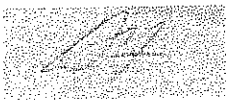
2.1 DECLARATION OF INDEPENDENCE (MR DANA GROBLER)

I, Dana Grobler, as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R. 543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.

Note: The terms of reference is included in the following section.

Signature of the specialist:



Mr Dana Grobler
Date: 07 May 2013

2.2 DECLARATION OF INDEPENDENCE (MS ANTONIA BELCHER)

I, Antonia Belcher, as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R. 543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.

Note: The terms of reference is included in the following section.

Signature of the specialist:

Ms Antonia Belcher
Date: 07 May 2013

3. TERMS OF REFERENCE

Interpretation of the terms of reference and work conducted

1. *Freshwater Assessment*
   - Conduct a situation assessment based existing information for the area and the detail on the proposed development, as well as a site assessment. Delineate the site's water bodies and determine aquatic ecosystem present state as well as ecological importance and sensitivity;
   - Evaluate the proposed development activities and their potential impacts for the various alternatives provided, and propose mitigation measures for the development. Describe the potential impacts, the significance of those impacts, and weigh and rank each impact during the project life cycle stages, according to the assessment, ranking, weighting and scaling criteria as laid out in the EIA Regulations and any Terms of Reference for the proposed dam development. Evaluate potential impact of the development against regional conservation targets;
   - Compile recommendations for rehabilitation of the wetland area;
   - Write up findings and recommendations for EIA process; and
   - Review of documentation and liaison with client.

2. *Water Use Application*
   - Collate all relevant information for the water use authorisation application. Compile licence application forms and additional supporting documentation to the freshwater assessment that would be required for the water use application; and
   - Review of documentation and liaison with DWA and the client.

4. LIMITATIONS AND ASSUMPTIONS OF THE STUDY

Limitations and uncertainties often exist within the various techniques adopted to assess the condition of ecosystems. The following techniques and methodologies were utilized to undertake this study:

- Analysis of the freshwater ecosystems was undertaken according to nationally developed methodologies as defined by WET Health Series developed for the Water Research Commission. This level is considered to be sufficient for the project.

- Recommendations are made with respect to the adoption of buffer zones within the development site, based on the wetlands/river's functioning and site characteristics.

These recommendations are based on professional opinion due to the lack of a formal methodology for buffer zone determination within South Africa.

5. USE OF THIS REPORT

This report reflects the professional judgment of its authors. The full and unedited content of this should be presented to the client. Any summary of these findings should only be produced in consultation with the authors.

6. STUDY OVERVIEW

6.1. OVERVIEW OF THE PROJECT AND STUDY AREA

The Overstrand Local Municipality is considering the potential to re-develop the Piet se Bos (Grotto Beach) area. It is their intention to upgrade and develop Piet se Bos (Grotto) area by means of establishing a restaurant, open air theatre and the partial rehabilitation of the degraded wetland system. The proposal has triggered various environmental requirements that need to be addressed in order to ensure sustainable development.

The Overstrand Municipality has subsequently issued a call for proposals, and has appointed an EIA practitioner, EnviroAfrica, to assist with the environmental authorisation processes for the development potential of the Piet se Bos area. It is a requirement of the appointment that a wetland scientist be appointed to consider the proposed development and wetland rehabilitation.

Figure 1a provides a topographic map of the Piet se Bos area and Figure 1b provides a Google Earth image of the area. The Piet se Bos area is located at Grotto Bay and surrounded with residential developments towards the north east and west. In the north, 12th Street forms the border of the Piet se Bos area and the southern border is defined by Grotto Road that runs parallel to the beach.

The area in which the existing picnic facility (with fixed braai stands) and open lawn was established was most likely an extended wetland are in the past. This area was filled in with building rubble, restricting the wetland areas to the northern and eastern borders of the original wetland. At the same time as the infilling of the original wetland area occurred, the flow of water to the wetland was confined to a canal and covered with concrete slabs. This canal diverts water around the filled in area towards the south-east, where it discharges onto the beach via a pipe onto the beach.

The topography of the Piet se Bos site has a moderate gradient from the west to the east on the infilled area, with a steep to very steep embankment on the northern boundary and a dune/berm separating the infilled area from the beach.

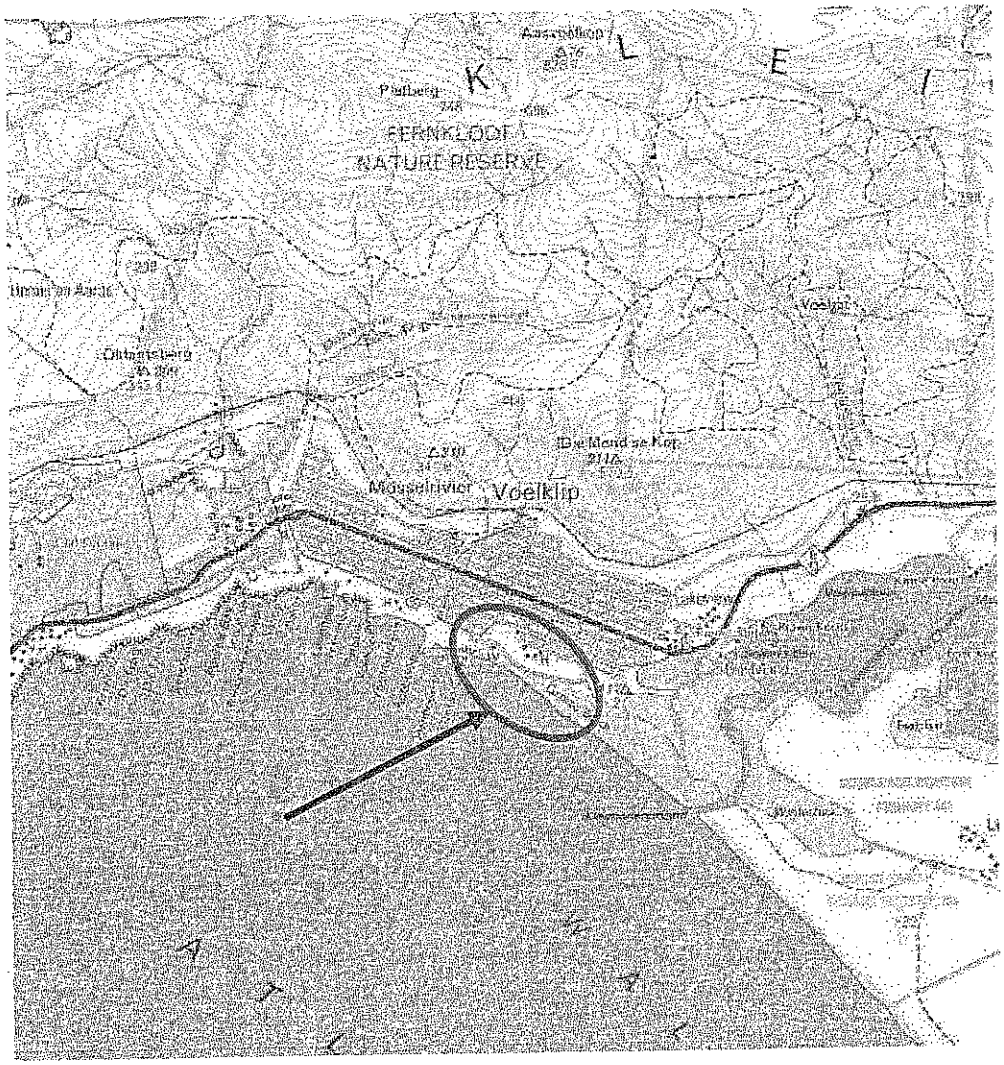


Figure 1a: Piet se Bos wetland and surrounding area – Grotto Beach, Hermanus (3419AD - Stanford)

