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# Proposed Development of a Filling Station on Erf 7379, George, Western Cape.

## Aquatic Biodiversity Compliance Statement



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## DECLARATION OF SPECIALIST INDEPENDANCE

- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP);
- At the time of conducting the study and compiling this report I did not have any interest, hidden or otherwise, in the proposed development that this study has reference to, except for financial compensation for work done in a professional capacity;
- Work performed for this study was done in an objective manner. Even if this study results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part, other than being members of the general public;
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- I do not have any influence over decisions made by the governing authorities;
- I undertake to disclose all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by a competent authority to such a relevant authority and the applicant;
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- All the particulars furnished by me in this document are true and correct.



Specialist: Dr. James Dabrowski (Ph.D., Pr.Sci.Nat. Water Resources)

Date: 3 December 2024

## TABLE OF CONTENTS

<b>1. INTRODUCTION</b>	<b>3</b>
1.1 KEY LEGISLATIVE REQUIREMENTS	3
1.1.1 National Environmental Management Act (NEMA, 1998)	3
1.1.2 National Water Act (NWA, 1998)	4
1.2 SCOPE OF WORK	<b>ERROR! BOOKMARK NOT DEFINED.</b>
<b>2. APPROACH</b>	<b>5</b>
<b>3. DESKTOP SURVEY</b>	<b>5</b>
3.1 STRATEGIC WATER SOURCE AREA	7
<b>4. SITE VISIT</b>	<b>7</b>
4.1 SITE DEVELOPMENT PLAN	9
<b>5. AQUATIC BIODIVERSITY COMPLIANCE STATEMENT</b>	<b>9</b>
5.1 MANAGEMENT RECOMMENDATIONS	9
5.1.1 Stormwater Runoff	9
5.1.2 Stormwater Quality	10
<b>6. REFERENCES</b>	<b>11</b>

## LIST OF FIGURES

Figure 1: Map showing the location of Erf 7379 relative to urban extent of George.	3
Figure 2: Location of the property.	6
Figure 3: Location of the property in relation to mapped freshwater features.	6
Figure 4: Location of stormwater canal.	8
Figure 5: Photographs from the site including the stormwater headwall discharging into the channel from Church Street (A); view of the channel in the direction of Beach Road (B); view of the channel from Beach Road (C); and the culvert that conveys stormwater flows from the channel beneath Beach Road (D).	8
Figure 6: The preferred site development plan (SDP) for Erf 7379 in George.	9

## 1. INTRODUCTION

Confluent Environmental was appointed by Cape EAPrac on behalf of the applicant to provide Aquatic Biodiversity specialist inputs for the proposed development on Erf 7379 in Pacaltsdorp, George. Erf 7379 is located south of the N2 highway, bordered on the northern side by Church Street. It is bordered on the east by Erf 2558. Mission Road forms the southern boundary. The site is bordered on the west by the Beach Road. The property area is ca. 4664 sqm. A filling station and associated buildings and infrastructure are planned for the property. The property occurs within the urban extent of the city of George. The scope of work for this report is guided by the legislative definitions as specified by the National Water Act (NWA).

