4 Pastorale Avenue
Durbanville

WETLAND DELINEATION
ZOUTERIVIER CELL PHONE TOWER

A requirement in terms of Section 21 (c) and (i) of the
National Water Act (36 of 1998).

July 2021

Index

List of Figures

List of Tables

Abbreviations

Critical Biodiversity Area	CBA
Department of Water and Sanitation	DWS
Ecological Importance	EI
Ecological Sensitivity	ES
Ecological Importance and Sensitivity Category	EISC
Ecological Support Area	ESA
Environmental Impact Assessment	EIA
Electronic Water Use License Application (on-line)	eWULAA
Government Notice	GN
Hectares	ha
Metres Above Sea Level	masl
National Environmental Management Act (107 of 1998)	NEMA
National Freshwater Environment Priority Area	NFEPA
National Water Act (36 of 1998)	NWA
Non-government organization	NGO
Present Ecological State	PES
South Africa National Biodiversity Institute	SANBI
Section of an Act of Parliament	S
Water Use License Application	WULA

1 Introduction

CTC Operations (Pty) Ltd is a company is about to construct a cellphone transmission tower to the west of Atlantis, a northern suburb of the City of Cape Town. The tower will be constructed on Portion 22 of Farm 22, Zouterivier, Western Cape.

For the transmission tower to be constructed, according to the requirements of NEMA, an EIA was required. CTC appointed Enviro Africa of Somerset West to carry out the EIA. In accordance with these legal requirements, Enviro Africa duly and meticulously compiled and circulated the required Pre-Application Draft Assessment Report for comments from I&AP's.

The DWS regional office in Bellville, upon scrutinizing the report, demanded a S21(c) and (i) WULA on the premise that there is a wetland within 500m from the proposed cell phone tower (letter, Appendix). Subsequently, Enviro Africa appointed Dr Dirk van Driel of WATSAN Africa of Cape Town to deal with the required WULA.

The WULA entails a Fresh Water Report. This report must supply adequate information for the decision-makers to arrive at informed decision. It must be written according to a fixed and established outline and contents. It must contain a Risk Matrix, according to which it is decided if a License or a General Authorisation is the indicated level of authorisation.

Once completed, the WULA, together with the required documentation, must be uploaded on the on-line eWULAAS facility.

2 Legal Framework

The proposed development "triggers" sections of the National Water Act. These are the following:

S21 (c) *Impeding or diverting the flow of a water course*

The proposed development is near a wetland, or what the DWS perceive as a wetland. A drainage line would be altered, should the development go ahead.

S21 (i) *Altering the bed, bank, course of characteristics of a water course.*

Some part of the proposed development may alter the bank of the wetland.

Government Notice 267 of 24 March 2017

Government Notice 1180 of 2002. *Risk Matrix.*

The Risk Matrix as published on the DWS official webpage must be completed and submitted along with the Water Use Licence Application (WULA). The outcome of this risk assessment determines if a letter of consent, a General Authorization or a License is required.

Government Notice 509 of 26 August 2016

An extensive set of regulations that apply to any development in a water course is listed in this government notice in terms of Section 24 of the NWA. No development take place within the 1:100 year-flood line without the consent of the DWS. If the 1:100-year flood line flood line is not known, no development may take place within a 100m from a water course without the consent of the DWS. The development is adjacent to a wetland that is perceived as a legitimate water resource.

Likewise, the development triggers a part of the National Environmental Management Act, NEMA, 107 of 1998).

The EIA Regulations of 2014 No.1 Activity 12 states that no development may take place within 32m of a water course without the consent of the Department of Environmental Affairs and its provincial representatives. A part of the development is adjacent to what is perceived as a wetland. Consequently, this regulation is relevant to this application.

This Fresh Water Report is exclusively focussed in S21 (c) and (i) of the NWA

3 Location

Figure 1 Street Map

The new cell phone transmission tower is planned 10.5km to the west of Atlantis Industrial, in a straight line (Figure 1). It is located 20km to the southwest of Malmesbury, to the west and adjacent to the N7 trunk road. It is 99masl.