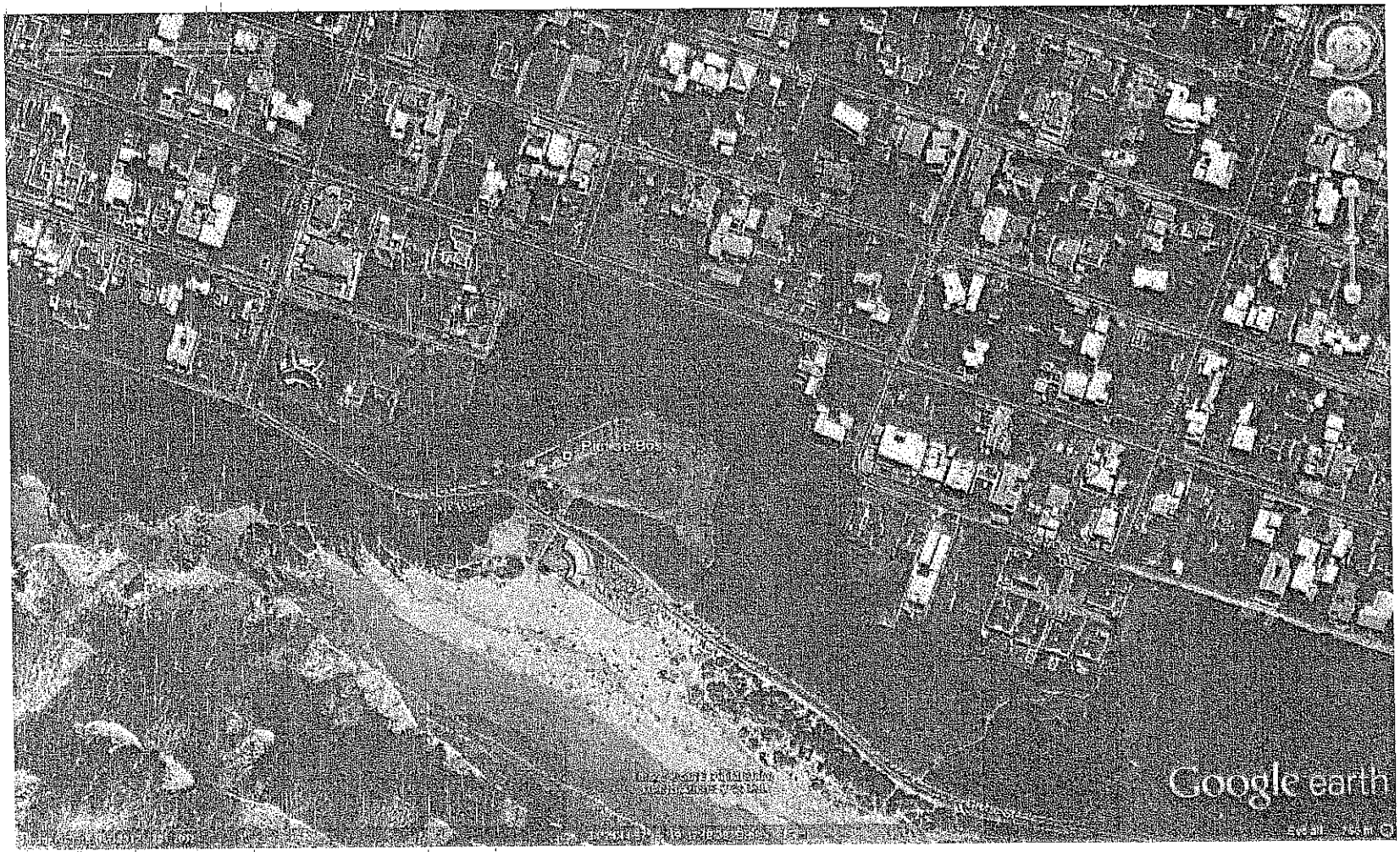


Figure 1b: Piet se Bos wetland and surrounding area – Grotto beach Hermanus (Google Earth 2013)

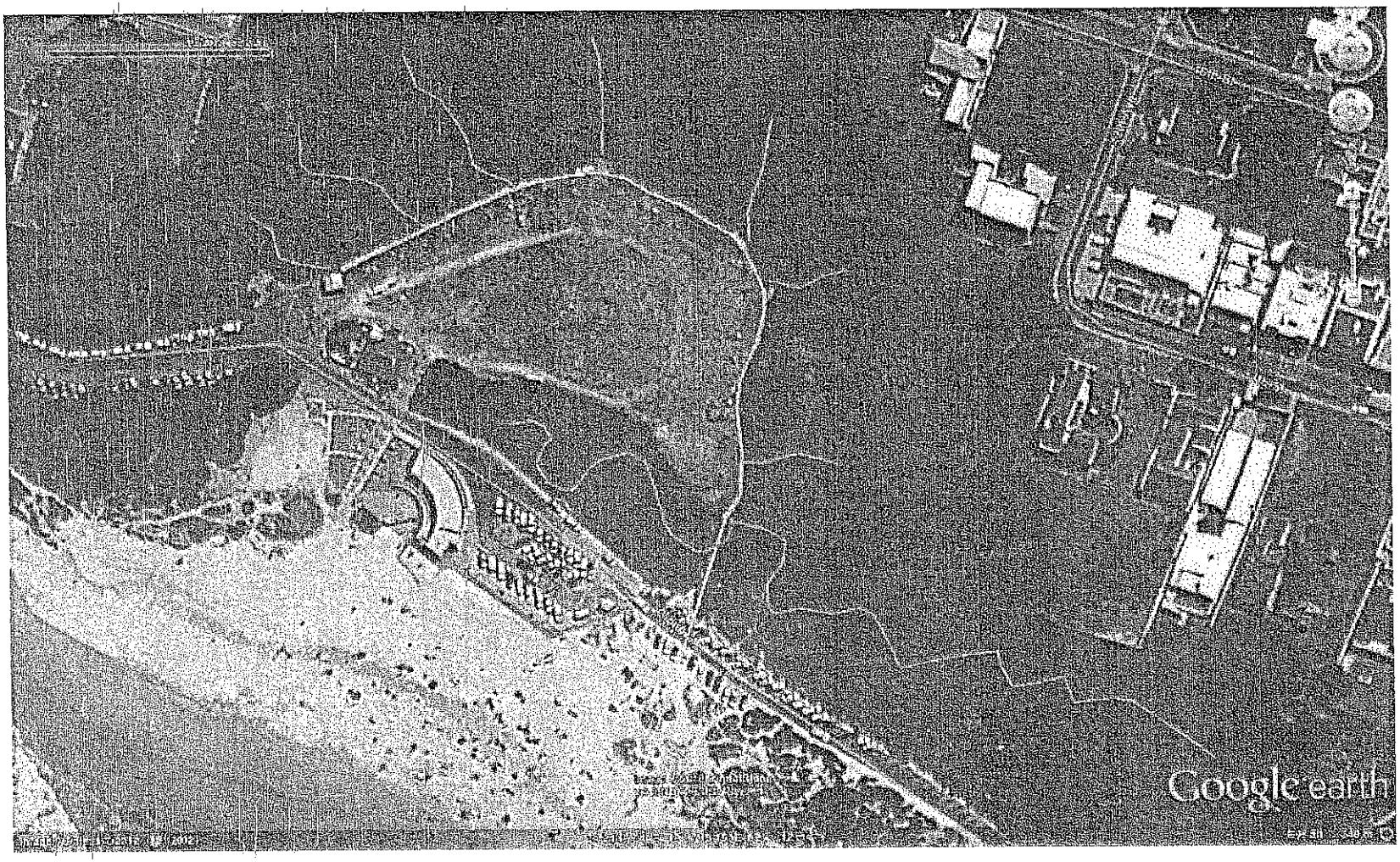


Figure 2: Satellite image of the Piet se Bos area indicating freshwater features (Google earth, 2013). Yellow lines represent the concrete slabs covering the canal, red – berm across a historic river channel, and blue lines the general drainage from north to south and east to west into the Piet se Bos wetland area.

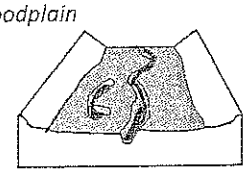
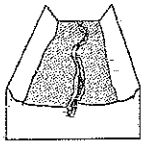
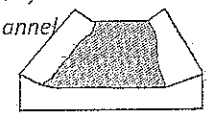
7. WETLAND ASSESSMENT

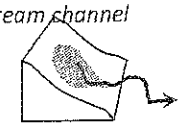
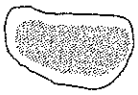
WET-EcoServices and WET-Health were utilised to assess the benefits and services supplied by the Piet se Bos wetland as well as to determine the integrity of the ecological processes for the wetland. Ecological Importance and Sensitivity assessments were also utilised to contextualise results for the water feature.