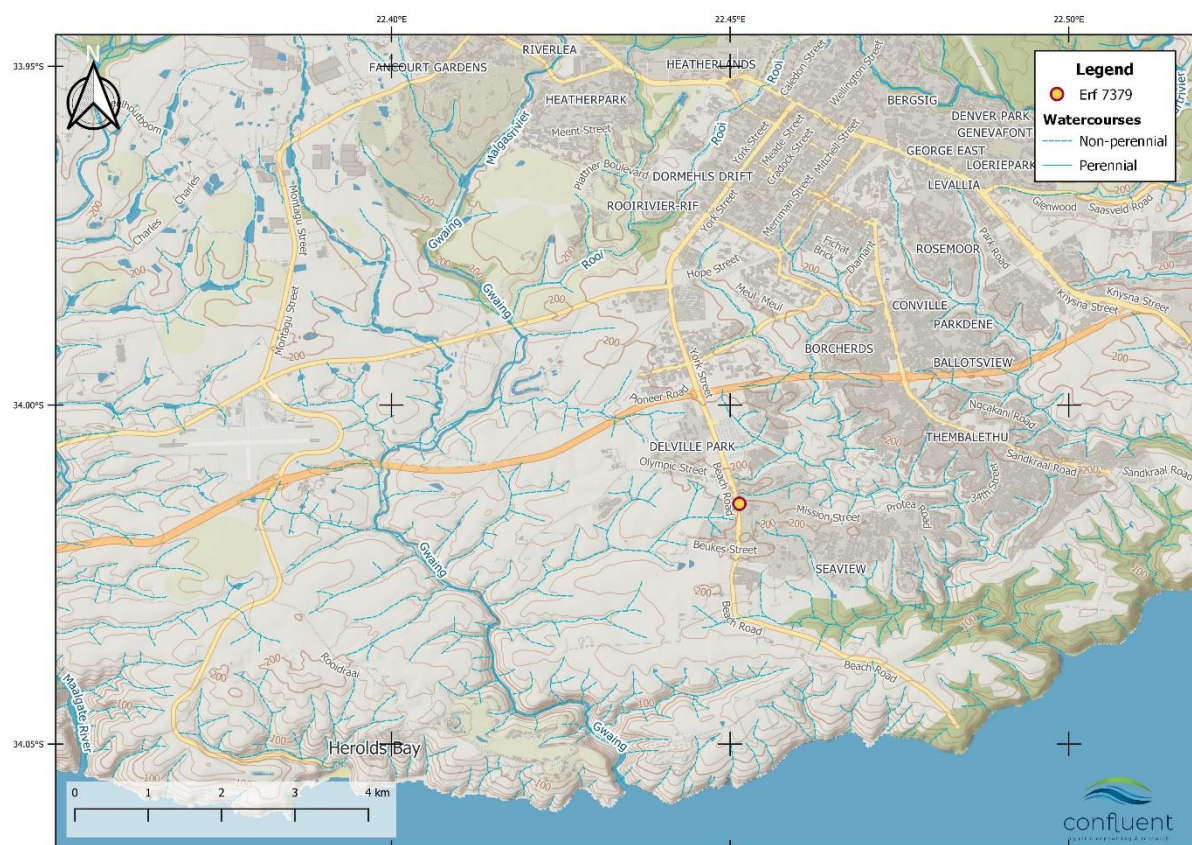


Figure 1: Map showing the location of Erf 7379 relative to urban extent of George.

### 1.1 Key Legislative Requirements

#### 1.1.1 National Environmental Management Act (NEMA, 1998)

According to the protocols specified in GN 320 (Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in Terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998, when Applying for Environmental Authorisation), assessment and reporting requirements for aquatic biodiversity are associated with a level of environmental sensitivity identified by the national web-based environmental screening tool (screening tool). An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of:

- **Very High** sensitivity for aquatic biodiversity, must submit an Aquatic Biodiversity Specialist Assessment; or

- **Low** sensitivity for aquatic biodiversity, must submit an Aquatic Biodiversity Compliance Statement.

According to the protocol, prior to commencing with a specialist assessment a site sensitivity verification must be undertaken to confirm the sensitivity of the site as indicated by the screening tool:

- Where the information gathered from the site sensitivity verification differs from the screening tool designation of **Very High** aquatic biodiversity sensitivity, and it is found to be of a **Low** sensitivity, an Aquatic Biodiversity Compliance Statement must be submitted.
- Similarly, where the information gathered from the site sensitivity verification differs from the screening tool designation of **Low** aquatic biodiversity sensitivity, and it is found to be of a **Very High** sensitivity, an Aquatic Biodiversity Specialist Assessment must be submitted.

The screening tool identified the site as being of **Very High** aquatic biodiversity based on the fact that the development occurs in a Strategic Water Source Area (SWSA).

