FLOODPLAIN AND RIVER CORRIDOR MANAGEMENT POLICY

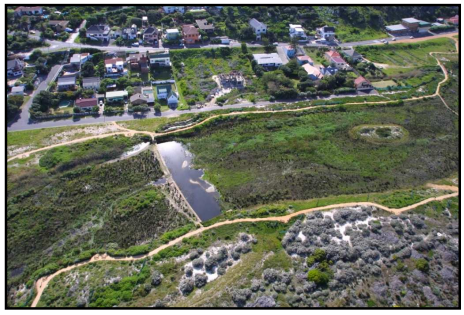
APPROVED BY COUNCIL : 27 MAY 2009

C 58/05/09

ROADS & STORMWATER DEPARTMENT

Catchment, Stormwater and River Management Branch

Floodplain and River Corridor Management Policy



Balancing flood risk, ecological and socio-economic considerations in developments near watercourses and wetlands

Version 2.1

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

CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

(Previously entitled: Floodplain Management Guidelines)

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1 Preamble

There is a developing worldwide view in many cities that watercourses and wetlands, whether natural or constructed, form an integral component of urban stormwater management systems, are important for sustaining the aquatic ecology of the city, and are an essential element in restoring the urban fabric of the city by providing both recreational and socio-economic opportunities to all citizens.

A well managed watercourse / wetland is a valuable resource for improving the quality of life and aesthetic nature of an urban area and provides benefits for public health, recreation and economic growth. This is particularly important in the context of changing weather patterns and the associated local, national and international strategies targeting sustainability issues.

This policy document is an enhancement of the former Floodplain Management Guidelines (Version 1.0) published in September 2003. Various improvements have been effected to align the policy principles to corporate strategic objectives. It outlines the procedure for managing development adjacent to watercourses and wetlands taking cognisance of the flood regime, aquatic and riparian ecology as well as socio-economic factors.

2 Definitions

In this policy, unless inconsistent with the context:–

"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, or the associated preparation of land;

“ecological buffer” means a strip of land adjacent to a watercourse, wetland or vlei required for the protection and enhancement of these ecosystems;

"fill" means the placement of fill material such as natural sands, dirt, soil or rock and may include concrete, cement or other waste materials at a specified location to bring the ground surface up to a desired elevation;

“floodlines” mean lines on a map or drawing depicting water levels likely to be reached by a flood having a specified recurrence interval;

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

“floor” means the inner, lower surface of a room, garage or basement to which the occupants of a building have access;

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

“river corridor” means a mixed-use corridor comprising a watercourse and/or associated wetlands, the floodplain, the ecological buffer and the area required for specific aesthetic, recreational and/or socio-economic needs. This combined area must be managed in an integrated manner which balances the flooding, environmental, social and economic issues;

“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, watercourses and their associated floodplains, 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;

"structure" means any man-made feature affixed to the ground or attached to something located on the ground, including but not limited to fences, walls, berms, levees, fill, storage tanks, shelters or buildings;

“top of bank” of a watercourse means a position identifiable by scour lines, vegetation limits, changes in bed and bank materials, the presence of flood deposited silt, or abrupt changes in slope;

“water sensitive urban design” 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.

“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.

“wetland delineation” means the determination and marking of the boundary of a wetland using nationally accepted guidelines / methodologies.

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 in restoring 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 management of land use, development or activity adjacent to watercourses and wetlands is important for the following reasons:

- It is far more cost effective, in the long term, to develop in areas where the threat of flooding is infrequent and the severity of flooding is minimal as opposed to the retrospective

implementation of flood mitigation works which would generally be extremely costly and sometimes prone to catastrophic failure when flood flows exceed the design capacity of infrastructure

- Climate change predictions indicate greater variability in the intensity and magnitude of storm events coupled with accelerated sea level rise. These uncertainties pose significant challenges for the management of major drainage systems.

- Encroachments result in ecological degradation, often reducing water quality and precipitating loss of ecological resources irreversibly.

- Since modifications to natural systems may disrupt natural aquatic and geomorphological processes they require a long term maintenance commitment. Therefore urban activity must be managed in such a way that maintenance activities can be adequately conducted.

- To promote a sense of place and recreational enjoyment for communities.

This policy describes a merit based approach for dealing with land use, development or activity proposals near watercourses and wetlands.

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)
- National Environmental Management: Protected Areas Act (Act 57 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.

The City's By-law relating to Stormwater Management defines the stormwater system to mean "both the constructed and natural facilities, including pipes, culverts, watercourses and their associated floodplains, 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".

Clauses 4 and 5 of the By-law deal with the protection of the stormwater system (which includes the natural and built systems and associated floodplain) and the prevention of flood risk.

It is in terms of this By-law therefore that Council may prohibit or conditionally permit development in areas adjacent to watercourses and wetlands.

In addition, a number of other documents have been produced over the years which have referred to the management of development adjacent to watercourses and wetlands, either directly or by implication, and considered how these areas should be managed. Some of the more pertinent are listed below.

- Greening the City: Open Space and Recreation Plan for Cape Town (1982)
- Roads and Stormwater Department: Catchment, Stormwater and River Management Strategy (2002)
- Biodiversity Strategy (2003) and Biodiversity Report (2008)
- Coastal Zone Strategy (2003) and Coastal Zone Management Review and State of the Coast Report Year 3 (2006)
- CMOSS – An Open Space Strategy (2005)
- Planning for Future Cape Town (2006)

5 Policy Rationale

Within the confines of the Cape Town Metropolitan Area the pressure to develop is significant and requires careful management to avoid developing in high flood risk areas, to protect the environmental integrity of aquatic resources and to ensure that permitted development enhances the aesthetics and character of the adjacent watercourses / wetlands.

In order to achieve this, a new approach is required where engineering, environmental and socio-economic elements are assessed and integrated as the vision for a particular watercourse / wetland system.

In this Policy a merit based approach is advocated for dealing with proposals within and adjacent to floodprone areas and environmental buffers. In addition, socio-economic considerations are also introduced whereby any permitted development will take cognizance of the presence of the watercourse / wetland and thereby holistically enhance the urban fabric of the area.

This Policy is important in achieving the service outcomes (refer to Section 3) namely; reducing the impact of flooding on people and properties, and of safeguarding human health, aquatic environments and improving and maintaining recreational water quality.

6 Policy Statement

"In order to ensure sustainable development and associated activities within or adjacent to natural and built stormwater systems, and that there is a balanced consideration of potential flood risk, environmental impacts and socio-economic needs, all developments within these areas shall be planned and designed in accordance with best practice and the requirements and conditions laid down in this policy."

This policy supports 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.

7 Scope and Application

This policy is applicable to land use, development or building or activity proposals adjacent to watercourses or wetlands. The principles regarding flood management can also be applied to development in the vicinity of formal stormwater management systems.

8 Objectives

The objectives of this policy are to manage development in a manner that;

- Limits or reduces exposure to flood risk by avoiding hazardous, uneconomic or unwise use of floodplains, thereby protecting life, property and community infrastructure.
- Protects the natural flood carrying capacity of watercourses and wetlands.
- Protects and enhances the intrinsic value and the environmental goods and services provided by watercourses, wetlands and associated riparian areas and floodplains.
- Facilitates the beneficial integration of watercourses into the urban landscape by creating an aesthetically pleasing public resource which will ultimately allow for the social and economic up-liftment of communities adjacent to watercourses and wetlands.
- Provides an effective decision making tool for officials, developers and consultants by introducing an element of predictability with regard to applications for development along watercourses / river corridors and adjacent to wetlands.
- Promotes sustainable development from engineering, environmental and socio-economic perspectives.

9 Planning, Safety, Environmental and Socio-economic Considerations

Land use, development or activities near watercourses and wetlands must be appropriate for the anticipated degree of flood risk whilst minimising concomitant environmental impacts and sustaining a sense of place and urban form. The following sections outline the planning, safety, environmental and socio-economic aspects to be considered when evaluating applications as envisaged in Section 7 above.

9.1 Plans / Sectoral plans

Cognisance must be taken of applicable requirements and recommendations contained in various plans / related documents. Various categories of plans that should be consulted where

available are listed below. Sound engineering and environmental judgment should be applied in the absence of these guide plans.

- Roads and Stormwater Department: Catchment, Stormwater and River Management Strategy 2002 – 2007
- Catchment & River Management Plan
- Stormwater Master Plan

9.2 Flood Management and Public Safety

Watercourses and their associated floodplains can convey significant volumes of water under flood conditions. For the purposes of this policy, a floodplain is defined as the area susceptible to inundation by the 100-year flood, as indicated in Figure 1 below.