7.1. WETLAND CHARACTERISATION

According to Table 1, the Piet se Bos wetland can be characterised as a hill slope seepage that is not connected to any stream channel. The wetland also occurs with the Overberg Dune Strandveld vegetation type, which typifies the surrounding vegetation.

Table 1: Wetland hydro-geomorphic types typically supporting inland wetlands in South Africa

Hydro-geomorphic types	Description	Source of water maintaining the wetland[1]	
		Surface	Sub-surface
Floodplain 	Valley bottom areas with a well defined stream channel, gently sloped and characterized by floodplain features such as oxbow depressions and natural levees and the alluvial (by water) transport and deposition of sediment, usually leading to a net accumulation of sediment. Water inputs from main channel (when channel banks overspill) and from adjacent slopes.	***	*
Valley bottom with a channel 	Valley bottom areas with a well defined stream channel but lacking characteristic floodplain features. May be gently sloped and characterized by the net accumulation of alluvial deposits or may have steeper slopes and be characterized by the net loss of sediment. Water inputs from main channel (when channel banks overspill) and from adjacent slopes.	***	*/***
Valley bottom without a channel 	Valley bottom areas with no clearly defined stream channel, usually gently sloped and characterized by alluvial sediment deposition, generally leading to a net accumulation of sediment. Water inputs mainly from channel entering the wetland and also from adjacent slopes.	***	*/***

Hillslope seepage linked to a stream channel 	Slopes on hillsides, which are characterized by the colluvial (transported by gravity) movement of materials. Water inputs are mainly from sub-surface flow and outflow is usually via a well defined stream channel connecting the area directly to a stream channel.	*	***
Isolated Hillslope seepage 	Slopes on hillsides, which are characterized by the colluvial (transported by gravity) movement of materials. Water inputs mainly from sub-surface flow and outflow either very limited or through diffuse sub-surface and/or surface flow but with no direct surface water connection to a stream channel.	*	***
Depression (includes Pans) 	A basin shaped area with a closed elevation contour that allows for the accumulation of surface water (i.e. it is inward draining). It may also receive sub-surface water. An outlet is usually absent, and therefore this type is usually isolated from the stream channel network.	*/***	*/***

[1] Precipitation is an important water source and evapotranspiration an important output

 Wetland

Water source: * Contribution usually small

*** Contribution usually large

*/*** Contribution may be small or important depending on local circumstances

7.2. HISTORICAL ASSESSMENT OF WETLAND

Figures 3a to 3c provide an historical review of the modifications to Piet se Bos wetland and its surrounding area. As early as 1938 (Figure 3a, top) the surrounding land was already being urbanized. It would appear that the wetland itself at this time was still largely natural. In the following aerial photograph (Figure 3a, bottom), taken in 1961, there has been an increase in the surrounding residential development and that there is some impact to the wetland area with a clear path to the wetland area and infilling or clearing of the inner vegetation within the wetland. Progressive aerial photographs after this indicate an increased disturbance of the inner portion of the wetland area (Figures 3b and c).

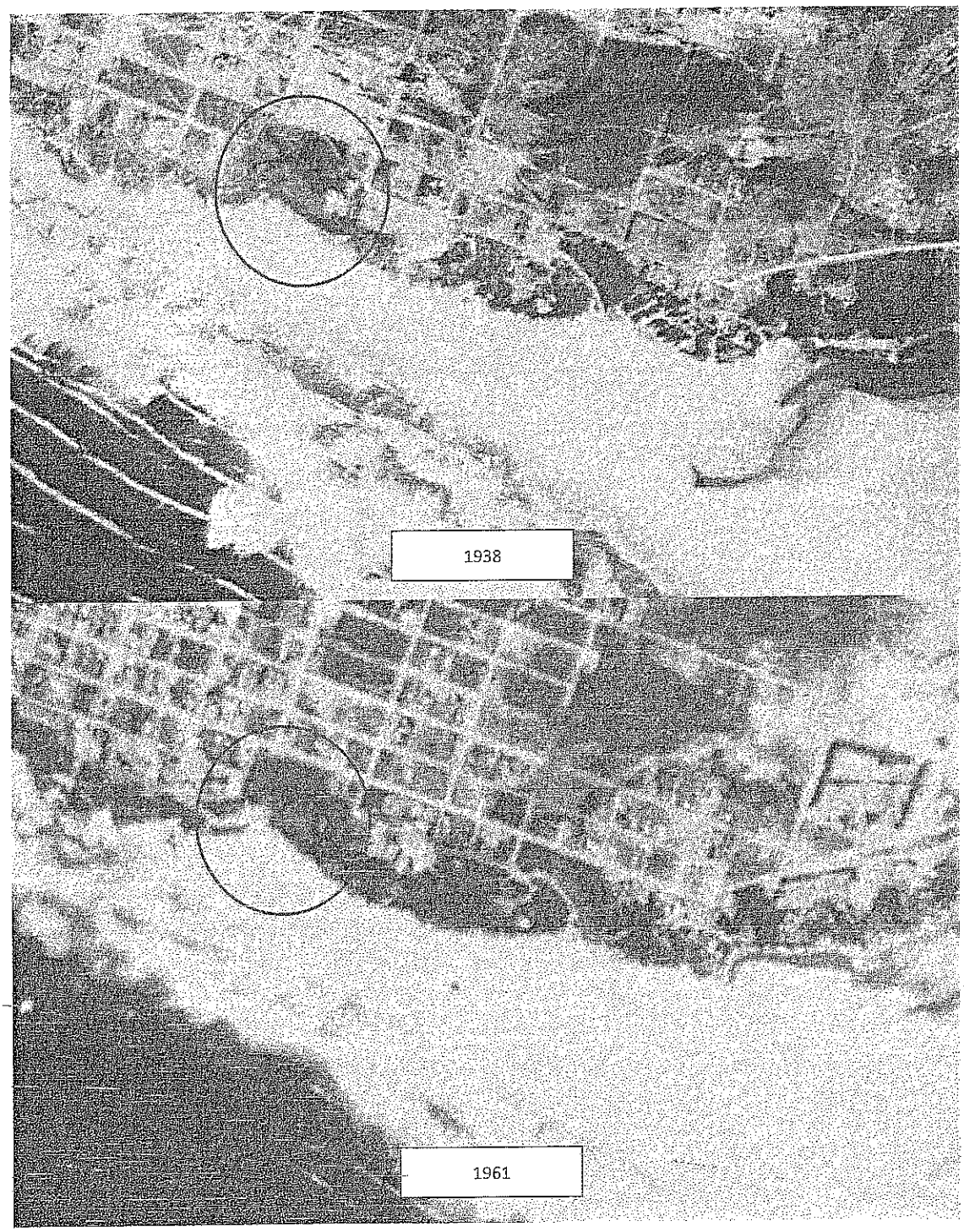


Figure 3a: Aerial photographs taken of the Grotto Beach and wetland area taken in 1938 (top) and 1961 (bottom)

