, maak ‘n belangrike onderdeel van die Stad se biodiversiteitsnetwerk uit, en verteenwoordig ‘n noodsaaklike element binne die Stad se stedelike weefsel deur die voorsiening van sowel ontspannings- as ekonomiese geleenthede.

Hierdie beleid ondersteun die doelwitte van die Departement: Paaie en Stormwater wat in die Stad Kaapstad se geïntegreerde-ontwikkelingsplan opgeneem is, naamlik:

- Om die impak van oorstroming op die bestaan van gemeenskappe en streeksekonomieë te verminder

- Om mensegesondheid en natuurlike wateromgewings te beskerm, en ontspanningswatergehalte te verbeter en in stand te hou

Die skadelike uitwerkings van verstedeliking op bestaande watermassas, d.w.s. riviere, strome, vleiland, grondwater en kuswater, is ‘n wêreldwye verskynsel. Sodanige uitwerkings sluit in:

- al hoe swakker watergehalte;
- kwynende grondwateraanvulling en -gehalte;
- agteruitgang van stroomkanale;
- toenemende waloorstroming;
- uitbreiding van vloedvlaktes;
- verlies aan ekosisteem-integriteit en -werking; en
- verlies aan biodiversiteit.

Oor die afgelope 20 jaar is daar wêreldwyd al hoe groter klem op die hantering van die uitwerking van verstedeliking op natuurlike watermassas geplaas, en die riglynbeginsels wat hieruit gespruit het staan as watersensitiewe stedelike ontwerp (WSUD) bekend.

WSUD erken die ontwrigting van die natuurlike watersiklus as die hoofrede vir die agteruitgang van stedelike watermassas. Uit ‘n stormwaterbestuursperspektief is die huidige toedrag van sake die gevolg van ‘n toename in sypeldigte oppervlakke, en die konsentrasie en versnelling van stormwaterafloop deur pyp- en kanaalnetwerke. Natuurlike absorpsie, vermindering en gehalteverbetering van afloop gaan verlore. Volhoubare stedelike dreineerstelsels (SUDS) is ‘n vertakking van WSUD wat bepaald oor stormwaterbestuursmaatreëls handel en so ver moontlik probeer om die natuurlike vloeistelsels in stand te hou of na te boots en die afskeiding van stedelike besoedelende stowwe in bestaande watermassas te voorkom. Hierdie maatreëls, wat as bestebestuurspraktyke (BMPs) bekend staan, word in twee groepe verdeel, naamlik strukturele en niestrukturele kontroles:

> Strukturele kontroles is ontwerpte toestelle wat gebruik word om afloopgehalte en -hoeveelheid te bestuur. Voorbeelde sluit rommelvangers, infiltreertoestelle, bioretensieselle of -komme, vloedvertragingsdamme en geboude vleilande in.
>
> Niestrukturele kontroles is institusionele en besoedelingvoorkomingspraktyke wat ontwerp is om so min moontlik of geen besoedelende stowwe in stormwaterafloop te laat beland en/of die volume stormwater wat bestuur verg te verminder. Niestrukturele kontroles sluit onder andere stadsbeplanningsaansporings, stormwatermeesterplanne, instandhoudingspraktyke vir besoedelingsvoorkoming, en openbare opvoeding in.

‘n Enkele maatreël is selde voldoende vir watergehaltebehandeling, en ‘n ‘behandelingsketting’ is dikwels nodig. Dít is ‘n kombinasie van verskillende metodes wat hetsy opeenvolgend of gelyktydig toegepas word, en gewoonlik voorkomende maatreëls by die bron, ontwikkelingsterreinkontroles én streekskontroles kan insluit, voordat die water na bestaande watermassas afgevoer word.

Oor die afgelope dekade het die Stad Kaapstad ‘n ongekende hoeveelheid ontwikkeling in sowel groenterrein- as ontwikkelde/bruinterreingebiede beleef. Gedagtig aan die bedreigde status van reeds afgetakelde riviere en vleilande, het die Stad se Departement: Paaie en Stormwater gereageer deur ontwikkelingsriglyne in te stel om die uitwerking van ontwikkeling te beperk, naamlik:

- **Beplannings- en ontwerpriglyne vir stormwaterbestuur by nuwe ontwikkelings, wat op 4 September 2002 deur die Stad se portefeuljekomitee oor vervoer, paaie en stormwater aanvaar is**

  In wese moedig hierdie dokument WSUD-beginsels aan. Dit beklemtoon beplannings- en ontwerp-oplossings wat kostedoeltreffend is, volhoubaar is met betrekking tot toekomstige instandhoudingsvereistes, omgewingsensitief is, en binne die bestaande beperkinge steeds maatskaplike sowel as geriefswaarde verhoog.