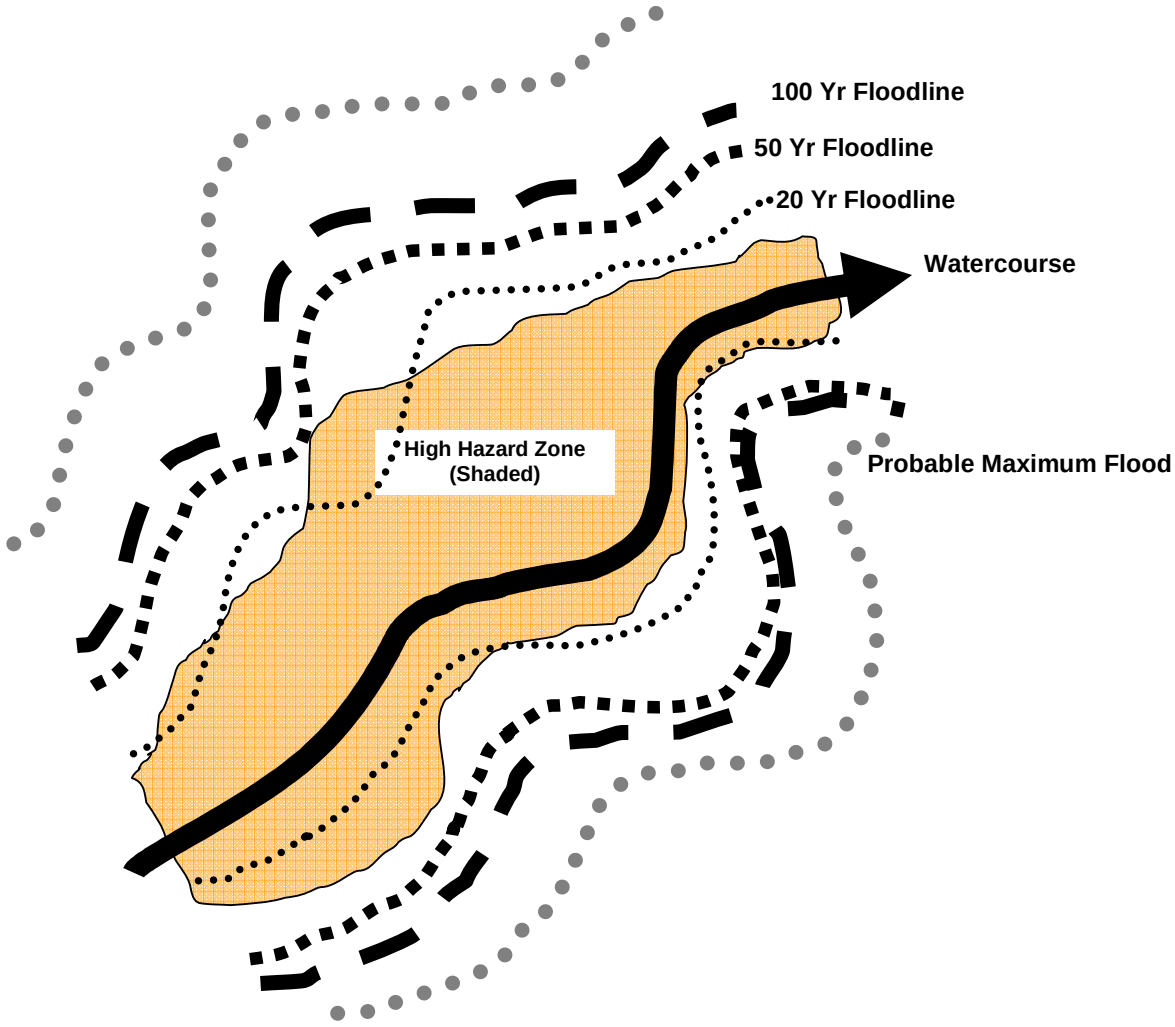

Figure 1: Schematic representation of floodplain depicting watercourse and significant floodlines

The high hazard zone within a floodplain, based on an analysis of the expected flow characteristics of the 100-year flood, is graphically indicated in Figure 2 below. The ability to wade or gain vehicular access as well as the stability of structures such as dwellings or boundary walls are deemed seriously compromised under these conditions. No new or additional rights or the exercising of existing development rights will be granted to properties located within the high hazard zone.

The permissible extent and nature of land use, development or activities within floodplains must be subject to stringent evaluation and control in the interests of public safety. In particular, obstruction to the free flow of water within the 20-year floodline area shall not be permitted. However, between the 50 and 100-year floodlines, some developments or activities may be permitted, subject to such conditions as the City may in its discretion impose, while developments with particular evacuation or emergency response issues and high risk developments will only be permitted above the 100-year floodline (refer to Table 1).

Any proposed development or redevelopment within the floodplain must be supported by a report by a registered professional engineer to ensure that any new or existing structure can withstand the forces and effects of floodwaters (refer to requirement R1 in Table 1). If building plans are submitted in respect of proposed buildings within the floodplain and such a report has not previously been submitted, it must be included with the building plans.

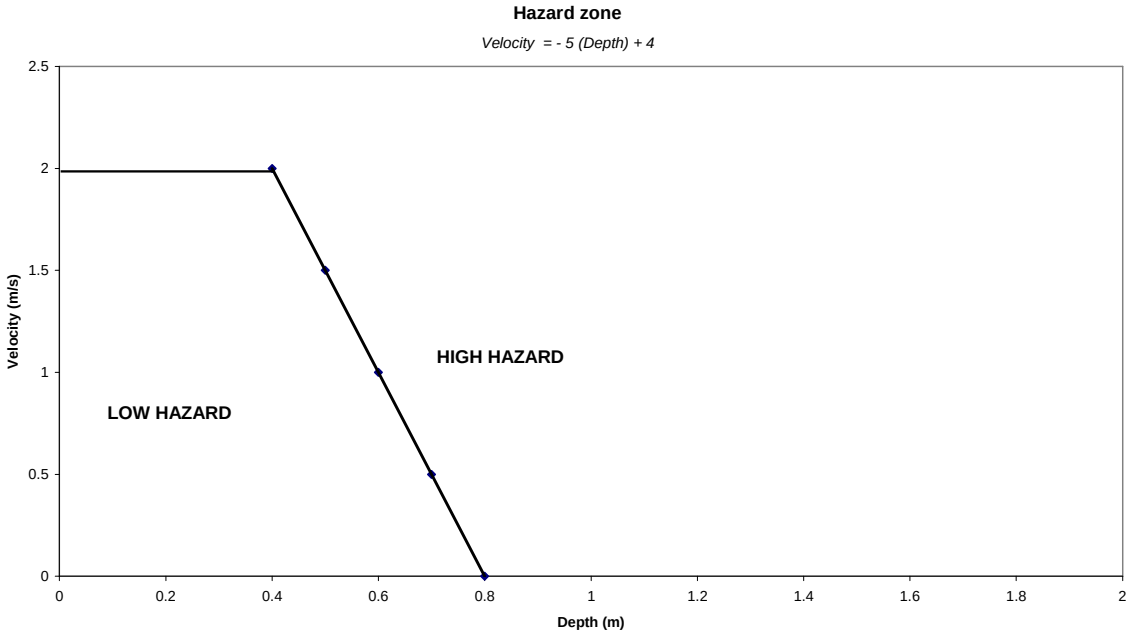

Figure 2: Flood hazard zones

9.2.1 Floodline Determination

Where floodlines have not previously been determined for a particular location, the developer will be required to procure the services of a suitably qualified registered engineering professional to undertake such determinations at own cost and to submit a report in connection therewith together with such planning or building plan approval applications he or she may lodge with the City. This should take place prior to any detailed planning being undertaken and must be in accordance with generally accepted practice.

In determining catchment runoff, the foreseeable ultimate development scenario for the catchment must be considered. All floodlines must be based on the theoretical energy level as opposed to the water surface level.

Permissible landuse / development / activity and applicable conditions within the floodplain are indicated in Table 1: Framework for the assessment of proposals (section 10). Depending on the type of application a range of floodlines must be determined as indicated below:

Floodline (Annual Probability)	Rationale
2 year (50%)	Determine if required (see Table 1)

Floodline (Annual Probability)	Rationale
20 Year (5 %)	Required for parking and other activities
50 Year (2%)	Controls a number of development activities
100 Year (1%)	Controls floor levels and high risk development activities

Note: Other legislation (e.g. NEMA) may require additional floodline determinations and therefore further restrictions may apply.

9.3 Ecological Buffers

Watercourses and wetlands with their adjacent riparian areas and associated fauna and flora must be protected or "buffered" from the impacts of adjacent development or activity. Often referred to as ecological buffers, these protected zones / set backs provide continuous corridors and habitat for flora and fauna. Buffers also provide other benefits such as water quality improvement of point or diffuse sources of pollution, stream bank and erosion protection from the hydrological impacts associated with hardened catchments in urban areas, and space for implementation of appropriate water sensitive urban design elements. In addition buffer areas can provide socio-economic benefits in the form public open space, opportunities for recreation and environmental education / awareness, and enhancement of waterway, visual and property values. In instances where watercourses have been canalized, buffers are still required to aid maintenance and, in some instances, to allow adequate space for possible future restoration activities.

Determination of ecological buffer widths is based on classification of the watercourse or wetland in terms of a recognized national classification system followed by an assessment of the ecological condition and importance of the system (using nationally recognized methods). Watercourses and wetlands with high ecological condition and importance require a wider buffer than those which have been exposed to considerable modification. For watercourses, buffer width may also be adjusted on the basis of the width of the active channel. The buffer is measured from watercourse "top of bank" or outer edge of the wetland (which must be delineated according to nationally accepted guidelines / methodologies e.g. DWAF 1999 and 2005). They have been determined for several of the significant watercourses and certain wetlands within the metropolitan area and vary in width between 10 m and 40 m for watercourses, and up to 75 m for wetlands. A minimum buffer of 10 m is required for concrete canals. Buffers must be adjusted to accommodate wetlands in close association with a watercourse as indicated schematically in Figure 3.

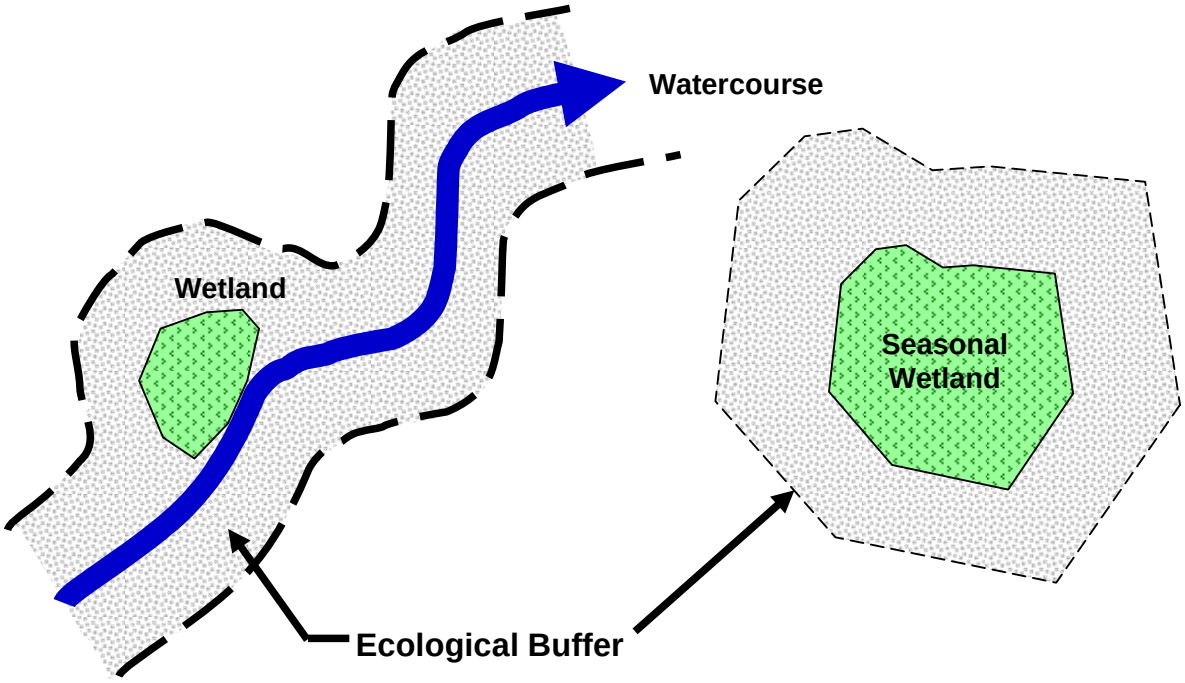

Figure 3: Schematic representation of ecological buffers

Where ecological buffers have not yet been determined for a particular watercourse or wetland, either the City may determine a buffer width by extrapolation if calculated buffer widths are available for similar situations elsewhere, or the developer is required to procure the services of a suitably qualified freshwater ecologist to recommend buffer widths in terms of Council guidelines or approved best practice at own cost and to submit a report in connection therewith together with such planning and building plan approval applications as he or she may submit to the City. This must take place prior to any detailed planning being undertaken.