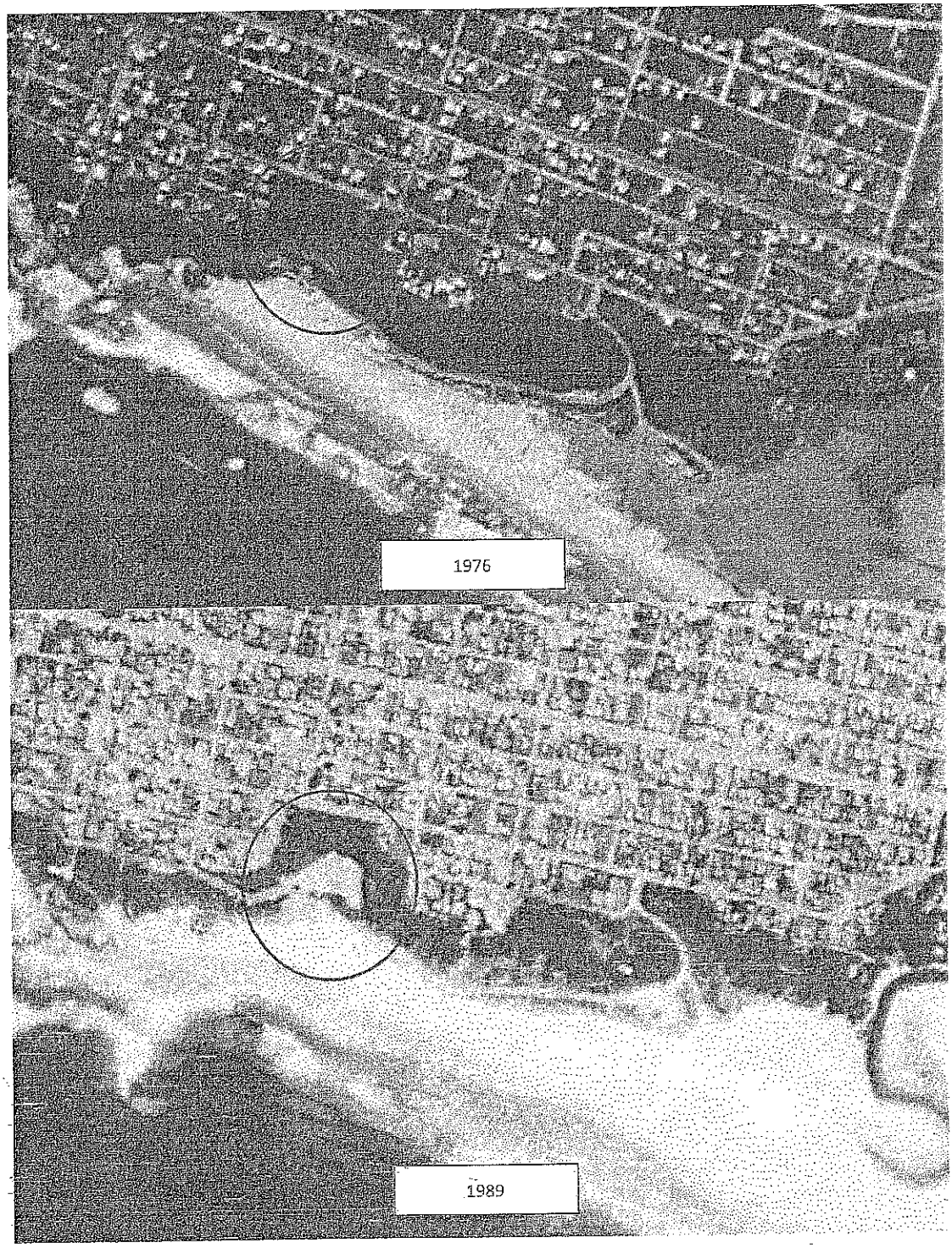


Figure 3b: Aerial photographs taken of the Grotto Beach and wetland area taken in 1976 (top) and 1989 (bottom)

Figure 3c: Google Earth image of Grotto Beach and the wetland area for 2002

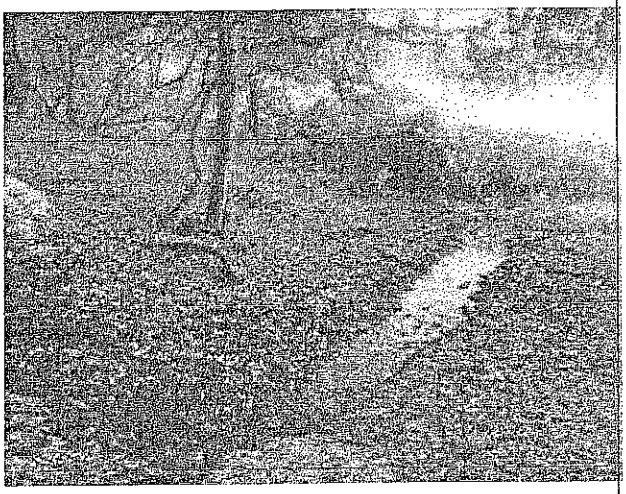
7.3. WETLAND INTEGRITY ASSESSMENT

The existing wetland area consists of micro habitats along the bottom of the cliffs and steep slopes which drain water from the northern and eastern part of the site (Figures 4 and 5). These micro habitats receive water for most of the year but are currently isolated from the once bigger wetland area that would have existed in the lower lying, shallower areas of the picnic area before it was filled in. The wetland would have most likely been dominated by bulrushes *Typha capensis* and common reeds *Phragmites australis*, depending on the depth and duration of the various habitats inundation with water and the salinity levels of the soils.

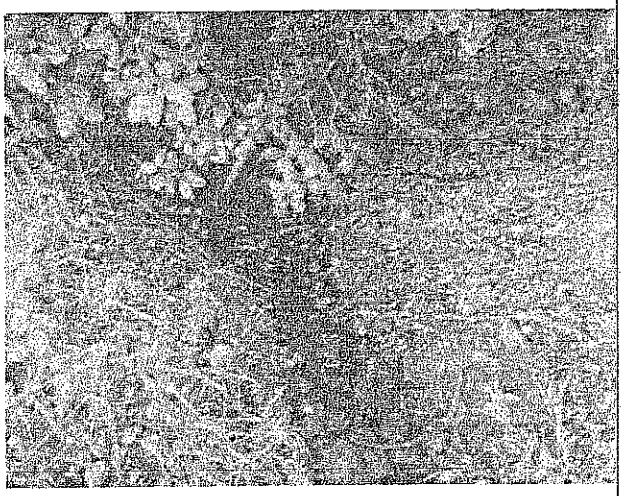
The main portion of the wetland area has deteriorated over time and was filled in between 1976 and 1989 to create a recreational area (picnic area). Most of the wetland functionality was lost with the infilling.

The Present Ecological Status (PES) Method (DWAF 2005) was used to establish the integrity of the remaining wetlands in the study area and was based on the modified Habitat Integrity approach developed by Kleynhans (DWAF, 1999; Dickens *et al*, 2003). Table 2 displays the criteria and results from the assessment of the habitat integrity of the wetland. These criteria were selected based on the

assumption that anthropogenic modification of the criteria and attributes listed under each selected criterion can generally be regarded as the primary causes of the ecological integrity of a wetland.



4a: Drainage from the steep slopes (north of the area)



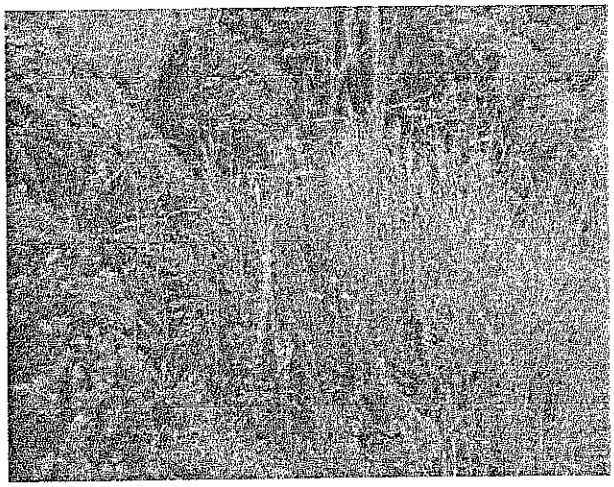
4b: Drainage from the steep slopes (north of the area)