- **Riglyne vir vloedvlaktebestuur, soos op 19 November 2003 deur die burgemeesterskomitee aanvaar**

  Hierdie dokument bied ‘n raamwerk vir die bestuur van grondgebruik, ontwikkeling en aktiwiteite naby waterlope op ‘n wyse wat moontlike vloedskade beperk en die omgewing beskerm en verbeter.

  Dié riglyne word tans hersien en bygewerk tot ’n beleid getitel “Beleid oor vloedvlakte- en rivierkorridorbestuur”.

- **Konsepbeleid oor die voorsiening van stormwaterdienste in informele gebiede, Maart 2003**

  Hierdie dokument bied ‘n raamwerk vir die lewering van vloedbeheer- en -bestuursdienste aan minstens minimum vlakke in informele gebiede op openbare grond, totdat die nedersettings na volledige dienste opgegradeer of na alternatiewe terreine verskuif word indien die grond nie vir ontwikkeling geskik is nie.

4 Wetgewende raamwerk en mandaat

Grondgebruik, ontwikkeling en verwante aktiwiteite wat deur hierdie beleid geraak word, word ingevolge onderstaande statute en beplanningsraamwerke hanteer.

4.1 Nasionaal

- Wet op Nasionale Bouregulasies & Boustandaarde, 1997 (Wet 103 van 1977)
- Wet op Bewaring van Landbouhulpbronne (Wet 43 van 1983)
- Nasionale Waterwet (Wet 36 van 1998)
- Wet op Nasionale Omgewingsbestuur (Wet 107 van 1998)
- Rampbestuurwet (Wet 57 van 2002)
- Wet op Nasionale Omgewingsbestuur: Biodiversiteit (Wet 10 van 2004)

4.2 Provinsiaal

- Wes-Kaapse Wet op Beplanning & Ontwikkeling (Wet 7 van 1999) (Dié wet sal van toepassing wees wanneer dit in werking tree.)
- Ordonnansie op Grondgebruikbeplanning (Ordonnansie 15 van 1985)

4.3 Stad Kaapstad

- Geïntegreerde-ontwikkelingsplan (2007/8 tot 2011/12)

  Onderstaande doelwitte van die Departement: Paaie en Stormwater is in die Stad Kaapstad se geïntegreerde-ontwikkelingsplan opgeneem:

  > Verminder die uitwerking van oorstroming op die bestaan van gemeenskappe en streeksekonomieë
  >
  > Beskerm mensegesondheid en natuurlike wateromgewings, en verbeter en hou ontspanningswatergehalte in stand

- Verordening op Stormwaterbestuur (uitgevaardig in September 2005 – PK 6300), waarmee saam dié beleid gelees en geïnterpreteer moet word.

Voorts is ‘n aantal ander dokumente wat na ontwikkelingsbestuur verwys oor die jare ontwikkel; hierdie beleid is in die algemeen in ooreenstemming daarmee. ‘n Paar van die belangrikste dokumente is:

- *“Greening the City: Open Sapce and Recreation Plan for Cape Town” (1982),* die Stad Kaapstad se plan vir die vergroening van oop en ontspanningsruimtes.
- Die Departement: Paaie en Stormwater se strategie oor opvangsgebied-, stormwater- en rivierbestuur (2002).
- *“Biodiversity Strategy” (2003),* die Biodiversiteitstrategie.
- *“Coastal Zone Strategy” (2003),* die Kussonestrategie.
- *“CMOSS – An Open Space Strategy” (2005)*, CMOSS – ‘n oopruimtestrategie.
- *“Planning for Future Cape Town” (2006)*, ‘n beplanningsraming vir die Kaapstad van die toekoms.