Site / case specific adjustment of the recommended minimum buffer width may be necessary to allow for exceptional circumstances such as the presence of sensitive habitats, fauna or flora which may require wider buffers for adequate protection; the intensity of adjacent landuse and the nature of anticipated impacts; and the physico-chemical and/or botanical characteristics of the buffer area which may alter the efficacy of the buffer to mitigate against identified impacts.

Permissible landuse / development / activity and applicable conditions within the ecological buffer are indicated in Table 1: Framework for the assessment of proposals (section 10).

9.4 Geomorphological Processes

Cognisance must also be taken of the fact that the beds of many watercourses, particularly on the Cape Flats, are dynamic and prone to erosion, sedimentation and meandering. Where the ecological buffer width and/or floodplain setback requirement is considered an inadequate allowance for these natural processes, additional site-specific studies and setback width may be required in the discretion of the City prior to planning and building plan approval. In these instances, the developer will be required to procure the services of a suitably qualified geomorphologist to determine setback widths at own cost and to submit a report in connection therewith upon request.

9.5 Socio-economic Considerations

Watercourses and wetlands are public resources which have the remarkable potential to stimulate local economies and to break down political, social and economic barriers if managed

and used with this goal in mind. Assessment of developments adjacent to watercourses and wetlands must therefore take cognizance of this potential and promote developments which actively incorporate these systems into the urban fabric of the area.

Without derogating from the general nature of what is stated in this clause, the following specific issues must be considered:

- Water Sensitive Urban Design principles
- Layout / configuration and nature of adjacent development and/or associated activities
- Watercourse / wetland frontage with adjacent development
- Areas of passive and active open space
- Areas for walkways, cycle tracks, picnic facilities
- Aesthetic improvement of degraded systems with appropriate indigenous landscaping
- Public access
- Safety and security
- Economic upliftment
- Environmental education and awareness
- Environmental standards and best practice

Socio-economic considerations such as those listed may be taken into consideration by the City when evaluating planning and building plan approval applications, in its discretion.

9.6 River Corridor

The “River Corridor” comprises the watercourse and/or associated wetlands (as applicable), the floodplain, the ecological buffer and the area required for specific aesthetic, recreational and/or socio-economic needs. This combined area must be managed in an integrated manner which balances the flooding, environmental, social and economic issues (as outlined in the preceding sections 9.2 to 9.5) . The City shall strive to develop river corridor plans for all river corridor areas within its jurisdiction, in order to give effect ultimately to this holisitic vision.

An allowance of up to 10 m (measured from the top of bank or outer edge of the wetland) dependent on the current or future maintenance strategy for the watercourse / wetland must be made for maintenance access.

10 Assessment of Proposals and Applications

This policy advocates a merit-based approach to the assessment of proposals and applications pertaining to property near watercourses and wetlands. Any new land use, development, activity or building must be appropriate for the anticipated flood risk and geomorphological process requirements and compatible with the ecological buffer and socio-economic requirements, whilst allowing access for maintenance. Table 1 provides acceptable land use for the various floodplain zones and buffer, as well as specific requirements in instances where conditional approval is considered.

Proposed land-use / development / activities / buildings must be set back beyond the greater of the applicable floodplain, geomorphological and ecological buffer requirements.

Typical proposals requiring input and approval may be divided into three broad categories as described in the following sections.

10.1 Zoning Schemes, Structure Plans and Related Policies

Only land uses considered appropriate within the applicable floodplain and ecological buffer (Refer Table 1) can be contemplated. In addition geomorphological, maintenance as well as social and economic aspects must be considered.

10.2 Land Use Planning Applications

10.2.1 New Development Rights

Developments or activities falling within this category typically require additional and/or amended land use rights to proceed, such as:

- Rezoning
- Sub-division
- Land use departures
- Consent use
- Amendment of plans or conditions of approval

Only land uses, developments or activities considered appropriate within the applicable floodplain and ecological buffer (Refer to Table 1) can be contemplated. In addition geomorphological, maintenance, social and economic aspects must be considered where appropriate.

10.2.2 New Development Rights on Existing Building Footprint

Where no increase in existing building footprint or usage is proposed, as in the case of the redevelopment of an existing building, deviation from this could be considered, where the development or activity is located outside the high hazard zone, subject to compliance with the following:

- Fulfillment of requirements R1 and R2 on Table 1.
- Implementation of appropriate flood protection and mitigation works, including but not limited to the flood proofing of buildings and flood evacuation plans if appropriate. The developer must make adequate provision for future maintenance or operation.
- The registration of a Notarial Deed of Restraint against alienation, which provides that the registered owner shall not be entitled to alienate his/her property without the consent of the City. Such consent shall be withheld until such time as the new owner/purchaser signs an indemnity on terms and conditions acceptable to council. The issuing of a clearance certificate in terms of section 118(1) of the Municipal Systems Act No. 32 of 2000 shall not constitute consent for the abovementioned purpose.
- Endorsement of all Building Plans to the effect that the owner is aware of the consequences of developing within a floodplain and floodlines to be depicted on all applicable building plans.

10.3 Building Plan Applications (Exercising of Existing Development Rights)

Consideration of building plans for structures, submitted in terms of existing development rights, will be conditional on the following:

- Location of buildings on the higher lying portions of the property with floors above the 100-year flood level where practically possible, the flood proofing of buildings and flood evacuation plans where necessary.
- No buildings will be permitted within the high hazard zone.
- Limitation of all construction / development activity within the ecological buffer.
- Consideration of measures to mitigate potential maintenance impacts as appropriate.
- The registration of a Notarial Deed of Restraint against alienation, which provides that the registered owner shall not be entitled to alienate his/her property without the consent of the

City. Such consent shall be withheld until such time as the new owner/purchaser signs an indemnity on terms and conditions acceptable to council. The issuing of a clearance certificate in terms of section 118(1) of the Municipal Systems Act No. 32 of 2000 shall not constitute consent for the abovementioned purpose.

- Endorsement of all Building Plans to the effect that the owner is aware of the consequences of developing within a floodplain and floodlines to be depicted on all applicable building plans.

10.4 Development Layouts

In preparing development layouts cognisance must be taken of the various considerations outlined in the previous sections (10.2 and 10.3) as well as Council's Stormwater Management Planning and Design Guidelines for New Developments. Where appropriate, a servitude protecting the floodplain and / or ecological buffer from alteration or obstruction on completion of the development must be registered in favour of Council by the developer at own cost. Where maintenance access is required, this must also be incorporated in the conditions of servitude.

Buildings must be located above the appropriate flood level or buffer zone, or on the upper extremities of the property if the site is entirely located within the relevant floodline, and must front or provide views onto the watercourse or wetland to ensure adequate visual surveillance and integration of the system into the fabric of the development and the City as a whole. Perimeter fencing below the 50-year floodline must be visually permeable from ground level and not adversely affect the free flow of water and movement of aquatic fauna (e.g. palisade fencing).

10.5 Table 1: Framework for the Assessment of Proposals

Table Shading Key	
Colour Coding	**Description**
Clear	Permitted
	Conditionally Permitted
	Not Permitted

Additional Requirement Key	
Code	**Requirement**
R1	A registered Engineering Professional must be engaged by the developer to satisfactorily demonstrate and certify that: ▪ The activity / development will not materially increase flood hazards for other property owners or adversely affect flood behavior or the stability of river channels. ▪ Any structure can withstand the forces and effects of flowing floodwaters, including scour of foundations, debris forces and buoyancy forces.
R2	Floors above 1:100 year flood level. Basements (non-habitable purposes) to be flood-proofed to 1:50-year flood level.
R3	Floors above 1:50 year flood level.
R4	A registered Environmental Professional (Aquatic Ecologist) must be engaged by the developer to determine the ecological buffer (if not available) and to satisfactorily demonstrate and certify that: • The activity / development will not negatively impact on the present condition of the watercourse or wetland OR • The activity or development will improve the condition of the watercourse or wetland from its present state

The land use / development / activity must be set back beyond the *greater* of the applicable floodplain zone / geomorphological or ecological buffer requirements

Land use / Development / Activity		**Requirements and Conditions**							
		Floodplain Zone (Flood Recurrence Interval in Years)						**Ecological Buffer (Width in meters)**	
Category	**Typical Examples**	**< 2**	**2–20**	**20–50**	**50-100**	**>100 (Note 1)**	***Explanatory Notes***	**Up to 75m (Note 2,3)**	***Explanatory Notes***
Industrial Development	Light, General, High Risk								
	Extractive (Mining)		R1	R1	R1				
Business Development	General				R2				
	Commercial (CBD)								
	Service Stations								
Residential Development	Formal				R2				
	Informal								
Community & Public Facilities	Hospitals, Clinics, Nursing Homes, Old Age Home								