### 1.1.2 National Water Act (NWA, 1998)

The Department of Water & Sanitation (DWS) is the custodian of South Africa's water resources and therefore assumes public trusteeship of water resources, which includes watercourses, surface water, estuaries, or aquifers. The National Water Act (NWA) (Act No. 36 of 1998) aims to protect water resources, through:

- The maintenance of the quality of the water resource to the extent that the water resources may be used in an ecologically sustainable way;
- The prevention of the degradation of the water resource; and
- The rehabilitation of the water resource.

A watercourse means:

- A river or spring;
- A natural channel in which water flows regularly or intermittently;
- A wetland, lake or dam into which, or from which, water flows; and
- Any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

No activity may take place within a watercourse unless it is authorised by the Department of Water and Sanitation (DWS). According to Section 21 (c) and (i) of the National Water Act, an authorization (Water Use License or General Authorisation) is required for any activities that impede or divert the flow of water in a watercourse or alter the bed, banks, course or characteristics of a watercourse. The regulated area of a watercourse for section 21(c) or (i) of the Act water uses means:

- a) The outer edge of the 1 in 100-year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;
- b) In the absence of a determined 1 in 100-year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first

identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); or

- c) A 500 m radius from the delineated boundary (extent) of any wetland or pan.

According to Section 21 (c) and (i) of the NWA, any water use activities that do occur within the regulated area of a watercourse must be assessed using the DWS Risk Assessment Matrix (GN 4167 of 2023) to determine the impact of construction and operational activities on the flow, water quality, habitat and biotic characteristics of the watercourse. Low Risk activities require a General Authorisation (GA), while Medium or High Risk activities require a Water Use License (WUL).

## 2. APPROACH

The following rationale was adopted to determine the presence of a watercourse on the site:

- Interrogation of available desktop resources including:
  - DWS spatial layers;
  - National Freshwater Ecosystem Priority Areas (NFEPA) spatial layers (Nel et al., 2011);
  - National Wetland Map 5 and Confidence Map (CSIR, 2018) – the latest national wetland inventory map for South Africa;
  - Western Cape Biodiversity and Spatial Plan (WCBSP) for George (CapeNature, 2017).
- A site visit was undertaken, during which time the following activities were undertaken:
  - Identification and classification of watercourses within the footprint of the site according to methods detailed in Ollis et al. (2013);
  - Soil augering to confirm the presence of soil indicators (DWAF, 2005) that may indicate the presence of a wetland (if applicable); and
  - Identification of hydrophilic plant species that may indicate the presence of wetland plant species (if applicable).

## 3. DESKTOP SURVEY

The site falls within Primary Catchment K (Kromme) and in quaternary catchment K30C (Figure 2). According to geospatial data sources, no watercourses (i.e. wetlands or streams) are indicated to occur within the footprint of the property (Figure 3) and no aquatic Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) are mapped on or adjacent to the property. Furthermore, the site does not fall within a sub-quaternary catchment (SQC) that has been categorised as a Freshwater Ecosystem Priority Area (FEPA).