5 Beleidsgronde en -beginsels

Terwyl daar in die algemeen aan die Departement: Paaie en Stormwater se stormwaterriglyne vir nuwe ontwikkelings, bepaald met betrekking tot die beperking van spitsafloop uit sodanige ontwikkelings, voldoen word, is die maatreëls vir die beperking van ander uitwerkings op bestaande watermassas minder suksesvol. Die riglyne skryf nóg voor onder watter omstandighede watergehaltebehandeling en ander BMPs op nuwe ontwikkelings toegepas moet word, nóg spesifiseer dit die parameters en vereiste uitkomste ten einde uitvoerige stadsbeplanning en ontwerp op grond van BMPs moontlik te maak.

Klousule 3 van die Stad se Verordening op Stormwaterbestuur, wat op 30 Augustus 2005 deur die Raad aanvaar is, verbied die afvoer van enigiets buiten stormwater in die stormwaterstelsel (klousule 3), terwyl klousule 4 en 5 oor die beskerming van die stormwaterstelsel (wat skade en die voorkoming van besoedeling insluit) en die voorkoming van vloedgevaar handel. Die verordening stel die Raad voorts daartoe in staat om voorwaardes met betrekking tot hierdie sake op te lê. Hierdie beleid is daarop gemik om die verordening te ondersteun, en die Stad se vermoë te verbeter om maatreëls in te stel en toe te pas wat sal verseker dat die Stad se natuurlike waterbates as deel van die stormwaterstelsel nie verder agteruitgaan nie, en selfs op die lange duur sal verbeter.

‘n Grondliggende beginsel is dat die persoon of liggaam, hetsy ‘n privaat onderneming of ‘n staatsinstelling, wat ‘n ontwikkeling skep, dit verantwoordelik moet doen en moet verseker dat sodanige ontwikkeling nie ‘n nadelige uitwerking op huidige en toekomstige gemeenskappe en natuurlike ekosisteme het nie.

Hierdie beleid is belangrik vir die verwesenliking van die diensuitkomste soos in afdeling 3 hier bo uitgelig. Dit verseker voorts dat die administratiewe optrede met betrekking tot grondgebruikbeplanningsaansoeke wettig, redelik en prosessueel billik is.

6 Beleid

6.1 Beleidstelling

Ten einde die uitwerking van stedelike stormwaterstelsels op bestaande watermassas te verminder, sal alle stormwaterbestuurstelsels ooreenkomstig bestepraktykmaatstawwe en -riglyne soos deur die Raad neergelê, beplan en ontwerp word om WSUD-beginsels en onderstaande bepaalde SUDS-oogmerke te ondersteun:

- Die verbetering van die gehalte van stormwaterafloop
- Die beheer van die hoeveelheid en tempo van stormwaterafloop
- Die ondersteuning van natuurlike grondwateraanvulling

6.2 Beleidsinwerkingstelling

6.2.1 Inwerkingstelling van watersensitiewe stedelike ontwerp beginsels in stormwaterbestuur

WSUD-beginsels sal, deur die toepassing van SUDS, soos volg by stedelike ontwikkeling ingesluit word:

A. Nuwe ontwikkelings

Nuwe ontwikkelings, wat groenterreingebiede sowel as herontwikkeling op bruinterreingebiede, asook bykomende ontwikkeling insluit op ’n perseel wat reeds ontwikkel is, sal beplan en ontwerp word om SUDS in die algemeen ooreenkomstig die Stad se beplannings- en ontwerpriglyne vir stormwaterbestuur by nuwe ontwikkelings, sowel as plaaslike en internasionale beste praktyk in te sluit.

B. Bestaande ontwikkelde gebiede

SUDS sal deur retropassing van toepaslike strukturele BMPs, sowel as deur niestrukturele maatreëls by bestaande ontwikkelde gebiede ingesluit word. Dit sal in die algemeen op grond van behoeftes toegepas word wat die Stad op streeksvlak deur opvangsgebied- en rivierbestuursbeplanning uitwys, sowel as ooreenkomstig stormwatermeesterplanne.

Die mate waarin die verskillende BMPs vir toepassing gekies word, sal van die maatstawwe afhang wat deur die Raad neergelê word en by hierdie beleid aangeheg is.