Land use / Development / Activity		Requirements and Conditions							
		Floodplain Zone (Flood Recurrence Interval in Years)						Ecological Buffer (Width in meters)	
Category	**Typical Examples**	**< 2**	**2–20**	**20–50**	**50-100**	**>100 (Note 1)**	***Explanatory Notes***	**Up to 75m (Note 2,3)**	***Explanatory Notes***
	Prisons, Military Bases, Police Stations, Fire Stations								
	Cemeteries								
	Educational Facilities								
	Public Halls, Places of Worship								
Utility / Infrastructure Services (incl. Private)	Stormwater Management Facilities	R1	R1					R4	
	Underground Sewers, Services						Manhole cover levels above 1:50 year flood level. Structure to be suitably protected and integrated into surrounds		
	On Site Sewage Treatment								
	Water & Wastewater Works, Pump Stations								
	Solid Waste Disposal Sites								
	Power Generation, Electrical Substations								
	Telecommunication Exchanges & Transmitters.								
Environment, Open Space & Recreation	Nature Reserves and Conservancies						All structures/earthworks to be subject to conditional approval		All structures/earthworks to be subject to conditional approval
	Sports Fields, Golf Courses, Picnic Areas		R1	R3			All club houses and similar structures to be above the 50 year floodline	R4	
	Public & Private Open Space						All structures/earthworks to be subject to conditional approval		All structures/earthworks to be subject to conditional approval
Agriculture	Cultivation, Free-range animal husbandry		R1	R1			Subject to Conservation of Agricultural Resources Act (CARA) Regulations		

Land use / Development / Activity		Requirements and Conditions							
		Floodplain Zone (Flood Recurrence Interval in Years)						Ecological Buffer (Width in meters)	
Category	**Typical Examples**	**< 2**	**2–20**	**20–50**	**50-100**	**>100 (Note 1)**	***Explanatory Notes***	**Up to 75m (Note 2,3)**	***Explanatory Notes***
	Agricultural Processing / Industry				R1,R2				
	Feedlots, Piggeries and Battery Farming			R1	R1		Subject to Conservation of Agricultural Resources Act (CARA) Regulations		
Resorts	Hotels, Holiday Resorts and Bungalows,				R2				
	Caravan and Camping Sites		R1	R3			All ablution facilities to be located above the 20 year floodline	R4	
Transport Systems	Roads and Railways elevated above NGL		R1	R1	R1				
	Modal Interchanges, Bus Depots, Railway Stations								
	Parking Areas			R1					
Bank Protection Works, Flow Diversion Structures, & Earthworks	Revetments, Training Walls, Levees	R1	R1	R1				R4	
	Dams, Weirs, Bridges	R1	R1	R1	R1	R1	Dam-break analysis to be performed where required in terms of National Water Act	R4	
	Filling				R1	R1	In exceptional circumstances minor "smoothing" of the 50 / 100 year floodline may be considered, provided equivalent compensatory stage storage volume is provided within the development precinct		

Note 1: The effects of the 100-year storm event on all developments and infrastructure, including adjacent and downstream properties, must be evaluated to comply with the above requirements.

Note 2: Watercourses: 10 to 40 m; Wetlands: up to 75 m

Note 3: Conditional approval may be granted for certain low impact social needs / activities, appropriate landscaping, indigenous planting, pathways

11 Commencement and Implementation

11.1 Commencement Date

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

11.2 Existing Policies / Guidelines Repealed

The following existing policies / guidelines are repealed:

Title	Commencement Date	Resolution
Floodplain Management Guidelines: Version 1.0	September 2003	MC37/11/03

12 General

12.1 Statutory Permits and Approvals

Certain developments or activities may be subject to approvals in terms of national 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
- Using water for recreational purposes
- Abstraction
- Land reclamation
- Agricultural cultivation in close proximity to watercourses.

12.2 Indemnity

The degree of flood and/or environmental protection recommended by this policy is considered reasonable for regulatory purposes and is based on engineering and scientific methods of study. Mere compliance with its provisions cannot ensure complete protection from flooding particularly from high order events or reduced environmental impact and must therefore not be construed as a warranty.

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.

12.3 Copyright

12.4 References

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DEPARTEMENT PAAIE & STORMWATER

Opvangsgebied-, stormwater-en-rivierbestuurstak

Beleid oor vloedvlakte- en rivierkorridorbestuur

Die balansering van vloedgevaar, ekologiese en sosio-ekonomiese oorwegings by ontwikkelings naby waterlope en vleilande

Weergawe 2.1

Goedgekeur deur die raad
27 Mei 2009
C 58/05/09

CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

(Voorheen getiteld: Riglyne vir vloedvlaktebestuur)

Inhoudsopgawe

1 Aanhef

Dit is toenemend ‘n wêreldsiening dat waterlope en vleilande, hetsy natuurlik of mensgemaak, ‘n integrerende deel van stormwaterbestuurstelsels uitmaak, belangrik is vir die volhoubaarheid van stede se waterekologie, en ‘n noodsaaklike element is by die herstel van stedelike weefsel deur die voorsiening van sowel ontspannings- as sosio-ekonomiese geleenthede aan alle inwoners.

‘n Goed bestuurde waterloop/vleiland is ‘n waardevolle hulpbron vir die verbetering van die lewensgehalte in en skoonheid van ‘n stedelike gebied, en hou voordele vir openbare gesondheid, ontspanning en ekonomiese groei in. Dit is veral belangrik in die lig van veranderende weerpatrone en die verwante plaaslike, nasionale en internasionale strategieë gemik op volhoubaarheidskwessies.

Hierdie beleidsdokument is ‘n versterking van die vorige riglyne vir vloedvlaktebestuur (weergawe 1.0) van September 2003. Verskeie verbeteringe is aangebring om die beleidsbeginsels met korporatiewe strategiese doelwitte te versoen. Met inagneming van die vloedregime, water- en oewer-ekologie sowel as sosio-ekonomiese faktore, sit dit die prosedure vir ontwikkelingsbestuur langs waterlope en vleilande uiteen.

2 Omskrywings

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

“ekologiese buffer” ‘n strook grond aanliggend aan ‘n waterloop of vleiland, wat vir die beskerming en versterking van dié ekosisteme nodig is;

“grond” die laagste binnevlak van ‘n vertrek, motorhuis of kelder waartoe diegene in ‘n gebou toegang het;

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

“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;

“oorskryding” ‘n indringing of skending;

“opvul(ling)” die plasing van opvulmateriaal, soos natuurlike sand, slyk, grond of klip, wat beton, sement of ander afvalmateriaal kan insluit, op ‘n bepaalde plek om die grondvlak tot ‘n gewenste hoogte te lig;

"raad" die Stad Kaapstad;

“rivierkorridor” ‘n gemengdegebruik-korridor wat bestaan uit ‘n waterloop en/of verwante vleiland, die vloedvlakte, die ekologiese buffer en die gebied wat vir bepaalde estetiese, ontspannings- en/of sosio-ekonomiese behoeftes vereis word. Hierdie gebied moet in sy geheel geïntegreerd bestuur word ten einde oorstromings-, omgewings-, maatskaplike en ekonomiese kwessies te balanseer;

“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 met hulle gepaardgaande vloedvlaktes 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;

"struktuur" enige mensgemaakte kenmerk wat aan die grond of aan iets op die grond geheg is, wat insluit, maar nie beperk is nie tot omheinings, mure, berms, oewerwalle, opvulling, opgaartenks, skuilings of geboue;

“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;

“vleilandkartering” die bepaling en merk van die grens van ’n vleiland deur nasionaal aanvaarde riglyne/metodologieë te gebruik;

“vloedlyne” lyne op ‘n kaart of skets wat die watervlakke aandui wat ‘n vloed met ‘n bepaalde herhalingsinterval waarskynlik sal bereik;

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

“walbopunt” van ‘n waterloop, ‘n punt wat deur skuurlyne, plantegroeigrense, veranderinge in bedding- en walmateriaal, die teenwoordigheid van slykafsetting weens oorstroming, of skielike hellingveranderinge gekenmerk word;

“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” ‘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.

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 in die herstel van die Stad se stedelike weefsel deur die voorsiening van sowel ontspannings- as ekonomiese geleenthede.

Hierdie beleid ondersteun die Departement: Paaie en Stormwater se doelwitte 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 bestuur van grondgebruik, ontwikkeling of aktiwiteit langs waterlope en vleilande is om die volgende redes belangrik:

- Dit is op lang termyn by verre meer kostedoeltreffend om in gebiede te ontwikkel waar die vloedgevaar ongereeld en die hewigheid van oorstromingsvoorvalle minimaal is, in vergelyking met terugwerkende vloedskadetempering wat gewoonlik uiters duur is en soms rampspoedige gevolge kan hê wanneer vloede die ontwerpvermoë van infrastruktuur oorskry.

- Klimaatsvoorspellings dui op al hoe meer wisseling in die intensiteit en krag van stormvoorvalle, saam met ‘n snelle styging in die seevlak. Hierdie onsekerhede hou groot uitdagings vir die bestuur van groot dreineerstelsels in.

- Oorskrydings lei tot ekologiese agteruitgang, verswak dikwels watergehalte, en verhaas die onherroeplike verlies aan ekologiese hulpbronne.

- Aangesien die wysiging van natuursisteme natuurlike water- en geomorfologiese prosesse kan ontwrig, is langtermyntoewyding nodig wat instandhouding betref. Daarom moet stedelike aktiwiteit op so ‘n manier bestuur word dat voldoende instandhoudingsaktiwiteite steeds onderneem kan word.

- Dit ondersteun ‘n plekgeheue, en werk ontspanningsgenot vir gemeenskappe in die hand.

Hierdie beleid beskryf ‘n merietegegronde benadering tot voorstelle vir grondgebruik, ontwikkeling of aktiwiteit naby waterlope en vleilande.

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)
- Wet op Nasionale Omgewingsbestuur: Beskermde Gebiede (Wet 57 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.

  Die Stad se Verordening op Stormwaterbestuur omskryf die stormwaterstelsel as "die opgerigte en natuurlike geriewe, waaronder pype, duikslote, waterlope en hulle meegaande vloedpleine, hetsy oor of onder grond in openbare of private besit, wat vir die bestuur, versameling, vervoer, tydelike berging, beheer, monitor, behandeling, gebruik en wegvoer van vloedwater gebruik of vereis word".

  Klousule 4 en 5 handel oor die beskerming van die stormwaterstelsel (wat natuurlike en geboude sisteme en die verwante vloedvlaktes insluit) en die voorkoming van vloedgevaar.

  Die raad kan dus ingevolge hierdie verordening ontwikkeling in gebiede langs waterlope en vleilande verbied of voorwaardelik toelaat.