4 Quaternary Catchment

Zouterivier is in the G21D quaternary catchment.

5 Conservation Status

5.1 Vegetation

The Zouterivier site is in Atlantis Sand Fynbos (Appendix, SANBI webpage, Mucina & Rutherford (2006). This vegetation type is listed as Vulnerable. Most of it has been transformed into agricultural land, small holdings and urban development. Likewise, the area around the cell phone tower site has been wholly disturbed, with little if any natural vegetation left.

5.2 NFEPA

The site at Zouterivier has not been listed as an NFEPA.

5.3 Western Cape Biodiversity Plan

Zoutefontein at the new cell phone tower site has not been listed as a CBA or ESA.

6 The Project

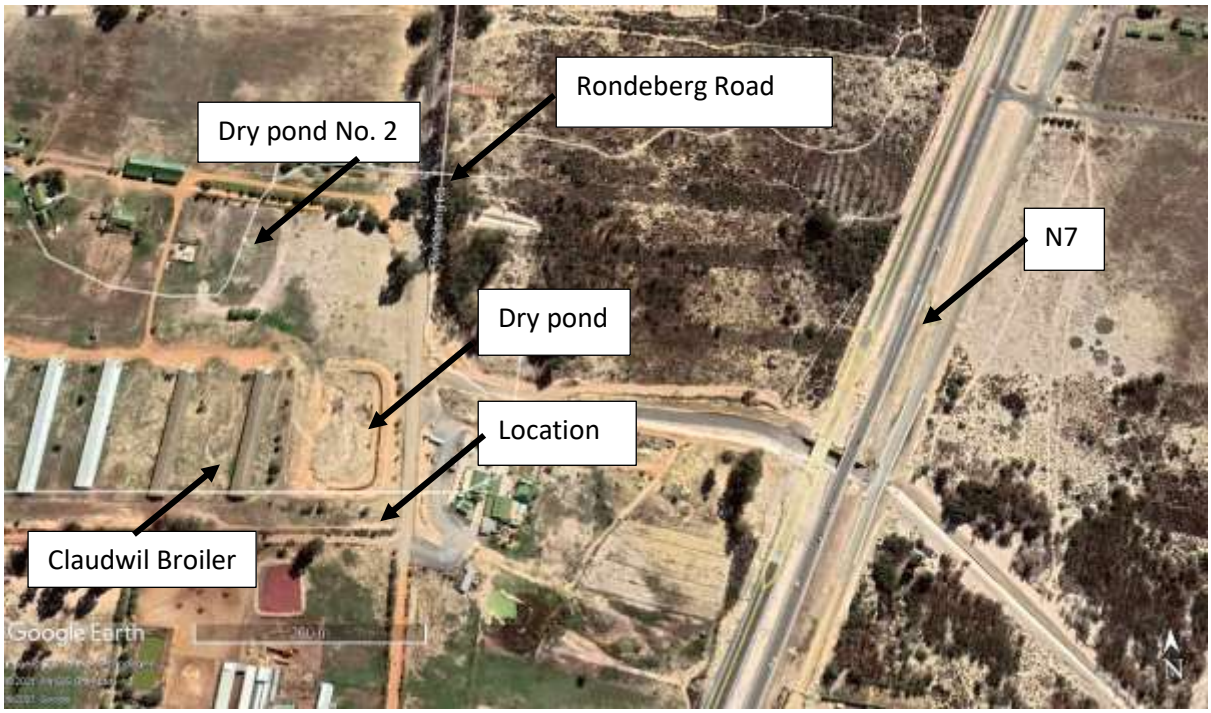

Figure 2 Location

The proposed mast will be constructed on the street corner of Rondeberg Road extension and a road past the Claudwil Broiler facility (Figure 2).

The coordinates are as follows:

33°36’22.91”S
18°35”34.39”E

The new cell phone tower is located right next to a dry pond (Figure 2). It is this pond that was identified as a legitimate water resource and that prompted the DWS to ask for a WULA.