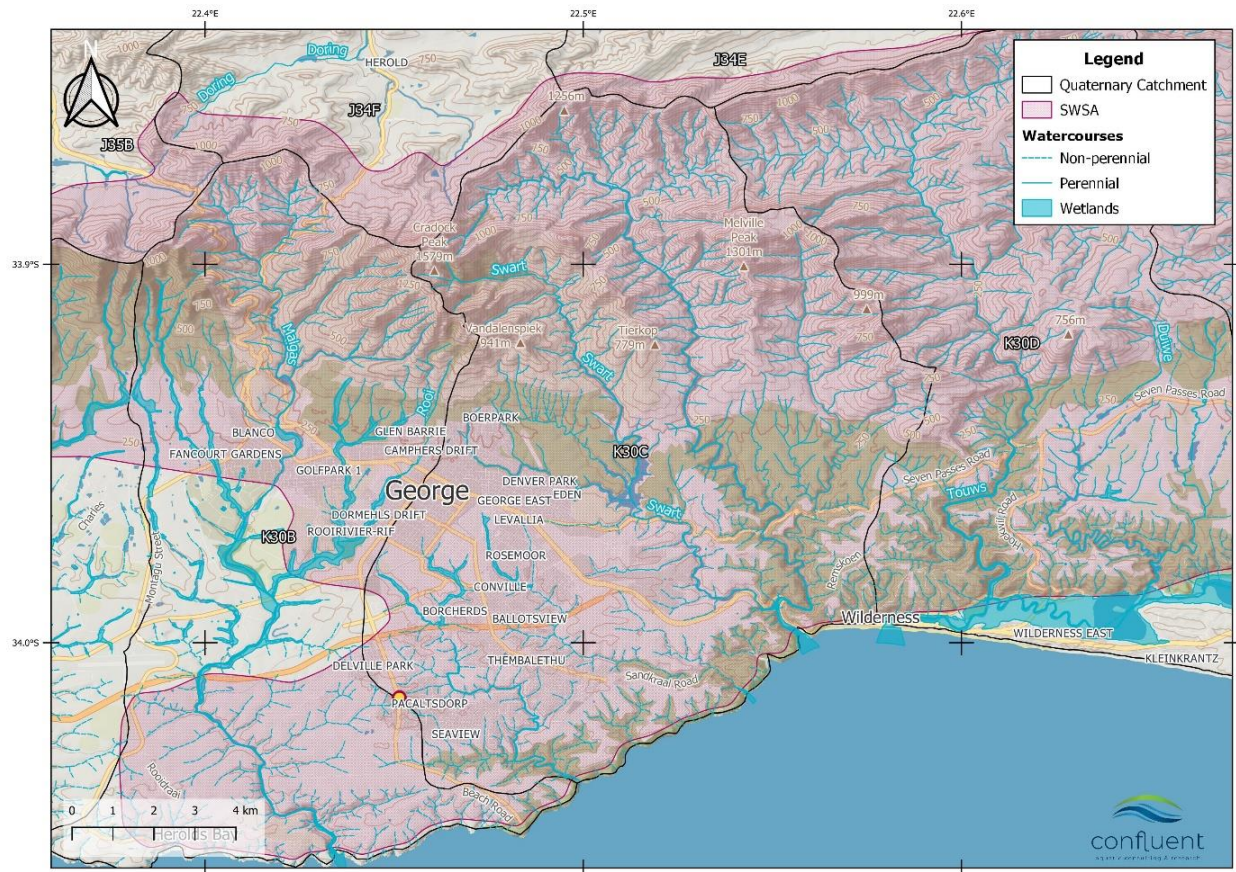


Figure 2: Location of the property.