Voorts is 'n aantal ander dokumente wat hetsy regstreeks of by implikasie na ontwikkelings- en gebiedsbestuur langs waterlope en vleilande verwys, oor die jare ontwikkel. '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)* and *"Biodiversity Report" (2008),* die Biodiversiteitstrategie en Biodiversiteitsverslag.
- *"Coastal Zone Strategy" (2003)* and *"Coastal Zone Management Review and State of the Coast Report Year 3" (2006), die* Kussonestrategie en die Kussonebestuursoorsig en verslag oor die stand van die kus jaar 3.
- *"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

Binne die grense van die Kaapstad- metropolitaanse gebied is die druk om te ontwikkel groot, en dit verg dus omsigtige bestuur om ontwikkeling in gebiede met 'n hoë vloedgevaar te voorkom, die omgewingsintegriteit van waterhulpbronne te beskerm, en te verseker dat toegelate ontwikkeling die skoonheid en karakter van die aanliggende waterlope/vleilande versterk.

Om dít te bereik, is 'n nuwe benadering nodig waardeur ontwerp-, omgewings- en sosio-ekonomiese elemente as die visie vir 'n bepaalde waterloop-/vleilandsisteem beoordeel en geïntegreer word.

Hierdie beleid beveel ‘n merietegegronde benadering tot voorstelle binne en langs vloedgeteisterde gebiede en omgewingsbuffers aan. Voorts word sosio-ekonomiese oorwegings ook in ag geneem, en behoort enige toegelate ontwikkeling dus aandag te skenk aan die teenwoordigheid van die waterloop/vleiland, en daardeur die stedelike weefsel van die gebied holisties te versterk.

Hierdie beleid is belangrik vir die verwesenliking van die diensuitkomste soos in afdeling 3 hier bo uitgelig, naamlik om die impak van oorstroming op mense en eiendomme te verminder, en mensegesondheid en wateromgewings te beskerm en ontspanningswatergehalte te verbeter en in stand te hou.

6 Beleidstelling

‘Om volhoubare ontwikkeling en verwante aktiwiteite binne of langs natuurlike en geboude stormwaterstelsels te verseker, en voorts te verseker dat die moontlike vloedgevaar, omgewingsimpakte én sosio-ekonomiese behoeftes gebalanseerd oorweeg word, sal alle ontwikkelings in hierdie gebiede ooreenkomstig beste praktyk en die vereistes en voorwaardes in hierdie beleid neergelê, beplan en ontwerp word.’

Hierdie beleid ondersteun die diensuitkomste soos in afdeling 3 hier bo uiteengesit, en verseker voorts dat die administratiewe optrede met betrekking tot grondgebruikbeplanningsaansoeke wettig, redelik en prosessueel billik is.

7 Bestek en toepassing

Hierdie beleid is van toepassing op grondgebruik-, ontwikkelings- of bou- of aktiwiteitsvoorstelle langs waterlope of vleilande. Die beginsels met betrekking tot vloedbestuur kan ook op ontwikkeling in die omgewing van formele stormwaterbestuurstelsels toegepas word.

8 Oogmerke

Die oogmerke van hierdie beleid is om ontwikkeling op ‘n manier te bestuur wat:

- blootstelling aan vloedgevaar beperk of verminder deur gevaarlike, onekonomiese of onwyse gebruik van vloedvlaktes te verhoed, en daardeur lewens, eiendom en gemeenskapinfrastruktuur te beskerm;
- die natuurlike vloeddravermoë van waterlope en vleilande beskerm;
- die intrinsieke waarde en die omgewingsgoedere en -dienste wat waterlope, vleilande en verwante oewergebiede en vloedvlaktes bied, te beskerm en te versterk;
- die voordelige integrasie van waterlope by die stedelike landskap in die hand werk deur ‘n esteties bevredigende openbare hulpbron te skep, wat uiteindelik die maatskaplike en ekonomiese opheffing van gemeenskappe langs waterlope en vleilande moontlik sal maak;
- ‘n doeltreffende besluitnemingsinstrument vir amptenare, ontwikkelaars en konsultante bied deur ‘n mate van voorspelbaarheid met betrekking tot ontwikkelingsaansoeke langs waterlope/rivierkorridors en vleilande te skep; en
- volhoubare ontwikkeling uit ‘n ontwerp-, omgewings- en sosio-ekonomiese perspektief ondersteun.

9 Beplannings-, veiligheids-, omgewings- en sosio-ekonomiese oorwegings

Grondgebruik, ontwikkeling of aktiwiteite naby waterlope en vleilande moet geskik wees vir die verwagte graad van vloedgevaar, terwyl dit ook die gepaardgaande omgewingsimpak beperk en ‘n plekgeheue en stedelike vorm behou. Die afdelings hieronder sit die beplannings-, veiligheids-, omgewings- en sosio-ekonomiese aspekte uiteen wat in die beoordeling van aansoeke oorweeg moet word, soos daar in afdeling 7 hierbo bedoel word.

9.1 Planne / sektorale planne

Toepaslike vereistes en aanbevelings in verskeie planne/verwante dokumente moet in ag geneem word. Die verskillende kategorieë planne wat, waar beskikbaar, geraadpleeg behoort te word, word hier onder gelys. Gesonde ontwerp- en omgewingsoordeel behoort in die afwesigheid van hierdie gidsplanne gebruik te word.

- Die Departement: Paaie en Stormwater se strategie oor opvangsgebied-, stormwater- en rivierbestuur 2002–2007
- Opvangsgebied- & rivierbestuursplan
- Stormwatermeesterplan

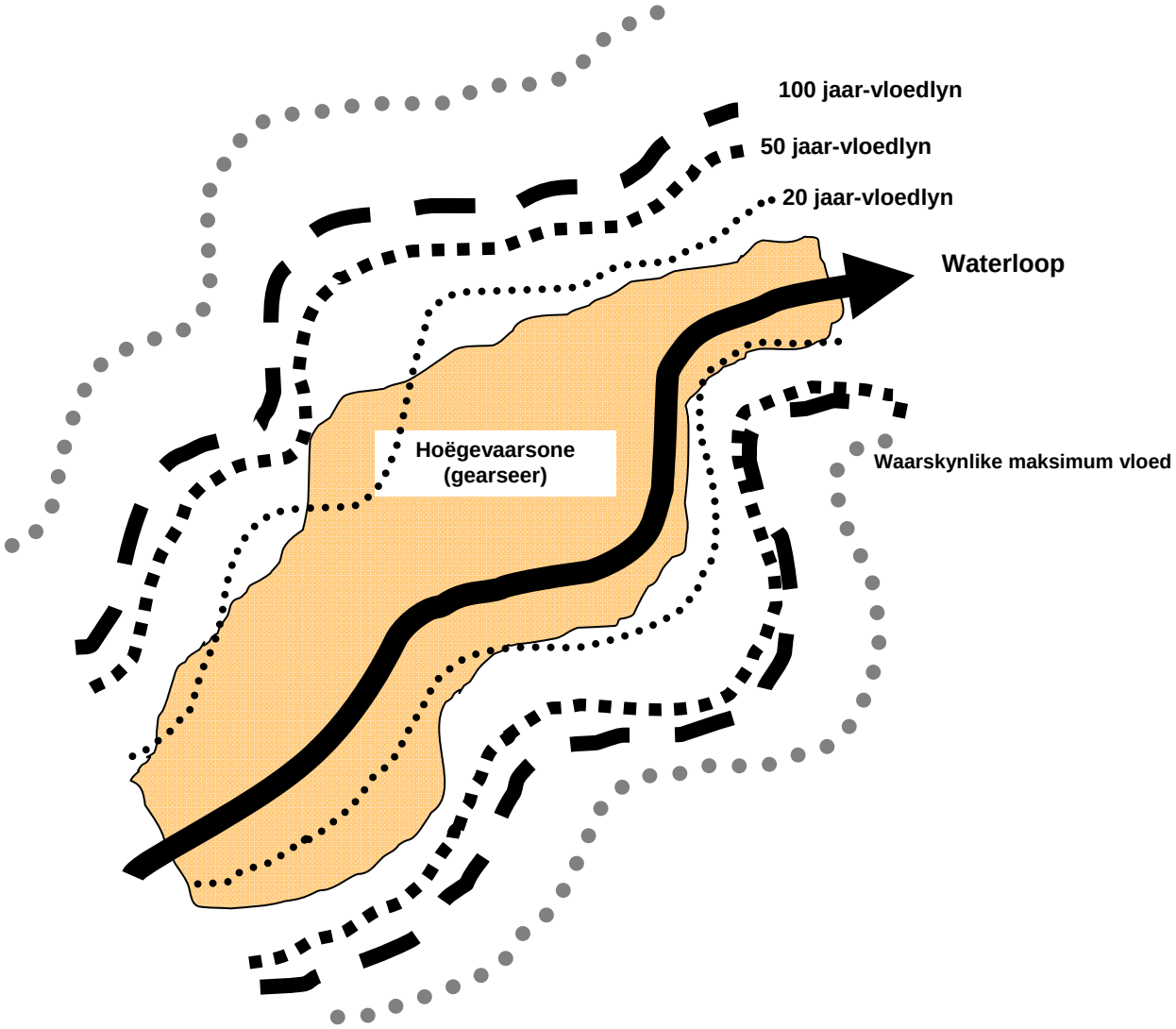
9.2 Vloedbestuur en openbare veiligheid

Waterlope en hulle verwante vloedvlaktes kan onder vloedomstandighede groot volumes water dra. Vir die doeleindes van hierdie riglynbeleid, word ‘n vloedvlakte omskryf as die area wat vatbaar is vir oorstroming tot en met die 100 jaar-vloed, soos in Figuur 1 hieronder aangedui.