Another dry pond can be identified 245m to the northwest of the proposed cell phone tower (Figure 2). This pond is on a higher elevation than the proposed cell phone tower, albeit only one meter higher. The proposed cell phone tower cannot possibly have any impact on this depression and is therefore not discussed any further.

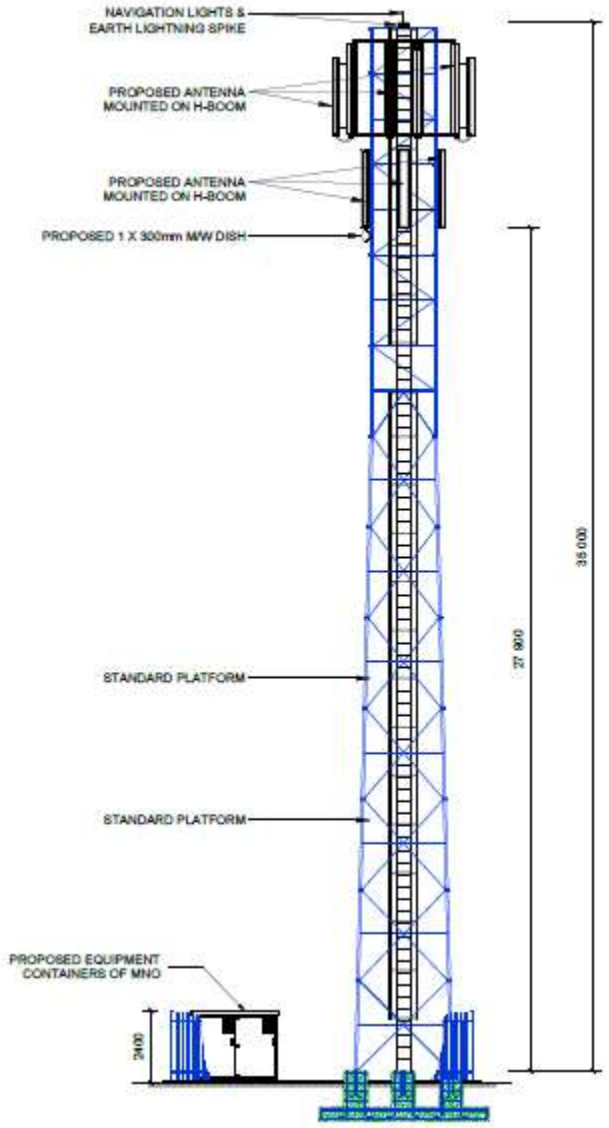

Figure 3 Cell phone tower

The cell phone tower will be a lattice mast of 35m high (Figure 3)