6.2.2 Maatstawwe vir die bereiking van doelwitte vir volhoubare stedelike dreineerstelsels in verskillende ontwikkelingscenario's (bylae)

Maatstawwe vir die toepassing van SUDS sal aandui:

- waar en onder watter omstandighede WSUD-oogmerke by die ontwerp en beplanning van nuwe ontwikkelings of by bestaande ontwikkelde gebiede ingesluit moet word; en

- in watter mate en met watter teikenvereistes BMPs op die betrokke ontwikkelingsgebied van toepassing is.

In die vasstelling van die maatstawwe, sal die Raad onder andere aandag skenk aan:

- die grootte van die ontwikkelingsterrein;
- die soort ontwikkeling (byvoorbeeld residensieel, industrieel, kommersieel);
- die ligging van die ontwikkelingsterrein;
- die sensitiwiteit, belang, en rehabilitasiepotensiaal van bestaande watermassas;
- bestaande opvangsgebied- en rivierbestuursplanne vir die gebied; en
- bestaande stormwatermeesterplanne vir die gebied.

Die Raad sal die maatstawwe van tyd tot tyd volgens veranderende plaaslike omstandighede en nuwe ontwikkelings op die gebied van WSUD en SUDS hersien. Die maatstawwe word in die bylae by hierdie beleid uiteengesit, en hersienings van die maatstawwe kan sonder heraanvaarding van die hele beleid deur die Raad goedgekeur word.

6.2.3 Goedkeuring van stormwaterbestuurstelsels

Stormwaterbestuurstelsels vir nuwe ontwikkeling wat ingevolge dié beleid beplan en ontwerp is, moet deur die Raad goedgekeur word.

In bepaalde omstandighede sal die Raad vereis dat 'n stormwaterbestuursplan voorgelê word.

6.2.4 Lae-inkomste- en informele-nedersettingsgebiede

BBP's moet by plaaslike omstandighede aangepas word, in besonder in lae-inkomste- en informele-nedersettingsgebiede waar daar dikwels 'n tekort aan grond is, wat behandeling by die oorsprong onprakties maak. Streeksmaatreëls kan vir dié gebiede geskik wees.

6.2.5 Beplanningsproses

<u>Metrowye ruimtelike ontwikkelings raamwerk</u>

Kwessies met betrekking tot water, in besonder bestaande watermassas, moet by die beplanningsproses ingesluit word ten einde volhoubare uitkomste te behaal. Om waterhulpbronne volhoubaar te gebruik, behoort water as 'n bate en teen die agtergrond van die algehele stedelike watersiklus beskou te word. Stormwaterdreinering, voedingstofbestuur, WSUD, die beskerming van waterhulpbronne, waterdoeltreffendheid, en waterherwinning en -hergebruik moet dus deel uitmaak van die holistiese en geïntegreerde beplanning van die Stad. As sodanig behoort voormelde in die metrowye ruimtelike ontwikkelings raamwerk sowel as in ander streeksgerigte ruimtelike beplannings benaderings en -meganismes vervat te word.

Plaaslike beplanning

Opvangsgebied- en rivierbestuursplanne behoort ontwikkel te word ten einde streeks- en plaaslike beplanningsprosesse te rig. Noue skakeling is nodig tussen stormwaterbestuurspraktisyns en plaaslike gebiedsbeplanners in die voorbereiding van stormwatermeesterplanne sowel as in die aanmoediging van WSUD in stedelike onderafdelings.

Opvangsgebiedbestuur-oordekkingsones

Beskermings- en bepaalde bestuursbehoeftes van bestaande watermassas (wat WSUD-vereistes insluit) kan met behulp van opvangsgebiedbestuur-oordekkingsones ingevolge die Raad se voorgestelde geïntegreerde soneringskema aangedui word.

6.2.6 Niestrukturele maatreëls

Niestrukturele maatreëls (byvoorbeeld openbare bewusmaking, opvoedingsprogramme, bedryfs- en instandhoudingspraktyke) sal strukturele ontwerp en beplanningsmaatreëls aanvul.

6.2.7 Integrasie by die omgewing

BBP's behoort stedelike biodiversiteit te ondersteun en die gerief en skoonheid van die ontwikkelingsterrein en die onmiddellike omgewing te verhoog.