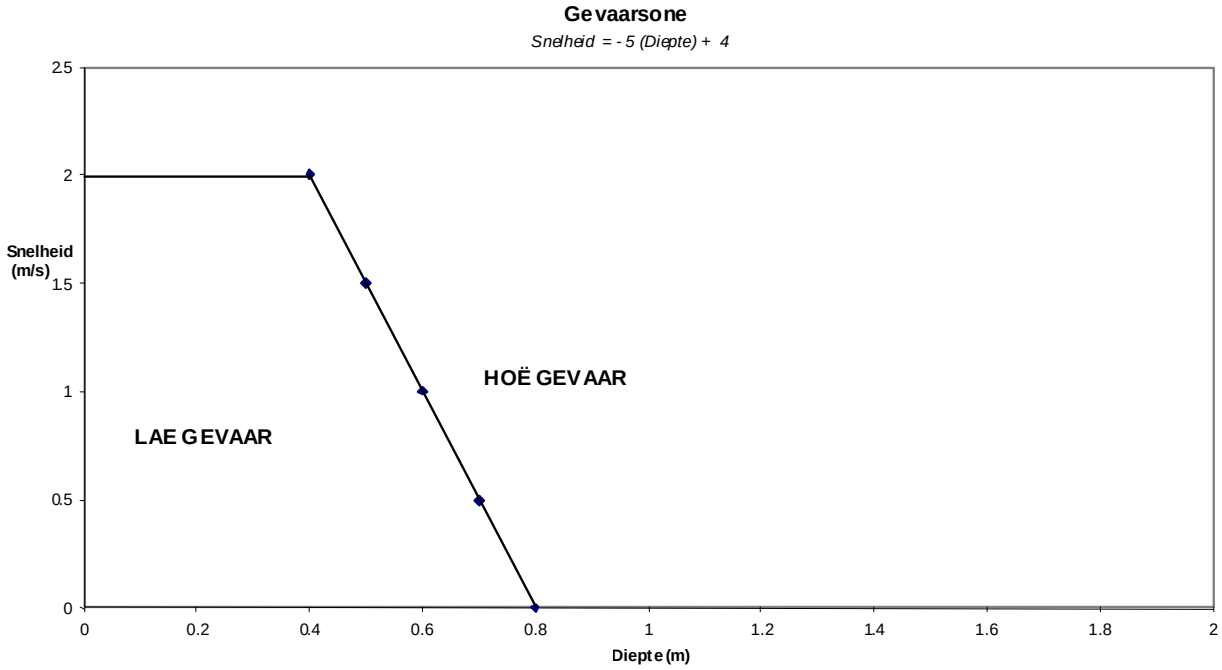
Die hoëgevaarsone binne ’n vloedvlakte, gegrond op die ontleding van die verwagte vloei-eienskappe van die 100 jaar-vloed, word grafies in Figuur 2 hieronder aangedui. Die vermoë om deur die water te loop of voertuigtoegang te verkry, sowel as die stabiliteit van strukture soos wonings of grensmure word onder hierdie omstandighede as ernstig gekompromitteer beskou. Geen nuwe of bykomente regte of die uitoefening van bestaande ontwikkelingsregte sal toegestaan word vir eiendomme wat in die hoëgevaarsone geleë is nie.

Die toegelate omvang en aard van grondgebruik, ontwikkeling of aktiwiteite in vloedvlaktes moet in die belang van openbare veiligheid aan streng beoordeling en beheer onderwerp word. In die besonder word die versperring van vrye watervloei binne die 20 jaar-vloedlyngebied hoegenaamd nie toegelaat nie. Tussen die 50 jaar- en 100 jaar-vloedlyne kan die meeste ontwikkelings of aktiwiteite toegelaat word, onderhewig aan sodanige voorwaardes na gelang die Stad na eie goeddunke kan oplê, terwyl ontwikkelings met bepaalde ontruimings- of noodreaksiekwessies sowel as hoërisiko-ontwikkelings slegs bo die 100 jaar-vloedlyn toegelaat sal word (sien Tabel 1).

Enige voorgestelde ontwikkeling of herontwikkeling binne die vloedvlakte moet deur ’n verslag deur ’n geregistreerde ingenieur gesteun word om te verseker dat enige nuwe of bestaande struktuur die kragte en effekte van vloedwater kan weerstaan (sien vereiste R1 in Tabel 1). As bouplanne ten opsigte van voorgestelde geboue binne die vloedvlakte voorgelê word, en sodanige verslag nie voorheen voorgelê is nie, moet die laasgenoemde by die bouplanne ingesluit word.



Figuur 1: Skematiese voorstelling van vloedvlakte, met waterloop en belangrike vloedlyne daarop uitgebeeld.



Figuur 2: Vloedgevaarsones

9.2.1 Vloedlynvasstelling

Waar vloedlyne nog nie voorheen vir ‘n bepaalde plek vasgestel is nie, sal daar van die ontwikkelaar verwag word om op eie koste die dienste van ‘n toepaslik gekwalifiseerde en geregistreerde ingenieur te verkry om sodanige vasstelling te doen, en om ’n verslag daaroor in te dien tesame met sodanige aansoeke om goedkeuring van beplanning of bouplanne wat hy/sy by die Stad kan indien. Dít behoort te geskied voordat enige uitvoerige beplanning ‘n aanvang neem, en moet ooreenkomstig algemeen aanvaarde praktyk gebeur.

In die bepaling van die afloop in die opvangsgebied, moet die voorsienbare maksimum-ontwikkelingscenario vir die opvangsgebied in ag geneem word. Alle vloedlyne moet gegrond word op die teoretiese energievlak teenoor die vlak van die wateroppervlakte.

Toelaatbare grondgebruike/ontwikkeling/aktiwiteite en toepaslike voorwaardes in die vloedvlakte word in Tabel 1, “Raamwerk vir die beoordeling van voorstelle” (afdeling 10), aangedui. Afhangende van die soort aansoek, moet ‘n reeks vloedlyne soos hier onder aangedui, vasgestel word:

Vloedlyn (jaarlikse waarskynlikheid)	Motivering
2 jaar (50%)	Bepaal, indien vereis (sien tabel 1)
20 jaar (5 %)	Vereis vir parkering en ander aktiwiteite
50 jaar (2%)	Beheer ‘n aantal ontwikkelingsaktiwiteite
100 jaar (1%)	Beheer grondvlakke en hoërisiko-ontwikkelingsaktiwiteite

Let wel: ander wetgewing (bv. die Wet op Nasionale Omgewingsbestuur) kan dalk bykomende vloedlynbepalings vereis, en bykomende beperkings kan dus van toepassing wees.

9.3 Ekologiese buffers

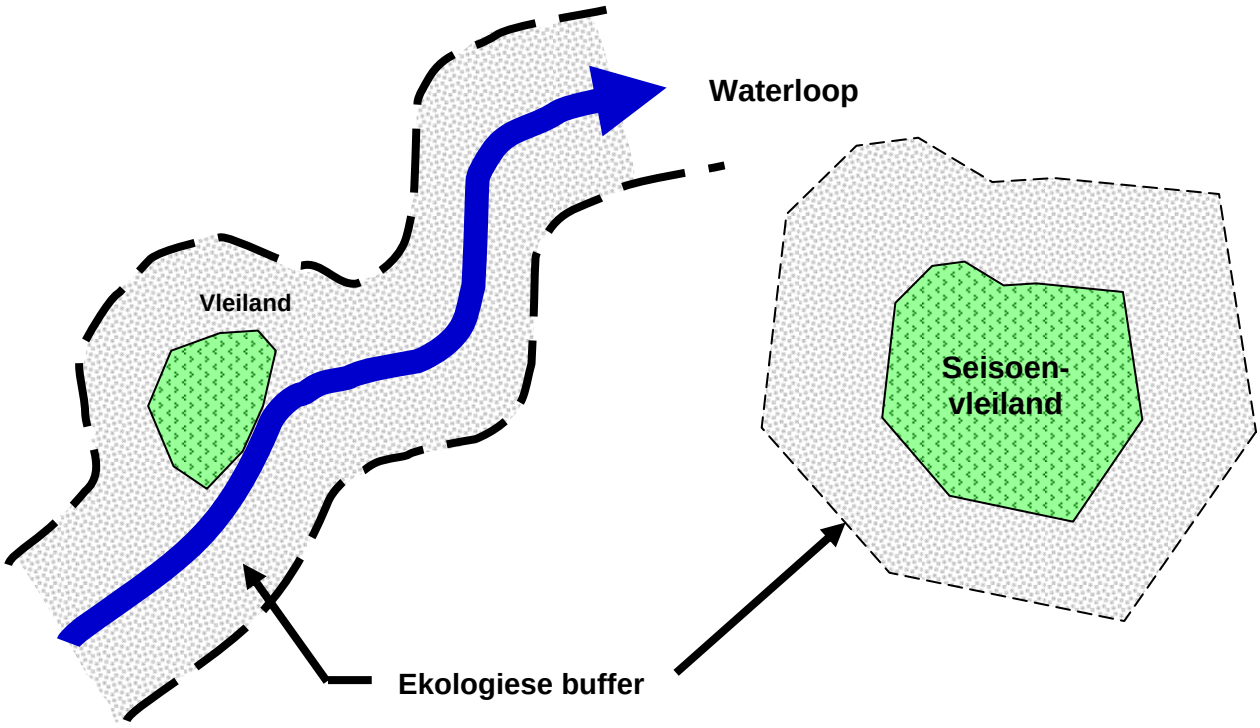
Waterlope en vleilande met hulle aanliggende oewergebiede en verwante diere- en plantelewe het ‘n ‘buffer’ teen die impak van aanliggende ontwikkeling of aktiwiteit nodig. Hierdie beskermde sones/inspringings, wat dikwels ekologiese buffers genoem word, verteenwoordig ononderbroke korridors en habitat vir plante en diere. Buffers hou ook ander voordele in, soos watergehalteverbetering by punt- of verspreide besoedelingsbronne, stroombank- en erosiebeskerming teen die hidrologiese effek wat met geharde opvangsgebiede in stedelike omgewings gepaardgaan, en ruimte vir die inwerkingstelling van toepaslike watersensitiewe-stedelikeontwerpelemente. Voorts kan buffergebiede ook sosio-ekonomiese voordele in die vorm van openbare oop ruimtes, geleenthede vir ontspanning en omgewingsopvoeding/-bewusmaking, en die verhoging van waterlope se visuele en eiendomswaardes inhou. In gevalle waar waterlope gekanaliseer is, word buffers steeds vereis om instandhouding moontlik te maak en om, in sommige gevalle, voldoende ruimte vir moontlike toekomstige herstelaktiwiteite te laat.

Die vasstelling van ekologiese-bufferbreedtes berus op die klassifikasie van die waterloop of vleiland ingevolge ‘n erkende nasionale klassifikasiestelsel, gevolg deur ‘n beoordeling van die ekologiese toestand en belang van die sisteem (deur van nasionaal erkende metodes gebruik te maak). Waterlope en vleilande in ‘n goeie ekologiese toestand en van groot belang vereis ‘n breër buffer as dié wat aan beduidende wysigings blootgestel is. Vir waterlope word bufferbreedtes ook op grond van die breedte van die aktiewe kanaal aangepas. Die buffer word van die waterloop se walbopunt, of die buiterand van die vleiland gemeet (wat ooreenkomstig nasionaal aanvaarde riglyne/metodologieë gekarteer moet wees, bv. “DWAF” 1999 en 2005. Hierdie punte en rande is vir verskeie van die belangrike waterlope en sekere vleilandgebiede in die metropolitaanse gebied vasgestel, en wissel in breedte tussen 10 m en 40 m vir waterlope, en tot en met 75 m vir vleilande. ‘n Minimum buffer van 10 m word vir betonkanale vereis. Buffers kan ook aangepas word om voorsiening te maak vir gevalle waar vleiland en ‘n waterloop in tandem is, soos skematies in Figuur 3 aangedui.