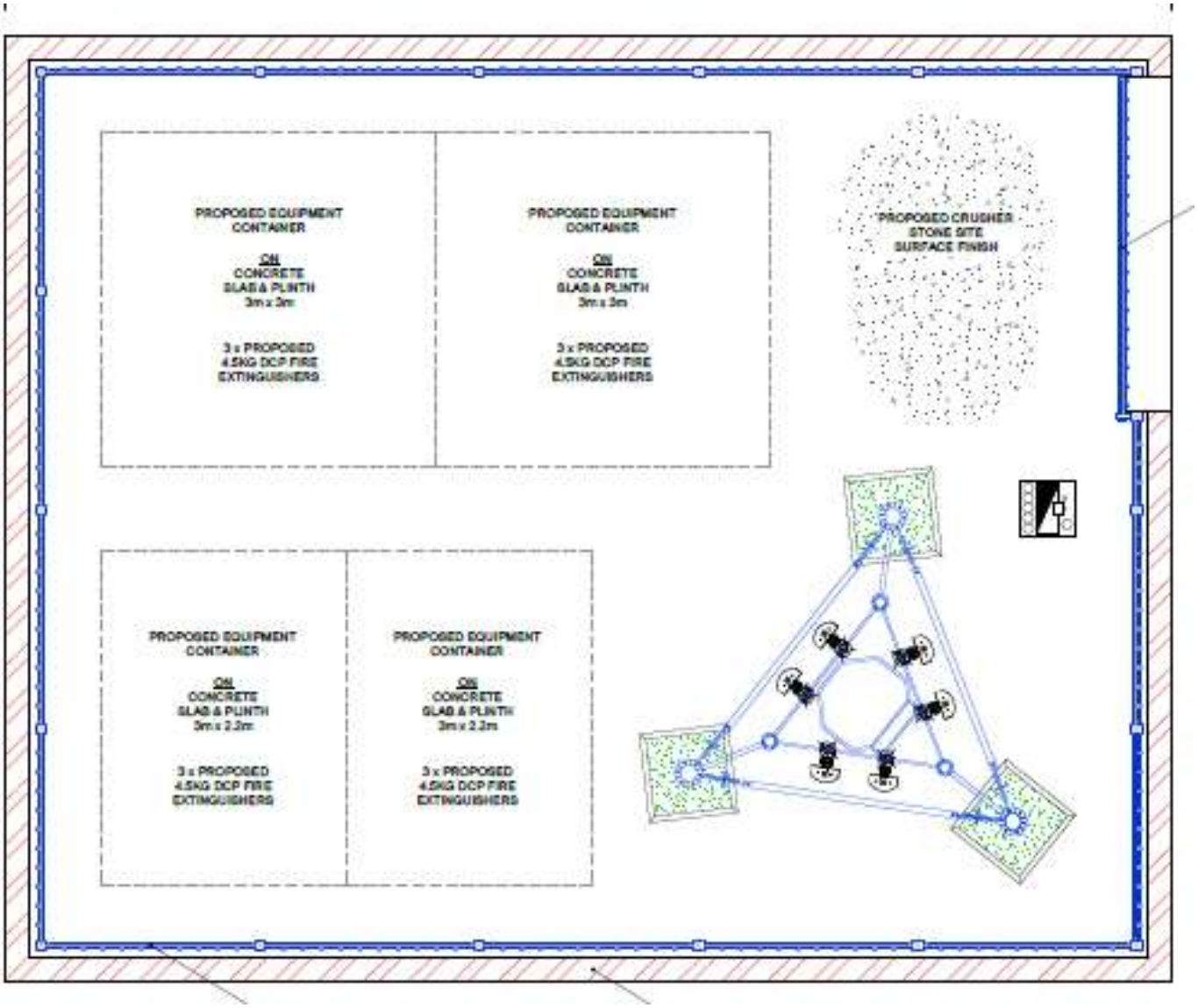

Figure 4 Construction site.

Concrete slabs will be casted on the site, two of 3 x 3m and another two of 2 x 2.2m. Containers will be places on these slabs. These containers will house the electronic infrastructure that is required for the operation of the transmission system.

The tower will be anchored to the ground with three concrete blocks (Figure 4).

The site will be secured with a palisade fencing and the ground surface around the tower will be covered with gravel.

7 The Pond

Figure 5 Pond

The pond (Figure 5) was a part of the farming operation. Currently it is disused and dry. This is an entirely artificial wetland. It is lined with a HDPE liner, the remnants of which can be seen sticking out on the banks. It is overgrown with port jackson willow *Acacia saligna*. No wetland vegetation is present on the pond. It can possibly be used for the drainage of the site.

There are similar ponds approximately a kilometre away to the east and the Diep River is approximately 3.5 km away.

The surface area of the pond is approximately 0.9 ha (Figure 6). It is 125m long and 74m wide. This is measured along the engineered berm of the pond.

The shortest distance between the pond and the cell phone tower installation's fence is 22m.

Figure 6 Pond surface area

8 Wetland Classification

According to Roundtree *el al* (2008) several types of wetlands can be distinguished. These are as follows:

- Rivers;
- Lakes;
- Unchannelled Valley Bottoms;
- Channelled Valley Bottoms; and
- Meandering Floodplain systems
- Seepage wetlands
- Depression pans
- Flats

The pond at Zouterivier does not fit into any of these descriptions, as it is a constructed and lined effluent pond for a poultry farm. The pond does not exist because of the flow or accumulation of natural surface or ground water.