6.2.8 Aansporingskemas

Die Raad kan aansporingskemas instel om die aanvaarding van WSUD-maatreëls deur privaat ontwikkelaars en individuele huishoudings, waar van toepassing, aan te moedig en in die hand te werk.

6.2.9 Bedryf en instandhouding

Strukturele BMPs moet ontwerp en ontwikkel word om bedryfs- en instandhoudingsvereistes na te kom én te beperk.

6.2.10 Monitering

Die toepassing van BMPs vir stormwaterbehandeling behoort voortdurend gemoniteer te word, en toepaslike optrede moet volg waar prestasie nie na wense is nie.

6.2.11 Watersensitiewe stedelike ontwerp in privaat ontwikkelings

Die Raad kan daarop aandring dat BMP-maatreëls binne die grense van 'n privaat ontwikkeling opgerig word en bly. Dit is veral van toepassing op privaat enkel-erf-ontwikkelings of privaat omheinde en/of afgesperde kantoorparke, nywerheidsparke, woonstelblokke, groepbehuisingslandgoedere of soortgelyke ontwikkelings waar die infrastruktuur binne die grense van die ontwikkelingsterrein in privaat besit is.

Tensy die Raad anders ooreenkom, sal die verantwoordelikheid vir die bedryf, instandhouding, monitering (sien 6.2.9 en 6.2.10 hierbo) en voortdurende doeltreffende werking van BMPs wat op

sodanige privaat grond geleë is, met inbegrip van die koste daaraan verbonde, by die eiendomseienaar, regspersoon of ander toepaslike regsverteenwoordigende liggaam van sodanige grond berus.

'n Ooreenkoms met dié strekking sal tussen die ontwikkelaar en die Raad aangegaan moet word, of as alternatief by die beheerliggaam/huiseienaarsvereniging se grondwet ingesluit en deur die Raad goedgekeur moet word, voordat oordrag van enige eiendom op die ontwikkelingsterrein mag plaasvind. Sodanige ooreenkoms sal bindend wees vir die eienaar, regsopvolgers, of die betrokke verteenwoordigende liggaam, na gelang van omstandighede. Die ooreenkoms moet onder andere insluit dat moniteringsresultate aan die Raad beskikbaar gestel moet word, en dat die Raad geregtig sal wees daarop om oudits van die fasiliteite uit te voer (wat sy eie monitering en inspeksies kan insluit), en om te vereis dat remediërende maatreels deur die eiendomseienaar geïmplementeer word ingeval enige fasiliteit versuim om te werk soos daar vereis word.

6.2.12 Versoening met ander volhoubaarheidsprogramme

Waar moontlik, behoort SUDS met ander WSUD-programme (soos die vermindering van drinkwatergebruik deur die hergebruik van afvalwaterafloop, reënwater-oesting, stormwaterhergebruik, ensovoorts) sowel as ander breër volhoubaarheidsprogramme gekombineer te word.

7 Bestek en toepassing

Hierdie beleid is van toepassing op enige grondgebruik-, ontwikkelings- of aktiwiteitsvoorstel binne die metropolitaanse gebied van Kaapstad wat in enige waterloop, vleiland of kusgebied dreineer. Dit is voorts bindend vir privaat individue en ondernemings sowel as vir alle staatsinstellings.

Hierdie beleid handel oor die vermindering van die impak van stormwater op bestaande watermassas, en beoog nie om oor alle ander aspekte van stormwaterbestuur, waaronder die beskerming van eiendom en gemeenskapsgesondheid en -veiligheid, te handel nie.

8 Uitkomste

Die toepassing van hierdie beleid in nuwe ontwikkelende sowel as bestaande gebiede sal tot die volgende aanleiding gee:

- Die vermindering van die impak van stormwater uit nuwe ontwikkelings op bestaande watermassas, byvoorbeeld waterlope, vleilande en kuswater.

- Die voorkoming van verdere agteruitgang van bestaande watermassas weens stormwaterdreinering uit bestaande ontwikkelings, sowel as die omkeer op die lange duur van huidige ongewenste stormwaterimpakte.

9 Datum van inwerkingtreding

Tensy anders aangedui, sal die datum van inwerkingtreding vir hierdie beleid die datum wees waarop die beleid deur die Raad aanvaar word.