Waar ekologiese buffers nog nie voorheen vir ‘n bepaalde waterloop of vleiland vasgestel is nie, kan òf die Stad ’n bufferbreedte deur middel van ekstrapolering bepaal as berekende bufferbreedtes vir soortgelyke situasies elders beskikbaar is, òf daar sal van die ontwikkelaar verwag word om op eie koste die dienste van ‘n toepaslik gekwalifiseerde varswater-ekoloog te verkry om bufferbreedtes ingevolge raadsriglyne of goedgekeurde beste praktyk aan te beveel, en om ’n verslag daaroor in te dien tesame met sodanige aansoeke om goedkeuring van beplanning of bouplanne wat hy/sy by die Stad kan indien. Dít moet geskied voordat enige uitvoerige beplanning ‘n aanvang neem.

Terrein-/gevalspesifieke aanpassing van die aanbevole minimum bufferbreedte kan nodig wees om vir uitsonderlike omstandighede voorsiening te maak, soos die teenwoordigheid van sensitiewe habitat; diere- of plantelewe wat breër buffers vir voldoende beskerming vereis; die intensiteit van aanliggende grondgebruik, en die aard van die verwagte impak daarvan; en die fisiko-chemiese en/of botaniese kenmerke van die buffergebied wat die doeltreffendheid van die buffer teen ‘n bepaalde impak kan beïnvloed.

Toelaatbare grondgebruike/ontwikkeling/aktiwiteite en toepaslike voorwaardes in die ekologiese buffer word in Tabel 1, “Raamwerk vir die beoordeling van voorstelle” (afdeling 10) aangedui.



Figuur 3: Skematiese voorstelling van ekologiese buffers

9.4 Geomorfologiese prosesse

Dit is ook belangrik om daarop te let dat die beddings van baie waterlope, veral op die Kaapse Vlakte, dinamies is en geneig is tot erosie, afsetting en kronkeling. Waar die vereiste ekologiese-bufferbreedte en/of vloedvlakte-inspringing as ontoereikend vir hierdie natuurlike prosesse beskou word, kan bykomende terreinspesifieke studies en inspringingsbreedte dalk na goeddunke van die Stad vereis word voordat beplanning en bouplanne goedgekeur word. In so ‘n geval sal daar van die ontwikkelaar vereis word om op eie koste die dienste van ‘n toepaslik gekwalifiseerde geomorfoloog te verkry om inspringingsbreedtes te bepaal en op versoek ’n verslag daaroor voor te lê.

9.5 Sosio-ekonomiese oorwegings

Waterlope en vleilande is openbare hulpbronne met die merkwaardige potensiaal om plaaslike ekonomieë te stimuleer en om politieke, maatskaplike en ekonomiese versperrings uit die weg te ruim indien dit met dié doel voor oë bestuur en gebruik word. Die beoordeling van ontwikkelings langs waterlope en vleilande moet dus hierdie potensiaal in ag neem en ontwikkelings ondersteun wat hierdie sisteme daadwerklik by die stedelike weefsel van die gebied insluit.

Sonder om afbreuk te doen aan die algemene aard van dit wat in dié klousule gemeld word, moet die volgende spesifieke kwessies oorweeg word:

- Watersensitiewe-stedelikeontwerpbeginsels
- Uitleg/struktuur en aard van aanliggende ontwikkeling en/of verwante aktiwiteite
- Uitsig oor waterloop/vleiland vanaf aanliggende ontwikkeling
- Areas met passiewe en aktiewe oop ruimte
- Areas met wandelpaaie, fietspaaie, piekniekfasiliteite
- Estetiese verbetering van verswakte sisteme met toepaslike inheemse terreinverfraaiing
- Openbare toegang
- Veiligheid en sekuriteit
- Ekonomiese opheffing
- Omgewingsopvoeding en –bewusmaking
- Omgewingstandaarde en beste praktyk

Sosio-ekonomiese oorwegings soos dié wat gelys is, kan deur die Stad na eie goeddunke in aanmerking geneem word wanneer aansoeke om goedkeuring van beplanning en bouplanne geëvalueer word.

9.6 Rivierkorridor

Die rivierkorridor bestaan uit die waterloop en/of verwante vleiland (waar van toepassing), die vloedvlakte, die ekologiese buffer en die gebied wat vir bepaalde estetiese, ontspannings- en/of sosio-ekonomiese behoeftes benodig word. Hierdie gebied moet in sy geheel geïntegreerd bestuur word ten einde vloed-, omgewings-, maatskaplike en ekonomiese kwessies te balanseer (soos in die voorafgaande afdelings 9.2 tot 9.5 uiteengesit is). Die Stad streef daarna om rivierkorridorplanne vir alle rivierkorridorgebiede binne sy regsgebied te ontwikkel ten einde uiteindelik aan hierdie holistiese visie uitvoering te gee.

Afhangende van die huidige of toekomstige instandhoudingstrategie vir die waterloop/vleiland, moet tot en met 10 m (gemeet van bo-op die oewer of die buitenste rand van die vleigebied), waar vereis, vir instandhoudingstoegang toegelaat word.

10 Beoordeling van voorstelle en aansoeke

Hierdie beleid beveel ‘n merietegegronde benadering tot die beoordeling van voorstelle en aansoeke met betrekking tot eiendomme naby waterlope en vleilande aan. Enige nuwe grondgebruik, ontwikkeling of aktiwiteit moet egter met die verwagte vloedgevaar- en geomorfologiese-prosesvereistes strook en aan die ekologiese-buffer- en sosio-ekonomiese vereistes voldoen, terwyl voldoende toegang vir instandhouding ook, waar vereis, toegelaat moet word. Tabel 1 sit aanvaarbare grondgebruike vir die verskillende vloedvlaktesones en -buffers uiteen, sowel as bepaalde vereistes in gevalle waar voorwaardelike goedkeuring oorweeg word.

Voorgestelde grondgebruike/ontwikkeling/aktiwiteite/geboue moet verder inspring as die *grootste* van hetsy die toepaslike vloedvlakte-, geomorfologiese of ekologiese-buffervereiste.

Tipiese voorstelle wat kommentaar en goedkeuring verg, kan in drie breë kategorieë, soos in onderstaande afdelings beskryf, verdeel word.

10.1 Soneringskemas, struktuurpanne en verwante beleid

Slegs grondgebruike wat as geskik vir die toepaslike vloedvlakte en ekologiese buffer beskou word (sien Tabel 1) kan oorweeg word. Voorts moet geomorfologiese, instandhoudings- sowel as maatskaplike en ekonomiese aspekte in ag geneem word.

10.2 Grondgebruikbeplanningsaansoeke

10.2.1 Nuwe ontwikkelingsregte

Ontwikkeling of aktiwiteite in hierdie kategorie vereis tipies bykomende en/of gewysigde grondgebruikregte om voort te gaan, byvoorbeeld

- hersonering;
- onderverdeling;
- grondgebruikafwykings;
- toestemmingsgebruik; en
- wysiging van planne of goedkeuringsvoorwaardes.

Slegs grondgebruike wat as geskik vir die toepaslike vloedvlakte en ekologiese buffer beskou word (sien Tabel 1) kan oorweeg word. Voorts moet geomorfologiese, instandhoudings- sowel as maatskaplike en ekonomiese aspekte in ag geneem word.

10.2.2 Nuwe ontwikkelingsregte op bestaande gebouvoetspoor

Waar geen toename in die bestaande gebouvoetspoor of -gebruik voorgestel word nie, soos in die geval van die herontwikkeling van ‘n bestaande gebou, kan afwyking oorweeg word waar die ontwikkeling of aktiwiteit buite die hoëgevaarsone geleë is, onderworpe aan voldoening aan die volgende:

- Voldoening aan vereistes R1 en R2 in Tabel 1.
- Inwerkingstelling van toepaslike vloedbeskermings- en -temperingswerk, wat insluit, maar nie beperk is nie tot die waterdigting van geboue, kompenserende grondwerk, en vloedontruimingsplanne, na gelang van omstandighede. Die ontwikkelaar moet voldoende voorsiening vir toekomstige instandhoudings- of bedryfswerk maak.
- Die registrasie van ‘n notariële beperkingsakte teen vervreemding, wat bepaal dat die geregistreerde eienaar nie daarop geregtig sal wees om sy/haar eiendom sonder die Stad se toestemming te verkoop nie. Sodanige toestemming sal weerhou word tot tyd en wyl die nuwe eienaar/koper ‘n vrywaring onderteken volgens bepalings en voorwaardes wat vir die Stad aanvaarbaar is. Die uitreiking van ’n klaringsertifikaat ingevolge artikel 118(1) van die Wet op Munisipale Stelsels, Wet 32 van 2000, geld nie as toestemming vir bogenoemde doel nie.
- Endossering van alle bouplanne ten effekte dat die eienaar bewus is van die gevolge van ontwikkeling in ‘n vloedvlakte, en vloedlyne moet op alle toepaslike bouplanne aangedui word.

10.3 Bouplanaansoeke (uitoefening van bestaande ontwikkelingsregte)

Oorweging van struktuurbouplanne wat ingevolge bestaande ontwikkelingsregte ingedien word, geskied voorwaardelik op grond van die volgende:

- Ligging van geboue op die hoërliggende gedeeltes van die eiendom, met vloere bo die 100 jaar-vloedvlak, waar prakties moontlik, die vloedwaterdigting van geboue en vloedontruimingsplanne waar nodig.
- Geen geboue word binne die hoëgevaarsone toegelaat nie.
- Beperking van alle bou-/ontwikkelingsaktiwiteit binne die ekologiese buffer.
- Oorweging van maatreëls om, waar toepaslik, potensiële instandhoudingsimpak te temper.
- Die registrasie van ‘n notariële beperkingsakte teen vervreemding, wat bepaal dat die geregistreerde eienaar nie daarop geregtig sal wees om sy/haar eiendom sonder die Stad se toestemming te verkoop nie. Sodanige toestemming sal weerhou word tot tyd en wyl die nuwe eienaar/koper ‘n vrywaring onderteken volgens bepalings en voorwaardes wat vir die Stad aanvaarbaar is. Die uitreiking van ’n klaringsertifikaat ingevolge artikel 118(1) van die Wet op Munisipale Stelsels, Wet 32 van 2000, geld nie as toestemming vir bogenoemde doel nie.
- Endossering van alle bouplanne ten effekte dat die eienaar bewus is van die gevolge van ontwikkeling in ‘n vloedvlakte, en vloedlyne moet op alle toepaslike bouplanne aangedui word.