4c: Canalised drainage covered with concrete slabs

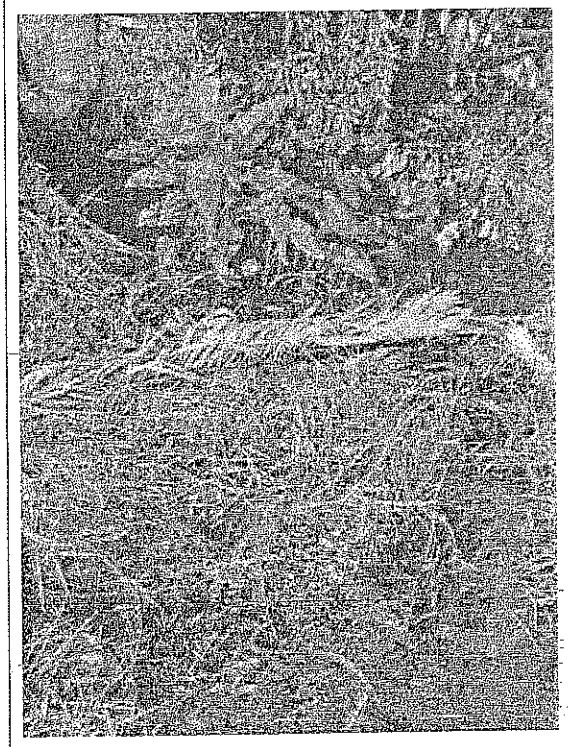
4d: Canalised drainage covered with concrete slabs

Figure 4: Drainage of water from the steep slopes and canalised canal with concrete slabs

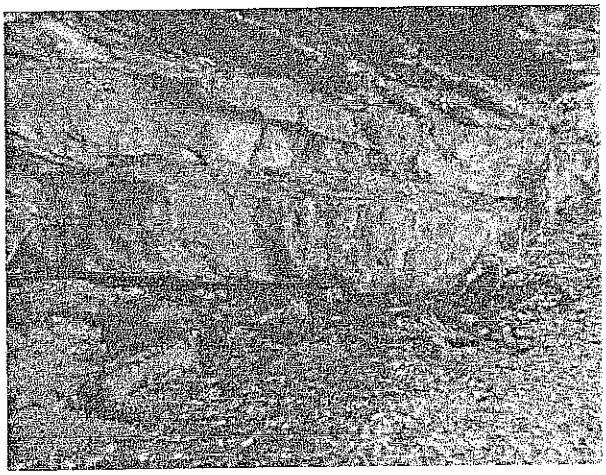
5a: *Watsonia spp.* and *Wachendorfia thyrsiflora*



5b: *Typha capensis*



5c: *Zanthedeschia spp*



5d: Overhanging rock formations

Figure 5: Wetland plants and micro habitats along the northern and eastern borders of the Piet se Bos picnic area

Table 2: Habitat integrity assessment criteria for palustrine wetlands (Dickens *et al*, 2003)

Criteria & Attributes	Relevance
Hydrologic	
Flow Modification	Consequence of abstraction, regulation by impoundments or increased runoff from human settlements or agricultural land. Changes in flow regime (timing, duration, frequency), volumes, velocity which affect inundation of wetland habitats resulting in floralistic changes or incorrect cues to biota. Abstraction of groundwater flow to wetland.
Permanent Inundation	Consequence of impoundment resulting in destruction of natural wetland habitat and cues for wetland biota.
Water Quality	
Water Quality Modification	From point or diffuse sources. Measure directly by laboratory analysis or assessed indirectly from upstream agricultural activities, human settlements and industrial activities. Aggravated by volumetric decrease in flow delivered to the wetland.
Sediment Load Modification	Consequence of reduction due to entrapment by impoundments or increase due to land use practices such as overgrazing. Cause of unnatural rates of erosion, accretion or infilling of wetlands and change in habitats.
Hydraulic/Geomorphic	
Canalisation	Results in desiccation or changes to inundation patterns of wetland and thus changes in habitats. River diversions or drainage.
Topographic Alteration	Consequence of infilling, ploughing, dykes, trampling, bridges, roads, railway lines and other substrate disruptive activities that reduce or change wetland habitat directly in inundation patterns.
Biota	
Terrestrial Encroachment	Consequence of desiccation of wetland and encroachment of terrestrial plant species due to changes in hydrology or geomorphology. Change from wetland to terrestrial habitat and loss of wetland functions.
Indigenous Vegetation Removal	Direct destruction of habitat through farming activities, grazing or firewood collection affecting wildlife habitat and flow attenuation functions, organic matter inputs and increases potential for erosion.
Invasive Plant Encroachment	Affects habitat characteristics through changes in community structure and water quality changes (oxygen reduction and shading).
Alien Fauna	Presence of alien fauna affecting faunal community structure.
Over utilisation of Biota	Overgrazing, over fishing, etc.

Table 3: Wetland habitat integrity assessment (score of 0=critically modified to 5=unmodified)

Criteria & Attributes	Score
Hydrologic	
Flow Modification	2.5
Permanent Inundation	3.5
Water Quality	
Water Quality Modification	4
Sediment Load Modification	4
Hydraulic/Geomorphic	
Canalisation	2
Topographic Alteration	1.5
Biota	
Terrestrial Encroachment	2
Indigenous Vegetation Removal	2.5
Invasive Plant Encroachment	2.5
Alien Fauna	4.5
Over utilisation of Biota	4.5
Total Mean	**3.04**
Category	**Largely natural to moderately modified**

Table 4: Relation between scores given and ecological categories

Scoring Guidelines Per Attribute*	Interpretation of Mean* of Scores for all Attributes: Rating of Present Ecological Status Category (PESC)
Natural, unmodified - score=5.	Within general acceptable range **CATEGORY A** >4; Unmodified, or approximates natural condition.
Largely natural - score=4.	**CATEGORY B** >3 and ≤4; Largely natural with few modifications, but with some loss of natural habitats.
Moderately modified- score=3.	**CATEGORY C** >2 and ≤3; moderately modified, but with some loss of natural habitats.
Largely modified - score=2.	**CATEGORY D** ≤2; largely modified: A large loss of natural habitats and basic ecosystem functions has occurred.
	OUTSIDE GENERALLY ACCEPTABLE RANGE
Seriously modified - rating=1.	**CATEGORY E** >0 and <2; seriously modified. The losses of natural habitats and basic ecosystem functions are extensive.
Critically modified - rating=0.	**CLASS F** 0; critically modified. Modifications have reached a critical level and the system has been modified completely with an almost complete loss of natural habitat.

7.4. ECOSYSTEM SERVICES SUPPLIED BY WETLAND

The assessment of the ecosystem services supplied by the identified wetlands was conducted according to the guidelines as described by Kotze *et* al (2005). An assessment was undertaken that examines and rates the services listed in Table 5. The characteristics were scored according to the general levels of services provided. It is important to manage the wetlands to ensure that they can continue to provide the valued goods and services:

Table 5: Goods and services assessment results for wetland (low = 0; high = 4)

Goods and services	Score
Flood attenuation	1
Stream flow regulation	1
Sediment trapping	2
Phosphate trapping	2
Nitrate removal	2
Toxicant removal	1.5
Erosion control	2.5
Carbon storage	1.5
Maintenance of biodiversity	3
Water supply for human use	1.5
Natural resources	1
Cultivated foods	1
Cultural significance	1
Tourism and recreation	3
Education and research	2

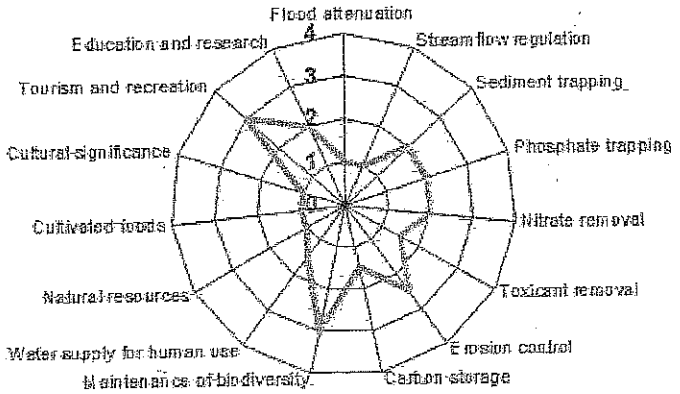


Figure 6: Ecosystem services provided by the wetland areas

8. DESCRIPTION OF ACTIVITY

8.1. DESCRIPTION OF THE ACTIVITY

The Overstrand Local Municipality is considering the potential to re-develop the Piet se Bos (Grotto Beach) area. It is their intention to upgrade and develop Piet se Bos (Grotto) area by means of establishing a restaurant, open air theatre and the partial rehabilitation of the degraded wetland system which can be accessed via a boradwalk.