10 Algemeen

10.1 Statutêre permitte en goedkeurings

Sekere WSUD-ontwikkelings kan onderworpe wees aan goedkeuring deur provinsiale en nasionale staatsdepartemente ingevolge nasionale wetgewing.

Voorbeelde sluit in, maar is nie daartoe beperk nie,

- die berging van water;
- die belemmering of omleiding van watervloei in ‘n waterloop;
- wysiging van die bedding, walle, loop of kenmerke van ‘n waterloop.

10.2 Vrywaring

Nóg die Stad Kaapstad nóg enige Stad-amptenaar sal vir enige skade wat uit die toepassing of navolging van hierdie beleid kan spruit, aanspreeklik wees.

10.3 Kopiereg

BYLAE: MAATSTAWWE VIR DIE INSLUITING VAN VOLHOUBARE STEDELIKE DREINEERSTELSELS (SUDS)

<table>
<tr><th><u>SUDS
DOELWITTE</u></th><th>Groenterreinontwikkelings
en
Bruinterrein en bestaande ontwikkelingsterreine wat in die opvangsgebiede van sensitiewe watermassas geleë is</th><th>Bruinterreine en bestaande ontwikkelingsterreine
>50 000 m^2</th><th>Bruinterreine en bestaande ontwikkelingsterreine
4 000 m^2 – 50 000 m^2

en

totale sypeldigte oppervlakte (bestaande én nuut) >15% van terrein</th><th>Bruinterreine en bestaande ontwikkelingsterreine
<4 000 m^2

en

totale sypeldigte oppervlakte (bestaande én nuut) >600 m²</th></tr>
<tr><td rowspan="3"><u>VERBETER AFLOOPGEHALTE</u>

Verwyder besoedelende stowwe deur kombinasie van vermindering en/of skeiding van sypeldigte gebiede, en die gebruik van BMPs wat stormwaterafloop infiltreer, opvang en behandel</td><td colspan="3">Ontwerpstormvoorval vir watergehaltebehandeling:
½-jaar-HI, 24 h-storm</td><td rowspan="2">Stormwaterbehandeling op die terrein nie vereis nie, maar waar prakties moontlik aangemoedig

Streeksbuiteterreinmaatreëls om die verminderingsteikens te behaal:

SS - 80%-vermindering
TP - 45%-vermindering</td></tr>
<tr><td>Teiken vir verwydering van besoedelende stowwe:

Vermindering van jaarlikse hoeveelheid besoedelende stowwe wat ná ontwikkeling van ontwikkelingsterreine afgevoer word:

Drywende vaste stowwe (“SS”) & totale hoeveelheid fosfor (“TP”) – verminder tot vlakke van onontwikkelde opvangsgebied,
<u>of</u>
SS - 80%-vermindering
TP - 45%-vermindering

na gelang van watter scenario die meeste behandeling verg</td><td>Teiken vir verwydering van besoedelende stowwe:

Vermindering op die perseel van jaarlikse hoeveelheid besoedelende stowwe wat ná ontwikkeling van ontwikkelingsterreine afgevoer word:

SS - 80%-vermindering
TP - 45%-vermindering</td><td>Teiken vir verwydering van besoedelende stowwe:

Kombinasie van maatreëls op die terrein sowel as streeksbuiteterreinmaatreëls om die verminderingsteikens te behaal:

SS - 80%-vermindering
TP - 45%-vermindering</td></tr>
<tr><td colspan="3">Alle ontwikkelings moet rommel, olie, ghries by die bron opvang</td></tr>
</table>

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<tr><td rowspan="4"><u>BEHEER AFLOOPHOEVEELHEID EN -TEMPO</u></td><td>Beskerm stabiliteit van kanale stroom af</td><td colspan="2">Uitgebreide 24 h-vloedvertraging vir eenjaar-HI-24 h-stormvoorval</td><td rowspan="3">Kombinasie van maatreëls op die terrein sowel as streeksbuiteterreinmaatreëls om aan die vereistes vir ontwikkelingsterreine van >50 000 m^2 te voldoen</td><td rowspan="4">Afloopbeheermaatreëls op die terrein nie vereis nie, maar waar prakties moontlik aangemoedig