10.4 Ontwikkelingsuitlegte

In die voorbereiding van ontwikkelingsuitlegte, behoort die verskillende kwessies in die vorige afdelings (10.2 en 10.3), sowel as die raad se beplannings- en ontwerpriglyne vir stormwaterbestuur by nuwe ontwikkelings in ag geneem te word. Waar toepaslik, moet die ontwikkelaar op eie koste ‘n serwituut, wat die vloedvlakte en/of ekologiese buffer teen wysiging of versperring by voltooiing van die ontwikkeling beskerm, ten gunste van die raad registreer. Waar instandhoudingstoegang vereis word, behoort dit by die voorwaardes van die serwituut ingesluit te word.

Geboue moet bo die toepaslike vloedvlak of buffersone of op die hoogste gedeeltes van die eiendom geleë wees, as die perseel in sy geheel binne die toepaslike vloedlyn geleë is, en moet uitkyk of ‘n uitsig bied oor die waterloop of vleiland om voldoende visuele waarneming en integrasie van die sisteem by die weefsel van die ontwikkeling en die Stad in sy geheel te verseker. Grensomheining onder die 50 jaar-vloedlyn moet visueel deurdringbaar wees van grondvlak, en mag nie die vrye vloei van water en beweging van waterfauna negatief beïnvloed nie (byvoorbeeld ‘n spitspaalheining).

10.5 Tabel 1: Raamwerk vir die beoordeling van voorstelle

Arseringsleutel	
Kleurkode	**Beskrywing**
Ongearseer	Toegelaat
	Voorwaardelik toegelaat
	Nie toegelaat nie

Bykomende-vereistesleutel	
Kode	**Vereiste**
R1	Die ontwikkelaar moet die dienste van 'n geregistreerde ingenieur verkry om tot almal se bevrediging te toon en te sertifiseer dat ▪ die aktiwiteit/ontwikkeling nie die vloedgevaar vir ander eiendomseienaars beduidend verhoog of vloedgedrag of die stabiliteit van rivierkanale negatief raak nie; en ▪ enige struktuur die kragte en uitwerking van 'n stroom vloedwater kan weerstaan, wat wrywing teen fondasies, puinkragte en hefvermoë insluit.
R2	Vloere bo 1:100 jaar-vloedvlak. Kelders (vir nie-bewoonbare doeleindes) moet tot by die 1:50 jaar-vloedvlak waterdig gemaak word.
R3	Vloere bo 1:50 jaar-vloedvlak.
R4	Die ontwikkelaar moet die dienste van 'n geregistreerde omgewingskundige (waterekoloog) verkry om die ekologiese buffer te bepaal (as dit nie beskikbaar is nie) en om tot almal se bevrediging te toon en te sertifiseer dat: • die aktiwiteit/ontwikkeling nie 'n negatiewe impak op die huidige toestand van die waterloop of vleiland sal hê nie; OF • die aktiwiteit/ontwikkeling die huidige toestand van die waterloop of vleiland sal verbeter.

Die grondgebruik/ontwikkeling/aktiwiteit moet verder inspring as die *grootste* van hetsy die toepaslike vloedvlaktesone-, geomorfologiese of ekologiese-buffervereistes

Grondgebruik/ontwikkeling/aktiwiteit		**Vereistes en voorwaardes**							
		Vloedvlaktesone (vloedherhalingsinterval in jaar)						**Ekologiese buffer (breedte in meter)**	
Kategorie	**Tipiese voorbeelde**	**<2**	**2–20**	**20–50**	**50-100**	**>100 (Nota 1)**	***Verduidelikende notas***	**Tot 75 m (Nota 2, 3)**	***Verduidelikende notas***
Nywerheids-ontwikkeling	Lig, algemeen, hoë risiko								
	Ekstraktief (mynwese)		R1	R1	R1				
Sake-ontwikkeling	Algemeen				R2				
	Kommersieel (sentrale sakekern)								
	Diensstasies								
Residensiële ontwikkeling	Formeel				R2				
	Informeel								
Gemeenskaps- en openbare fasiliteite	Hospitale, klinieke, verpleeginrigtings, ouetehuise								

Grondgebruik/ontwikkeling/aktiwiteit		Vereistes en voorwaardes							
		Vloedvlaktesone (vloedherhalingsinterval in jaar)						Ekologiese buffer (breedte in meter)	
Kategorie	**Tipiese voorbeelde**	**<2**	**2–20**	**20–50**	**50-100**	**>100 (Nota 1)**	***Verduidelikende notas***	**Tot 75 m (Nota 2, 3)**	***Verduidelikende notas***
	Tronke, militêre basisse, polisiestasies, brandweerstasies								
	Begraafplase								
	Opvoedkundige fasiliteite								
	Openbare sale, plekke van aanbidding								
Nuts-/infrastruktuur-dienste (wat privaat insluit)	Stormwaterbestuurs-fasiliteite	R1	R1					R4	
	Ondergrondse rioolpype, dienste						Mangatdekselvlakke bo 1:50 jaar-vloedvlak. Struktuur moet toepaslik beskerm en by omgewing geïntegreer word.		
	Rioolwatersuiwering op die terrein (byvoorbeeld ‘n verteerput)								
	Water- en afvalwateraanlegte, pompstasies								
	Wegdoeningsterreine vir vaste afval								
	Kragopwekking, elektrisiteitsubstasies								
	Telekommunikasie-sentrales & -senders								
Omgewing, oop ruimte en ontspanning	Natuurreservate & -bewaringsgebiede						Alle strukture/grondwerk onderworpe aan voorwaardelike goedkeuring.		Alle strukture/grondwerk onderworpe aan voorwaardelike goedkeuring.
	Sportvelde, gholfbane, piekniekplekke		R1	R3			Alle lubgeboue en soortgelyke strukture moet bo die 50 jaar-vloedlyn wees	R4	
	Openbare en privaat oop ruimte						Alle strukture/grondwerk onderworpe aan voorwaardelike goedkeuring.		Alle strukture/grondwerk onderworpe aan voorwaardelike goedkeuring.

Grondgebruik/ontwikkeling/aktiwiteit		Vereistes en voorwaardes							
		Vloedvlaktesone (vloedherhalingsinterval in jaar)						Ekologiese buffer (breedte in meter)	
Kategorie	**Tipiese voorbeelde**	**<2**	**2–20**	**20–50**	**50-100**	**>100 (Nota 1)**	***Verduidelikende notas***	**Tot 75 m (Nota 2, 3)**	***Verduidelikende notas***
Landbou	Grondbewerking, vrywei-veeteelt		R1	R1			Onderworpe aan regulasies van Wet op Bewaring van Landbouhulpbronne (“CARA”)		
	Landbouverwerking/-nywerheid				R1, R2				
	Voerkampe, varkboerdery en batteryboerery			R1	R1		Onderworpe aan regulasies van Wet op Bewaring van Landbouhulpbronne (“CARA”)		
Oorde	Hotelle, vakansie-oorde en strandhuise				R2				
	Karavaan- en kampeerterreine		R1	R3			Alle ablusiefasiliteite moet bo die 20 jaar-vloedlyn geleë wees	R4	
Vervoerstelsels	Paaie en spoorweë bo natuurlike grondvlak		R1	R1	R1				
	Modale wisselaars, busdepots, spoorwegstasies								
	Parkeerterreine			R1					
Walbe-skermingswerk, stroomomlei-dingstrukture en grondwerk	Keermure, rigmure, oewerwalle	R1	R1	R1					
	Damme, keerwalle, brûe	R1	R1	R1	R1	R1	Dambreekontleding waar vereis ingevolge Nasionale Waterwet	R4	
	Opvulling				R1	R1	In uitsonderlike omstandighede kan geringe ‘afvlakking’ van die 50 jaar/100 jaar-vloedlyn oorweeg word, mits gelykstaande kompensasiestadium-bergingsvolume binne die ontwikkelingsgebied voorsien word.		

Nota 1: Die uitwerking van die 100 jaar-stormvoorval op alle ontwikkelings en infrastruktuur, wat aanliggende kenmerke én kenmerke laer af insluit, moet beoordeel word om aan bostaande vereistes te voldoen.
Nota 2: Waterlope: 10 tot 40 m; vleiland: tot en met 75 m.
Nota 3: Voorwaardelike goedkeuring kan vir sekere lae-impak maatskaplike behoeftes/aktiwiteite, toepaslike terreinverfraaiingg, inheemse aanplanting, voetpaaie, ensovoorts toegestaan word.

11 Inwerkingtreding en -stelling

11.1 Datum van inwerkingtreding

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

11.2 Bestaande beleid/riglyne herroep

Onderstaande bestaande beleid/riglyne word hiermee herroep:

Titel	Datum van inwerkingtreding	Resolusie
Riglyne vir vloedvlaktebestuur, weergawe 1.0	September 2003	MC37/11/03

12 Algemeen

12.1 Statutêre permitte en goedkeurings

Sekere ontwikkelings of aktiwiteite kan onderworpe wees aan goedkeuring deur provinsiale en nasionale staatsdepartemente ingevolge nasionale wetgewing.

Voorbeelde sluit in, maar is nie beperk 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
- Watergebruik vir ontspanningsdoeleindes
- Onttrekking
- Grondherwinning
- Landboubewerking naby waterlope

12.2 Vrywaring

Die graad van vloed- en/of omgewingsbeskerming wat deur hierdie beleid aanbeveel word, word as redelik vir reguleringsdoeleindes beskou en is op ingenieurs- en wetenskaplike studiemetodes gegrond. Blote nakoming van die bepalings van die beleid kan egter nie volkome beskerming teen oorstroming verseker nie, veral nie teen hoë-ordevoorvalle of ‘n verminderde omgewingsimpak nie, en die beleid behoort daarom op geen manier as ’n waarborg beskou te word nie.

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.

12.3 Kopiereg

12.4 Verwysings

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