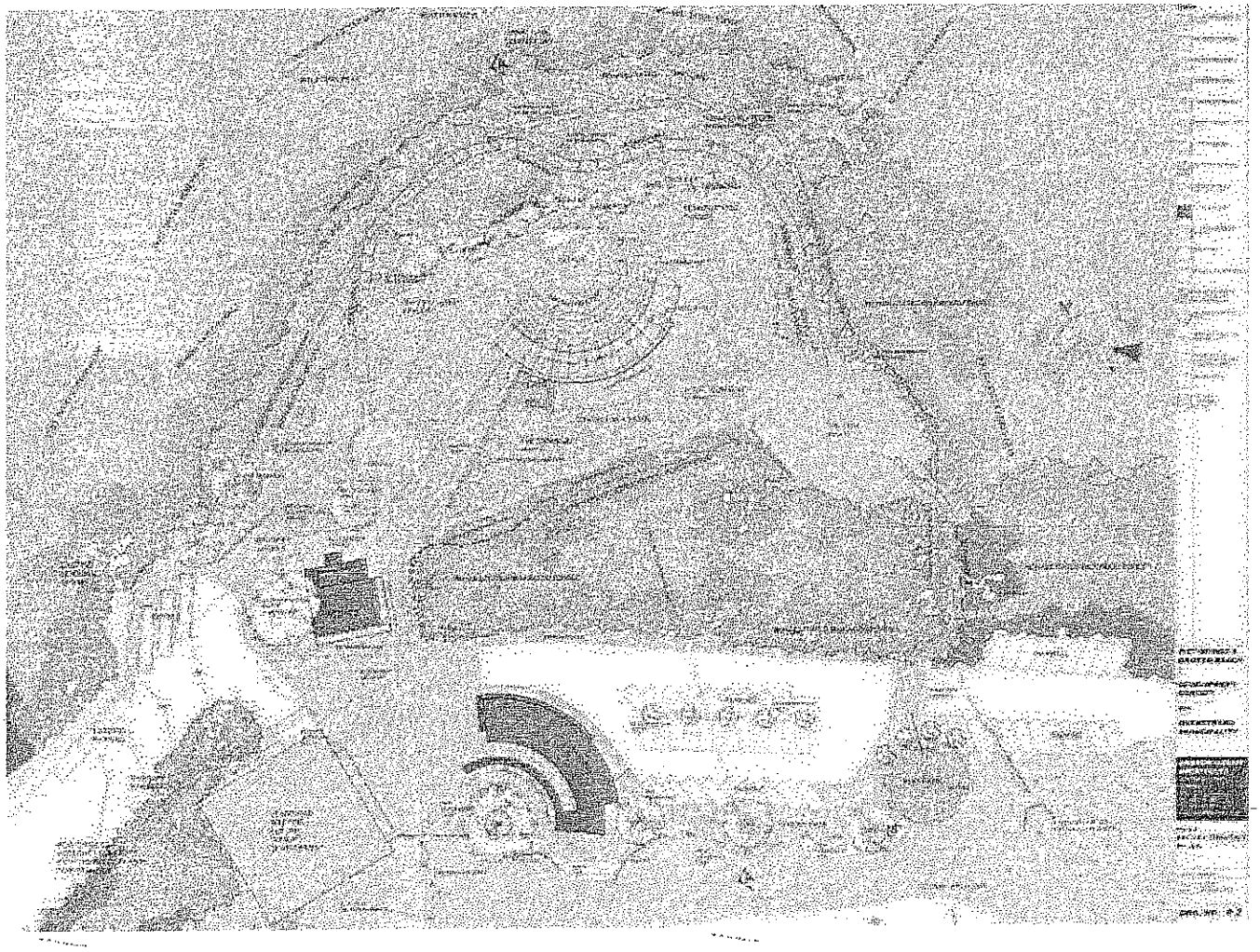


Figure 7: Proposed layout plan for the rehabilitated wetland area

8.2. LEGAL REQUIREMENTS

The following Acts, regulations and ordinances are applicable to the development:

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO. 107 OF 1998)

The EIA process followed is in compliance with NEMA, as amended, and the EIA Regulations promulgated under this Act (Government Notice No.'s R.543, 544, 545 and 546 of 2010). The proposed development involves 'listed activities', as defined by NEMA. Listed activities are activities, which may have potentially detrimental impacts on the environment and therefore require environmental authorisation from the relevant authorising body. The proposed development occurs in the Western Cape Province and thus DEA&DP is the responsible regulatory authority.

NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998)

The National Water Act guides the management of water in South Africa as a common resource. The Act aims to regulate the use of water and activities, which may impact on water resources through the categorisation of 'listed water uses' encompassing water abstraction and flow attenuation within catchments as well as the potential contamination of water resources, where the Department of Water Affairs (DWA) is the administering body in this regard.

The listed water use activities in Part 4, Section 21 of the National Water Act that are of relevance to the proposed development are:

- Section 21(c): Impeding or diverting the flow of water in a watercourse; and
- Section 21(i): Altering the bed, banks, course or characteristics of a watercourse.

In terms of the definitions provided, activities included under Sections 21(c) and 21(i) are (amongst others) the construction of roads, bridges, culverts and structures for slope stabilisation and erosion protection. Infilling of floodplains or any other development activity within the 1 in 100 year flood line are also considered by DWA to be a Section 21(i) activity.

The defined water use activities may require the approval of DWA in the form of a Water Use Licence authorisation. Government Gazette No. 26187 of 26 March 2004 provides for General Authorisations for certain specified activities which then do not require a licensing process. There are restrictions on the extent and scale of listed activities for which General Authorisations apply. These would have to be considered in detail to determine whether the proposed activities could be covered by General Authorisations or not.

Section 22(3) of the National Water Act allows for a responsible authority (DWA) to dispense with the requirement for a Water Use Licence if it is satisfied that the purpose of the Act will be met by the grant of a licence, permit or authorisation under any other law.

OVERBERG CRITICAL BIODIVERSITY AREAS

The Critical Biodiversity Areas (CBA) map for the Overberg District Municipality aims to guide sustainable development by providing a synthesis of biodiversity information to decision makers. It serves as the common reference for all multi-sectoral planning procedures, advising which areas can be lost to development, and which areas of critical biodiversity value and their support zones should be protected against any impacts.

The CBA map indicates areas of land as well as aquatic features which must be safeguarded in their natural state if biodiversity is to persist and ecosystems are to continue functioning. Ecological Support Areas (ESAs) are supporting zones required to prevent the degradation of Critical Biodiversity Areas and Protected Areas. Those areas of natural vegetation identified on the map as Other Natural Areas are sufficiently extensive at this stage that they may withstand some loss through conversion of their natural state, and undergo development. Areas that have been irreversibly transformed through development (e.g. urban development, plantation, agriculture) are referred to as No Natural Areas Remaining and no longer contribute to the biodiversity of the area but may still play an important role in supporting ecological processes.