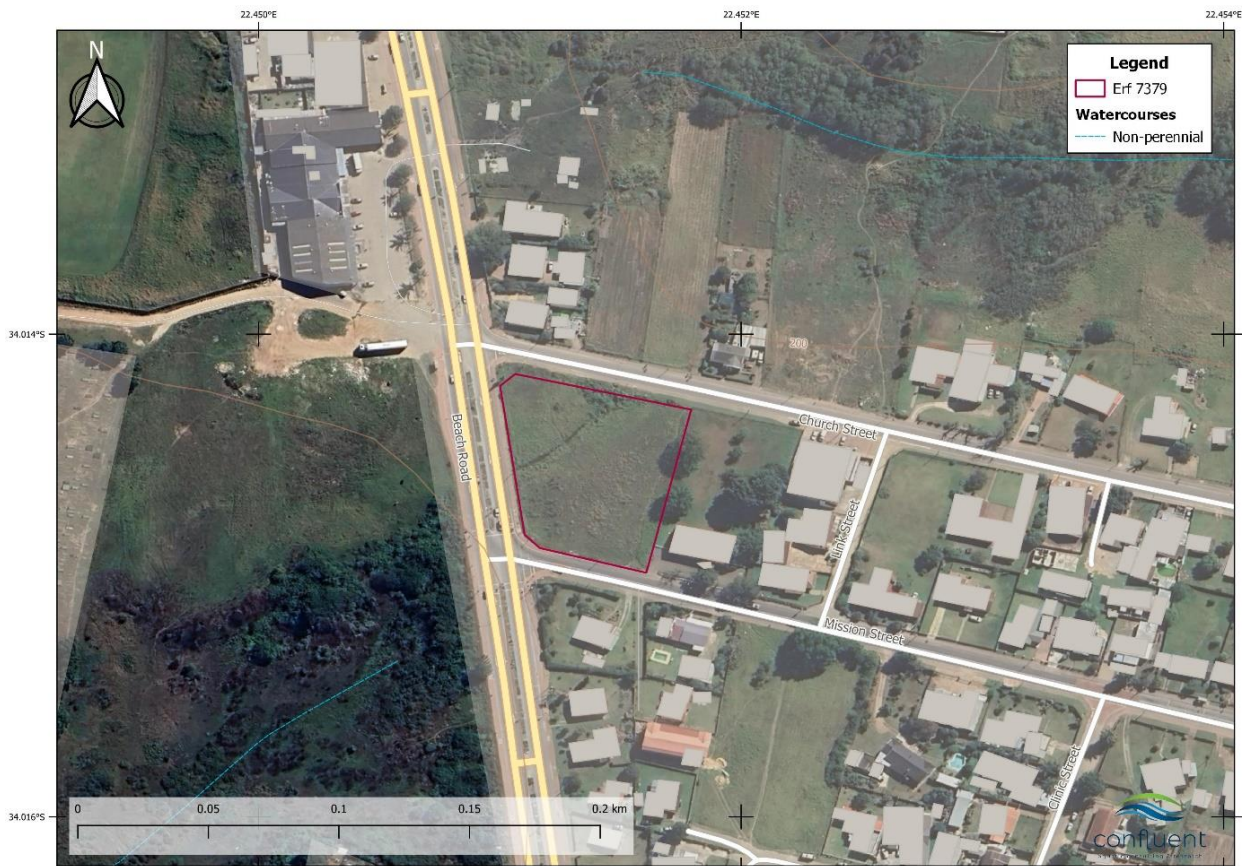


Figure 3: Location of the property in relation to mapped freshwater features.

### 3.1 Strategic Water Source Area

The property falls within the Outeniqua Strategic Water Source Area (SWSA) (Figure 1) which is considered to be of national importance. SWSAs are defined as areas of land that either:

- a) Supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or
- b) Have high groundwater recharge and where the groundwater forms a nationally important resource; or
- c) Areas that meet both criteria (a) and (b).

SWSAs are vital for water and food security in South Africa and also provide the water used to sustain the economy. Given this context, management and implementation guidelines have been developed with the objective of facilitating and supporting well-informed and proactive land management, land-use and development planning in these nationally important and critical areas (Le Maitre, et al., 2018). The primary principle behind this objective is to protect the quantity and quality of the water they produce by maintaining or improving their condition. The proposed development footprint falls within an urban 'working landscape' and in this context the management objectives are to maintain at least the present condition and ecological functioning of these landscapes, to restore where necessary, and to limit or avoid further adverse impacts on the sustained production of high-quality water.

## 4. SITE VISIT

The site visit was undertaken on the 22nd of November 2024. The property consists of vacant land, which is crossed by several footpaths. Evidence of minor dumping was visible. The property slopes gently downwards from the south-east and north-west to form a natural low point drainage area that runs diagonally from the north-east to the south-west along the property. The visit confirmed the presence of an excavated linear, earthen drainage channel that runs along this low point (Figure 4). The canal receives stormwater from a headwall located along Church Street and conveys it through the property under Beach Road via a culvert and towards a natural watercourse west of Beach Road. There were no indicators of wetland conditions (i.e. wetland plant species or hydromorphic soils) on the slopes leading down towards the canal. There were some wetland plant species associated with the channel, including some *Cyperus sp.*, *Juncus effusus* and *Zantedeschia aethiopica*. The channel is however clearly artificial (as could be seen by the placement of excavated soil along the length of the canal) and its primary function is to convey stormwater flows through the property. Photographs of the site can be viewed in Figure 5.