9 Wetland Indicators

The methodology to be followed for the delineation of wetlands is available on the DWS webpage. The methodology consists of 4 parts, wetness, landform, soil profile and vegetation.

9.1 Wetness

This is the most obvious characteristic. The pond is generally dry. During heavy winter rains, it will collect water, which will evaporate soon after.

9.2 Landform

Landforms that are conducive to the formation and maintenance of wetlands include mountain sides, ridges and connectivity to adjacent rivers and streams.

The topography around the pond is entirely flat, with no pointers that there should be a wetland. There are no fountains or other natural wetland in the area.

9.3 Ground Profiles

It is customary to dig test holes and look for chroma mottles, which then indicate the presence of hydromorphic soils. The area in and around the pond is very much disturbed and consists of a homogeneous yellow or off-white to light grey sands with hardly any clay content. This is evident from the sides of the pond and other disturbances nearby. There is no indication of any hydromorphic soils.

9.4 Vegetation

There are no wetland plants in the pond. The vegetation is dominated by port Jackson willow.

The only wetland indicator that supports the idea that this pond should be classified as a wetland is the little wetness that occurs there in the dead of winter. This is not enough that the pond should be classified as a valid natural wetland.

10 Possible Impacts and Mitigating Measures

During the construction phase it is possible that building rubble and other debris can end up in the pond.

This is largely addressed by the construction method. Most of the components are manufactured off-site, transported to the site and finally assembled on the site. The concrete is mixed off-site. The slabs are cast with heavy equipment designed for this purpose. This minimises disturbance of the site. Movement of construction vehicles and cranes must be limited to the immediate vicinity of the building site and must be kept away from the pond.

Following construction, the site must be levelled and landscaped, with all rubble and debris removed.

From experience with previous constructions, it is evident that the construction team is well organised, with well-rehearsed operating procedures and that they are running a tight shop. If this past record of excellence is anything to go by, the site at Zouterivier will be left clean and tidy once construction has been completed.

Cell phone transmission towers require maintenance, from time to time, as well as upgrading and adding to the equipment. This is mostly a muted operation, with minimal impact. It is not expected that operation, maintenance and upgrading will have any adverse effects on the adjacent pond.

Decommissioning is not on the cards. It is foreseen that the proposed tower will be in operation for decades to come. Decommissioning is not about to have any adverse impact on the adjacent pond.

11 Present Ecological State

Table 1 Habitat Integrity according to Kleynhans, 1999

Category	Description	% of maximum score
A	Unmodified, natural	90 – 100
B	Largely natural with few modifications. A small change in natural habitats and biota, but the ecosystem function is unchanged	80 – 89
C	Moderately modified. A loss and change of the natural habitat and biota, but the ecosystem function is predominantly unchanged	60 – 79
D	Largely modified. A significant loss of natural habitat, biota and ecosystem function.	40 – 59
E	Extensive modified with loss of habitat, biota and ecosystem function	20 – 39
F	Critically modified with almost complete loss of habitat, biota and ecosystem function. In worse cases ecosystem function has been destroyed and changes are irreversible	0 - 19

The PES is a protocol that have been produced by Dr Neels Kleynhans (Table 1 and 2) in 1999 of the then DWAF to assess river reaches. The scores given are solely that of the practitioner and are based on expert opinion.

It is unusual and even perhaps odd to complete the procedure for this highly artificial and dysfunctional wetland, previously part of a farming operation. Nevertheless, this is what the DWS requires and this then is the best effort.

The approach here is to arrive at a PES class under the assumption that once this was a natural and ecologically functioning wetland that now has been transformed because of human impact. This is the approach to all other wetlands that were assessed, according to prescribed protocol. The initial state of this wetland is purely an assumption, because there never was a natural wetland in this location.

The riparian and the ponds bottom habitat both are placed in Class E, as they are severely modified, with the ecological functioning seriously impaired. The only reason

why they do not resort in Class E is because there is no water abstraction from the pond.