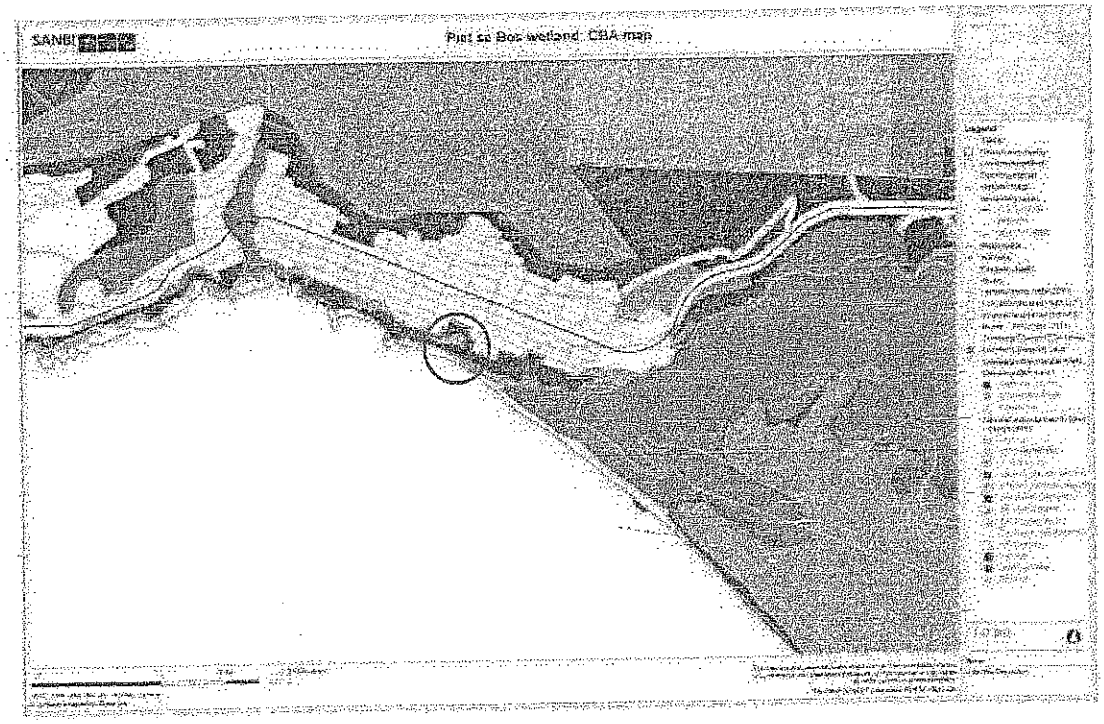


Figure 10: Overstrand Municipality Critical Biodiversity Map for the area

Figure 10 indicates that the natural vegetation areas still remaining within the Overberg Dune Strandveld vegetation and surrounding the Piet se Bos wetland area are considered to be a Critical Biodiversity Area that must be maintained where still largely natural and rehabilitated where degraded. The filled area is mapped as an ecological support area that must be managed in such a manner to ensure that the CBA does not become degraded particularly in terms of its ecological functionality.

9. REHABILITATION MEASURES

The proposed re-development of the Piet se Bos area provides an ideal opportunity to restore some of the lost functionality of the original wetland and to formalise the protection of remnants of the wetland areas. It is however unrealistic to expect that the full functionality of the original wetland would be restored as it would have been prior to the infilling of the current picnic area. The objective should be to create a diversity of habitats in which the landscape plan can give effect to an improved wetland and ecosystem functionality.

9.1. REHABILITATION / RESTORATION MEASURES AND CONDITIONS

The following measures, aimed at the re-establishment and rehabilitation of part of the wetland should be used to ensure that wetland functionality is restored:

- Short term rehabilitation: In conjunction with the development of the site, manage kikuyu and other aliens within the area and rehabilitate disturbed micro habitats, landscape reclaimed wetland area to enhance wetland functionality (in particular to mitigate storm water runoff at site) and plant with appropriate hydrophilic vegetation.

- The final 'on-site' design will be informed by the opportunities that are exposed once clearing and excavation commences, additionally following the flooding of the re-established wetland area. This, together with exposure of the soil substrates, will inform the planting and features plan for the wetland.

- Long term rehabilitation and monitoring: Undertake follow-up maintenance thereof to ensure that no invasive alien plants colonize in the area and that re-vegetated areas achieve optimum plant communities.

wetland; Any landscaping and re-vegetation of the wetland area over the longer term should be under the direction of a suitably qualified botanist / wetland scientist.

- It may be necessary to hydro-seed some of the cleared areas to prevent erosion. Seeding should be done with a sterile crop specific to the season, mixed with a primary or pioneer species that may have been harvested from the area.

- The selection of the tree species to screen the back of the stage (northern part) must be done in such a way to prevent the overshadowing of the wetlands areas over time and the possible loss of the newly established wetland plants communities.

- The landowner should maintain a programme of progressive alien plant clearing on the site. This programme should be aimed at controlling the growth and regrowth of exotic grasses and the other invasive plants.

WATER LEVELS AND DRAINAGE

- The existing water channel should be surveyed to ensure that the existing flow patterns are kept or manipulated back to the historical flow pattern based on the discoveries in the soil profiles in terms of the original wetland soil layer.

- The sloping of the site from the proposed amphitheatre towards the proposed drainage channel must be done in such a way as to prevent drainage to be concentrated in one particular area but to support and benefit the newly planted wetland plants all around the developed area.

- The sloping of the development edges towards the proposed newly created drainage channel must be done in such a way as to ensure that newly planted wetland plants will be benefitted and to prevent *Typha* and or *Phragmites* reeds dominating the plant species as a result of stagnant and deep water areas.

- The graduation of the wetland baselevel slope from west to east should be slightly stepped to ensure that the higher lying areas do not drain too rapidly.

- A mix of shallow and deeper water habitats should be created to provide for a diversity of reeds in the deeper water habitat and sedges in the shallow habitats. The design of such a wetland habitat map should be undertaken between a landscape architect and a wetland specialist.

- The creation of a sluice with a gate that allows for the water level in the wetland area to be varied should be installed at the end of the current concrete slab canal. The gate should provide the option in the future to vary the water level so as to allow for the selection of the plant communities in the lower sections of drainage channel.

10. GUIDELINE FOR LONGER TERM MANAGEMENT AND MONITORING OF WETLAND FEATURES

The landowner is responsible for implementing all measures described in the rehabilitation, mitigation and proposed landscape measures contained in this report and other environmental authorisation documentation. Table 6 provides a summary of the long term management and monitoring that should be undertaken.

Table 6: Summary of long term monitoring and management of the wetland features

Objectives	Risks	Actions	Monitoring	Target
Activities identified as part of the development				
Maintain freshwater habitats and biota	Loss of aquatic habitat and in particular the newly established wetland in and around the drainage channel	Establish a buffer area between the wetland area and the remainder of the development and landscape plan which will allow for control of invasive grasses in the wetland and minimise the impact of the other activities on the re-established wetland. Minimise disturbances in freshwater areas Control invasive alien vegetation growth	Annual site visits to monitor compliance. Check for the changes in plant species compositions to ensure the desired outcome is achieved Monitor re-establishment of wetland area by means of fixed point photography.	Improvement of condition of micro habitats and remnants of the wetland areas; Establishment and maintenance of the newly created wetlands areas; Establishment and maintenance of the wetland diversity (prevention of single species dominance of the wetland areas by *Typha* and *Phragmites*)

11. REFERENCES

Department of Water Affairs and Forestry. (1999). *Resource Directed Measures for Protection of Water Resources. Volume 3: River Ecosystems Version 1.0.* Resource Directed Measures for Protection of Water Resources, Pretoria, South Africa.

Department of Water Affairs and Forestry. (2007). *River Ecoclassification: Manual for Ecostatus Determination (Version 2).* Riparian Vegetation Response Index, Water Research Commission Report Number KV 168/05. Pretoria.

Dickens, C. Kotze, D. Mashigo, S. MacKay H. & Graham M. Guidelines for integrating the protection, conservation and management of wetlands into catchment management planning (Report TT220/04)

Ellis, F. (2009). *Wetland soils variation in the Cape*, Department of Soil Science, University of Stellenbosch, Elsenburg

Kotze, D., Marneweck, G.C., Batchelor, A.L., Lindley, D.S. And Collins, N.B. 2005: *WET-EcoServices: A technique for rapidly assessing ecosystem services supplied by wetlands.* Dept. Tourism, Environmental and Economic Affairs, Free State.

Mucina, L. and Rutherford, M. C. (eds.) (2004) Vegetation map of South Africa, Lesotho and Swaziland. Strlitzia 18. South African National Biodiversity Institute, Pretoria.