Figure 4: Location of stormwater canal.



Figure 5: Photographs from the site including the stormwater headwall discharging into the channel from Church Street (A); view of the channel in the direction of Beach Road (B); view of the channel from Beach Road (C); and the culvert that conveys stormwater flows from the channel beneath Beach Road (D).

## 4.1 Site Development Plan

The proposed development on Erf 7379 is for a filling station combined with a drive through and a line shop. The details of the development planned is presented in Figure 6. The current zoning of the site is Single Residential Zone 1. The topography of the site is defined by the existing stormwater furrow creating a valley terrain. The north-western section (i.e., the majority of the Erf) of the Erf falls from north-west to south-east, and the south-eastern section from south-east to north-west. Stormwater will be rerouted around the perimeter of the Erf to the existing culvert beneath Beach Road.

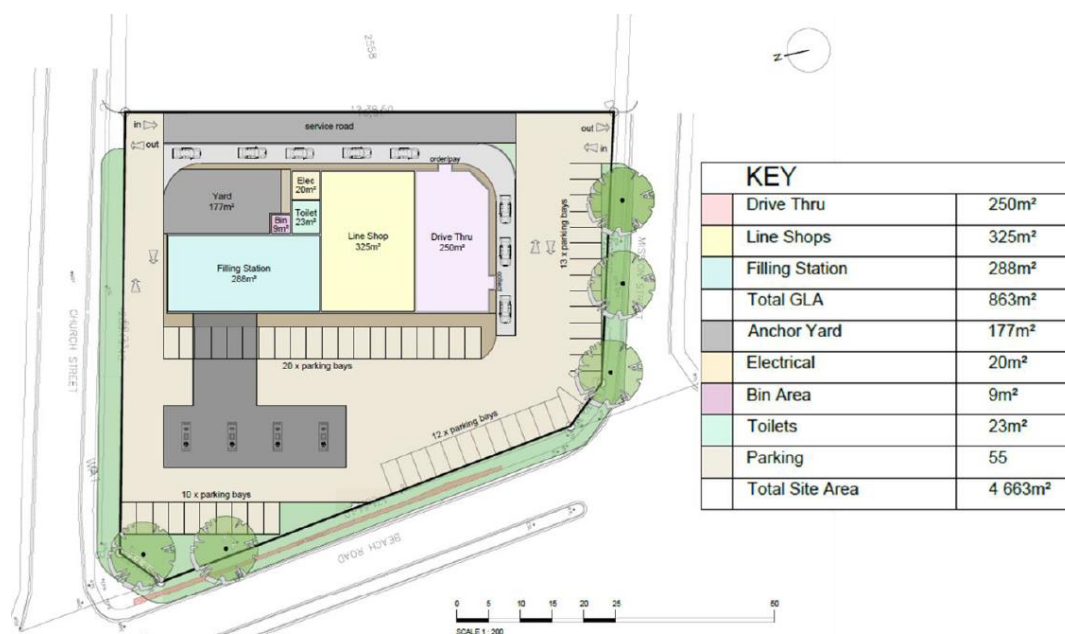


Figure 6: The preferred site development plan (SDP) for Erf 7379 in George.

## 5. AQUATIC BIODIVERSITY COMPLIANCE STATEMENT

Based on the results of the desktop review and the site verification, it can be concluded that the development will not impact on any watercourse or associated freshwater biodiversity. While the development is located within 100 m of a non-perennial watercourse (to the west of Beach Road) it does not occur within the floodline or riparian zone of this watercourse. Thus, no Section 21 (c) and (i) water uses are triggered by the development.