Table 2 Present Ecological Status of the pond on Portion 22 of Farm 22, Zouterivier

Bottom of the pond				
	Score	Weight	Product	Maximum score
Water abstraction	25	14	350	350
Flow modification	9	13	117	325
Bed modification	3	13	39	325
Channel modification	3	13	39	325
Water quality	4	14	56	350
Inundation	4	10	40	250
Exotic macrophytes	2	9	18	225
Exotic fauna	21	8	168	200
Solid waste disposal	4	6	24	150
Total		100	851	2500
% of total			34.0	
Class			E	
Riparian				
Water abstraction	25	13	325	325
Inundation	4	11	44	275
Flow modification	9	12	108	300
Water quality	4	13	52	325
Indigenous vegetation removal	2	13	26	325
Exotic vegetation encroachment	2	12	24	300
Bank erosion	19	14	266	350
Channel modification	2	12	24	300
Total			869	2500

12 Impact Assessment

Table 3 Impact Assessment

Description of impact Construction of the new cell phone tower and associated infrastructure. Building material and rubble ending up in the pond **Mitigation measures** Strictly follow standard operating procedures.								
Type Nature	Spatial Extent	Severity	Duration	Significance	Probability	Confidence	Reversibility	Irreplaceability
Without mitigation								
Direct	Local	Low	Medium term	Low	Certain	Certain	Reversible	Replaceable
With mitigation measures								
Negative	Local	Very low	Short term	Very Low	Unlikely	Sure	Reversible	Replaceable

Description of impact Maintenance and operation of the cell phone tower. Rubble ending up in the pond **Mitigation measures** Keep rubble out of the pond, remove any debris and rubble.								
Type Nature	Spatial Extent	Severity	Duration	Significance	Probability	Confidence	Reversibility	Irreplaceability
Without mitigation								
Direct	Local	Low	Medium term	Low	Certain	Certain	Reversible	Replaceable
With mitigation measures								
Negative	Local	Very Low	Short term	Very Low	Unlikely	Sure	Reversible	Replaceable

This impact assessment is directed at the construction, operation and maintenance of the proposed cell phone tower on the aquatic environment.

It is hardly comprehendible that the proposed cell phone tower would have an impact capable of lowering the classification to “E”. If it does, it would not really matter, as this retired effluent pond has from an ecological perspective little to offer.

The impact assessment procedure is designed to measure the efficiency of proposed mitigating measures. The procedure is explained in the Appendix.

The construction, operation and maintenance of the new cell phone tower is not about to have any impact on aquatic environment that may be present in the pond. The usual operating procedures will ensure that there will be no noticeable impact.

13 Significance

Decision-makers often press on a numerical score for Significance, in this event the significance of the impact that the sinking of the new borehole had on the local and regional aquatic environment. This evaluation is an attempt to put a numerical value to an Impact Assessment. The score takes into consideration both the environmental value of the site and the degree of impact.

Table 21.4, p30, Appendix provides a system for allocation values for each of the parameters Conservation Value, Extent, Duration, Severity and Likelihood with regard to possible impacts on the aquatic environment. These values are then entered into the equation on p39 to derive at a value for Significance. The value for Significance can subsequently be evaluated according to Table 21.4.2.

Table 25.4.2 provides a yardstick for decision-making to allow or disallow a development with its concomitant impact on the aquatic environment.

The scores that were given are entirely those of the specialist, based on his or her knowledge and experience. These scores form a bases for debate and consensus, should contemporaries and decision-makers wish to add to the process.

The scores apply under the assumption that mitigation measures will be in place.

The impact under discussion is solely that of the construction and operation of the proposed cell phone tower at Zouterivier.

The scores given were as follows:

Table 4 Significance Score

Parameter	Score
Conservation value	1
Likelihood	1
Duration	5
Extent	1
Severity	1
Significance	8

The score is extremely “Low”, as can be expected on an effluent pond to be impacted by a low impact activity such as the construction of a cell phone tower.