APPENDIX H

ENVIRONMENTAL MANAGEMENT PLAN

1396

EnviroAfrica
Environmental Planning and Impact Assessment Consultants
Omgewingsbeplanning en Impakbeoordeling Konsultante

ENVIRONMENTAL MANAGEMENT PLAN

for the

MANAGEMENT OF CONSTRUCTION AND OPERATIONAL ACTIVITIES RELATING TO THE PROTECTION OF THE ENVIRONMENT FOR THE

UPGRADING OF THE PIET SE BOS AND GROTTO BEACH AREA, ERF 4771, HERMANUS

This EMP is a condition as set out in the DEA&DP Environmental Authorisation 16/3/1/1/E2/14/2026/13 and is to be presented to contractors at the On Site Start-Up Meeting

compiled by

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SEPTEMBER 2013

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IS AND ABBREVIATIONS:

owing definitions are applied:

[Site Completion] Environmental Site Inspection and verification of construction activities to EMP
enclosure under / around a storage facility to contain any spillage.
olant - a concrete or plaster mixing facility and associated equipment and materials.
ctor - the principal persons / company and all other sub-contractors involved in the construction of the

uction phase - The construction phase period of a Construction Site is defined as from the
ncement of site establishment up to and including the practical site handover.
DP Department Environmental Affairs & Development Planning
ation of Understanding – Form that is signed by all contractors involved in the construction works of
derstanding and acceptance of the EMP and site-specific additions to the EMP.
pment site - boundary and extent of development works and infrastructure.
Environmental Control Officer: - Must be a suitably qualified independent site environmental consultant
ted to ensure compliance to the EMP.
Environmental Site Agent
Environmental Site Officer - . Must be a person with adequate environmental knowledge to understand
iplei it the EMP by conducting on site inspections determined by the ECO and the client.
s ESO - ECO might also mean the ESO but the ESO does not mean the ECO. The ESO is responsible to
O
Engineers representative or Main contractors representative
te Start-Up Meeting – The OSSM held at site to discuss EMP and determine Site Specific additions that
included as the basis for the EMP.
IORISATION – Directive issued by DEA&DP to commence the activity under certain environmental
iances.
M-On Site Start-Up Meeting.

	Cape Metropolitan Council
&DP	Department of Environmental Affairs and Development Planning
	Department of Environmental Affairs
	Department of Water Affairs
	Environmental Impact Assessment
	Environmental Management Programme, although the term Environmental Management *Plan* is often used interchangeable with *Programme*.
	Environmental Management System
	Heritage Western Cape
	Integrated Environmental Management
	Environmental Control Officer
	Environmental Site Officer
	Engineer's Representative
	Interested & Affected Party
IRA	South African Heritage Resources Agency

ironment means the surroundings within which humans exist and that are made up of:
- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part of the combination of the above two bullets and the interrelationships between them;
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

entially hazardous substance is a substance, which, in the reasonable opinion of the Engineer, have a deleterious (detrimental) effect on the environment.

thod Statement is a written submission by the Contractor to the Engineer or relevant responsible son such as the Project Leader, in response to the Specification, or a request by the gineer/Project Leader, setting out the plant, materials, labour, method, responsible persons and eframe that the Contractor proposes using to carry out an activity, identified by the relevant ecification or the Engineer/Project Leader when requesting the Method Statement, in such detail that Engineer/Project Leader is enabled to assess whether the Contractor's proposal is in accordance

with the Specifications and/or will produce results in accordance with the Specifications. The Method Statement shall cover applicable details with regard to:

- construction procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/non-compliance with the Specifications;
- any other information deemed necessary by the Engineer/Project Leader.

reasonable means, unless the context indicates otherwise, reasonable in the opinion of the Engineer/Project Leader after he has consulted with a person, not an employee of the client, suitably experienced in "environmental implementation plans" and "environmental management plans", both as defined in the National Environmental Management Act (Act No 107,1998).

solid waste means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

contaminated water means water contaminated by the Contractor's activities, *e.g.* concrete water and runoff from plant/ personnel wash areas.

construction site means the area influenced and affected by the construction activities or under the control of the Contractor, often referred to as "the Site".

contractor's camp means the designated and suitably demarcated areas on the Site within which all site offices and staff facilities are situated and within which equipment will be stored, for instance, borrow areas, batching plant, crusher plant, sand washing plant, workshop, offices, rest areas, ablution areas, etc., whichever is applicable.

construction means the period of the project during which the actual works are carried out, deemed to include site establishment, site preparation, the works, maintenance period and decommissioning.

precautionary principle means the basic principle, that when in doubt or having insufficient or unreliable information on which to base a decision, to then undertake actions that will have minimum risk.

The CLIENT	The person/organisation (usually the landowner if the CLIENT or holder of the servitude rights) with rights to undertake the development of the site.
Audit/Monitoring	Regular inspection and verification of construction activities for degree of compliance to the Environmental Management Programme.
Bund	Enclosure under/around a storage facility to contain any spillage – the storage capacity of the bung must be 120% of the total capacity of the possible spillage amount
Batch plant	Machinery used on site for the large-scale mixing and production of concrete or plaster and associated equipment and materials.
Contract	An accepted offer to execute specified work within a stated time for a monetary reward. It takes the form of all the documents and drawings issued when tenders are invited (in which the nature and quantity of the work to be executed are set out), the schedules of which documents have been priced by the contractor for completion within a stated time, and the acceptance, in writing, of the Contractor's price) (source: SABS 0120; 1986). OR The General Conditions of Contract and Special Conditions, Specifications, Drawings, Tender, written records of matters agreed after the submission of the Contractor's tender, Letter of Acceptance and Agreement, together with other documents which the parties have agreed in writing shall form part of the Contract and such amendments or additions to the Contract as may be agreed in writing between the parties (source: GCC, 1990).
Contractor	The natural or juristic person or partnership whose tender has been accepted by, or on behalf of the Employer and where applicable, includes the Contractor's heirs,

executors, administrators, trustees, judicial managers or liquidators, as the case may be.

Developer The developer is the person/body responsible for the development of the project and could be the same as, or different to the CLIENT.

Emergency A situation requiring immediate action and where failure to implement appropriate actions timeously may result in environmental damage.

Engineer A person who represents the CLIENT and is responsible for the technical, environmental and contractual implementation of the works to be undertaken.

Engineer's Representative The person appointed from time to time by the Engineer in terms of the General Conditions of Contract. The Engineer's Representative shall:

- Observe the execution of the Works, examine and test materials and workmanship and receive from the Contractor such information as he shall reasonably require.
- Have the authority:
  - Given to him by any provisions of the Contract.
  - Given to him by the Engineer.
  - To deliver to the Contractor oral or written communications from the Engineer.
  - To receive on behalf of the Engineer oral or written communications from the Contractor.

The powers and authority of the Engineer's Representative would by subject to certain conditions.

Environmental Awareness Course An environmental education course for the Contractors management staff and labour force which informs them of the requirements of the EMP.

Environmental Completion Statement A report document submitted to the relevant authority showing that the EMP environmental controls were appropriately implemented on a project.

Environmental Completion Audit Similar to an Environmental Completion Statement but it is more detailed and will contain detailed information regarding controls and their effectiveness. This document would be required for large projects normally where a professional environmental scientist was appointed as the ECO.

Environmental Management Programme: A programme for managing potential impacts identified during the approval process. It could consist of one or more of the following components, depending on necessity dictated by the nature of the development:

- Standard Environmental Specification
- Detailed Environmental Specification
- Guideline documents and tools for implementation by the different role players
- The Environmental Education Course
- Standard Revegetation Specification
- Detailed Revegetation Specification

As mentioned earlier, the term Environmental Management *Plan* is often used interchangeable with Environmental Management *Programme*, and for the purposes of this document will be assumed to have the same definition.

***ESO (Environmental Site Officer** Designation is reserved for suitably qualified environmental site managers, who are to be appointed by the Engineer, and are mainly associated with large and complex developments.

***ECO (Environmental Control Officer)** Designation is reserved for suitably qualified authority or officer acting on their behalf. The ECO is usually a professionally registered Environmental Scientist..

Environmental Specification For the purposes of this study, this designation is reserved for the combination of the Standard Environmental Specifications and the Detailed Environmental Specifications.

General Conditions of Contract A document that sets out the general rights and obligations of the parties to a contract, on such matters as sureties, quality of work, program, supervision, insurance, co-operation with others, provision of plant, material and labour, the regulation of wages, samples, tests, examination, commencement and completion of work, penalties for delay, requirements for maintenance, methods of dealing with defects, variations, measurements and payments, and the settlement of disputes. In South Africa the most widely accepted general conditions of contract for general civil engineering works is the SAICE General Conditions of Contract for Works of Civil Engineering Construction (sixth edition, 1990).

No Go Areas Areas identified as being environmentally sensitive in some manner and delineated