The sensitivity of aquatic biodiversity on the property can therefore be regarded as **Low**. Management recommendations as specified below must however be included in the authorisation for the development.

### 5.1 Management Recommendations

#### 5.1.1 Stormwater Runoff

A key impact related to large urban developments is the generation of large volumes of stormwater associated with an increased area of impermeable surfaces (i.e. roads, roofs and other infrastructure). Stormwater is typically conveyed into watercourses, where high volumes (and associated high energy) cause degradation of watercourses, mainly due to the erosion of the bed and banks. These watercourses may not necessarily fall within the development

footprint but may still ultimately receive stormwater by connecting the development into an existing stormwater network that discharges into the watercourse. In this way, stormwater generated from the site can still affect watercourses located far outside of the development footprint.

It is therefore important that stormwater generated on site should be managed according to Sustainable Drainage System (SuDS) principles. This requires that as much stormwater as possible should be attenuated within the development footprint. For example, the City of Cape Town guideline is that developments must provide for 24-hour extended detention of the 1-year return interval 24-hour storm event. In this respect the following measures, *inter alia*, should be considered:

- Rainwater harvesting tanks be installed at all buildings;
- Use of swales and detention ponds to attenuate stormwater runoff, encourage infiltration and reduce the speed, energy and volumes at which stormwater is discharged from the site;
- Use of permeable paving to encourage infiltration into the soil; and
- Use of retention ponds and artificial wetlands to capture stormwater runoff and prevent its discharge from the site.

#### 5.1.2 Stormwater Quality

Filling stations pose a potential pollution risk to the stormwater system due to the nature of the products used and activities occurring at the station (e.g. workshops, servicing areas, refuelling pumps and use of petroleum products, oils, grease, solvents and detergents on a daily basis). These pollutants can easily be transported by clean water and discharged into stormwater drains. The stormwater plan **must** therefore incorporate the following:

- Contaminated areas where clean water has the potential to mix with pollutants must be prevented from draining directly into the stormwater system and must to be directed into an approved on-site treatment or retaining system in the form of an oil and grit separator tank, prior to discharge into the stormwater system.
- The on-site treatment system must be frequently maintained by a suitably qualified contractor to prevent the build-up of fine-grained and oil-based pollutants.
- Cleaning and washing water of the forecourt must be collected and directed through the on-site treatment system.
- An emergency spill response plan must be formulated to manage any risk that results from the leakage or spillage of any hazardous materials.

## 6. REFERENCES

- CapeNature (2017). *2017 WCBSP George [Vector] 2017*. Available from the Biodiversity GIS website, downloaded on 26 March 2019
- Council for Scientific and Industrial Research (CSIR). (2018). National Wetland Map 5 and Confidence Map [Vector] 2018. Available from the Biodiversity GIS website, downloaded on 30 September 2020.
- Department of Water Affairs and Forestry (DWAf) (2005). *Final Draft: A Practical Field Procedure for Identification and Delineation of Wetlands and Riparian Areas*.
- Le Maitre, D.C., Walsdorff, A., Cape, L., Seyler, H., Audouin, M, Smith-Adao, L., Nel, J.A., Holland, M. and Witthüser. K. (2018). Strategic Water Source Areas: Management Framework and Implementation Guidelines for Planners and Managers. WRC Report No. TT 754/2/18, Water Research Commission, Pretoria.
- Nel, J.L., Driver, A., Strydom, W.F., Maherry, A., Peterson, C., Hill, L., Roux, D.J., Nienaber, S., van Deventer, H., Swartz, E. and Smith-Adao, L.B. (2011). Atlas of freshwater ecosystem priority areas in South Africa: Maps to support sustainable development of water resources. Water Research Commission Report No. TT 500/11.
- Ollis, D., Snaddon, K., Job, N., & Mbona, N. (2013). Classification system for wetlands and other aquatic ecosystems in South Africa. South African National Biodiversity Institute.