Streeksbuiteterreinmaatreëls vir afloopbestuur om aan die vereistes vir ontwikkelingsterreine van >50 000 m^2 te voldoen</td></tr>
<tr><td>Beskerm eiendomme stroom af teen betreklik gereelde, hinderlike oorstromings</td><td colspan="2">Vermindering van tot en met 10 jaar-HI-spitsvloei tot voorontwikkelingsvlak</td></tr>
<tr><td rowspan="2">Beskerm vloedvlakte-ontwikkelings en vloedvlaktes teen negatiewe impakte van uiterste vloede</td><td colspan="2">Vermindering van tot en met 50 jaar-HI-spitsvloei tot bestaande ontwikkelingsvlakke.
Evalueer die uitwerking van die 100 jaar-HI-stormvoorval op die stormwaterbestuurstelsel, aanliggende eiendom en fasiliteite en eiendom stroom af. Bestuur die uitwerking deur vloedvertragingskontroles en/of vloedvlaktebestuur</td></tr>
<tr><td colspan="3">Ontwikkelings aanliggend aan vloedvlaktes moet aan die vereistes van die beleid oor vloedvlakte- en rivierkorridorbestuur voldoen</td></tr>
<tr><td colspan="2"><u>MOEDIG NATUURLIKE GRONDWATERAANVULLING AAN</u></td><td colspan="4">Waar toepaslik, moet terreinspesifieke vereistes in oorleg met die Raad oorweeg word</td></tr>
</table>

NOTAS:

1. Die Raad lê bykomende vereistes op waar dit van mening is dat bepaalde besoedelingsbedreigings met betrekking tot die aard van die nuwe ontwikkeling kan ontstaan, of waar dit deur bepaalde opvangsgebied- of watermassa-omstandighede geregverdig word.

2. Stormwaterafloopgehalte en -hoeveelheid kan beheer word deur die vermindering van direk gekoppelde sypeldigte gebiede, en/of maatreëls vervat in die Raad se Beplannings- en Ontwerpriglyne vir Stormwaterbestuur by Nuwe Ontwikkelings, weergawe 1.0 van Julie 2002, soos gewysig, en/of ander goedgekeurde metodes. Alle maatreëls (BMPs) moet beoordeel en ontwerp word om aan die aangewese standaarde aan die hand van bestepraktykmetodes, -parameters en -aannames, soos deur die Raad goedgekeur, te voldoen.

3. Maatreëls op die terrein verwys na maatreëls binne die ontwikkelingsterrein in sy geheel, maar kan maatreëls op elke onderverdeelde eenheid daarvan insluit. In die algemeen sal ‘n behandelingsketting vereis word wat uit ‘n kombinasie van kleiner BMPs hoër op in die ontwikkeling tot groter damtipe maatreëls by die afvoerpunt laer af in die ontwikkeling kan bestaan.

4. In sekere gebiede kan verskillende vereistes ingevolge ‘n Raadsgoedgekeurde streekstormwatermeesterplan geld. Die Raad kan na goeddunke bepaal watter vereistes van toepassing sal wees.

5. Vir formele, lae-inkomste-, staatgesubsidieerde behuising kan vereistes vir behandeling op die terrein en/of spitsafloopvermindering ingekort word waar ‘n streekstormwatermeesterplan bestaan en vir streeksmaatreëls voorsiening maak om besoedeling en spitsafloop te verminder. Parke en ander openbare oop ruimtes van sodanige behuisingskemas behoort egter, waar uitvoerbaar, oor sodanige maatreëls op die terrein te beskik.

6. Vir informele-nedersettingsgebiede behoort stormwaterbestuursmaatreëls ooreenkomstig die Stad se Konsepbeleid oor die Voorsiening van Stormwaterdienste in Informele Gebiede, weergawe 1, konsep 2, van Maart 2003, soos gewysig, toegepas te word.

7. BMPs behoort stedelike biodiversiteit te ondersteun en die geriefs- en skoonheidswaarde van die terrein en die onmiddellike omgewing te verhoog.

8. Definisies: TP = totale fosfor; SS = drywende vaste stowwe; “ontwerpstorm” die reënvalstorm wat gebruik word om die grootte van die behandelingsfasiliteit te bepaal; HI = herhalingsinterval – die gemiddelde interval in jare tussen reënval- of vloedvoorvalle wat gelyk staan met ’n spesifieke hewigheidsgraad of dit oorskry.