14 EISC

The DWS demand that wetland be placed in a category according to the EISC methodology (Table 5). The EISC is one of the essential items that is required for the Risk Matrix.

Table 5 EISC for the Zouterivier Pond

Determinant	Score	Confidence
Rare and endangered species	0	4
Populations of unique species	0	4
Species / Taxon richness	1	4
Diversity of habitat	1	4
Migration Route/ Breeding and feeding site for wetland species	1	4
Sensitivity to water quality changes	1	4
Flood storage, energy dissipation, particulate / element removal	0	4
Protection status	1	4
Ecological integrity		
Average	0.6	4

Score guideline:

Very High 4, High 3, Moderate 2, Low 1, None 0

Confidence Rating

Very High 4, High 3, Moderate 2, Low 1

The EISC can then be determined in Table 6, according to the score of Table 5.

The EISC came to D, which is fitting for a effluent collection pond. The proposed cell phone tower cannot possibly downgrade or even uplift the EISC of the pond.

Table 6 EISC for biotic and habitat determinants

EISC	Range of median	Recommended Ecological Management Class
Wetlands that are considered to be ecologically important and sensitive on a national or even international scale	>3 ≤ 4	A
Wetlands that are considered to be ecologically important and sensitive	>2 ≤ 3	B
Wetlands that are considered to be ecologically important and sensitive on a provincial or local scale	>1 ≤ 2	C
Wetlands that are not ecologically important and ecologically important on any sale	>0 ≤ 2	D

15 Risk Matrix

The purpose of the Risk Matrix is to determine if a General Authorisation of a License is applicable.

The assessment was carried out according to the interactive Excel table that is available on the DWS webpage. Table 7 is a replica of the Excel spreadsheet that has been adapted to fit the format of this report. The numbers in Table 7 (continued) represent the same activities as in Table 3, with sub-activities added.

The methodology is tabled in the Appendix.

It is assumed that mitigation measures will be in place.

The risks to the perceived aquatic habitat are Low. It is emphatically recommended that a General Authorization be the appropriate level of authorization. A License is not called for. In fact, the aquatic habitat is of such a nature that al letter of consent from the DWS would suffice.

Table 7 Risk Matrix

No.	Activity	Aspect	Impact	Significance	Risk Rating
1	Construction of the new urban cell phone tower and associated infrastructure	Building material and rubble ending up in the pond	Alteration of of aquatic habitat	24	Low
2	Maintenance and operation of the cell phone tower	Rubble ending up in the pond	Alteration of aquatic habitat	50	Low

Table 7 Continued Risk Rating

No	Flow	Water Quality	Habitat	Biota	Severity	Spatial scale	Duration	Conse-quence
1 2	1 1	1 1	1 1	1 1	1 1	1 1	1 3	3 5

No	Frequency of activity	Frequency of impact	Legal issues	Detection	Likelihood	Significance	Risk Rating
1 2	1 2	1 2	5 5	1 1	8 10	24 50	Low Low

16 Resource Economics

The goods and services delivered by the environment, in this case the drainage line at the new Erf 4440 development, is a Resource Economics concept as adapted by Kotze *et al* (2009).

The diagram (Figure 7) is an accepted manner to visually illustrate the resource economic footprint the drainage line, from the data in Table 8.

Table 8. Goods and Services

Goods & Services	Score
Flood attenuation	1
Stream flow regulation	1
Sediment trapping	1
Phosphate trapping	3
Nitrate removal	3
Toxicant removal	3
Erosion control	1
Carbon storage	3
Biodiversity maintenance	1
Water supply for human use	0
Natural resources	0
Cultivated food	0
Cultural significance	0
Tourism and recreation	0
Education and research	0

0	Low
5	High

The size of the star shape (spider diagram) signifies the importance of the economic footprint. A large star shape attracts the attention of the decision-making authorities. The star shape of Figure 19 is small.

This is the smallest star-shape ever encountered in WATSAN's years of practice. The resource economics footprint is insignificant.

The proposed cell phone tower is not about to reduce the economic footprint even more. If it does, not much would be lost.

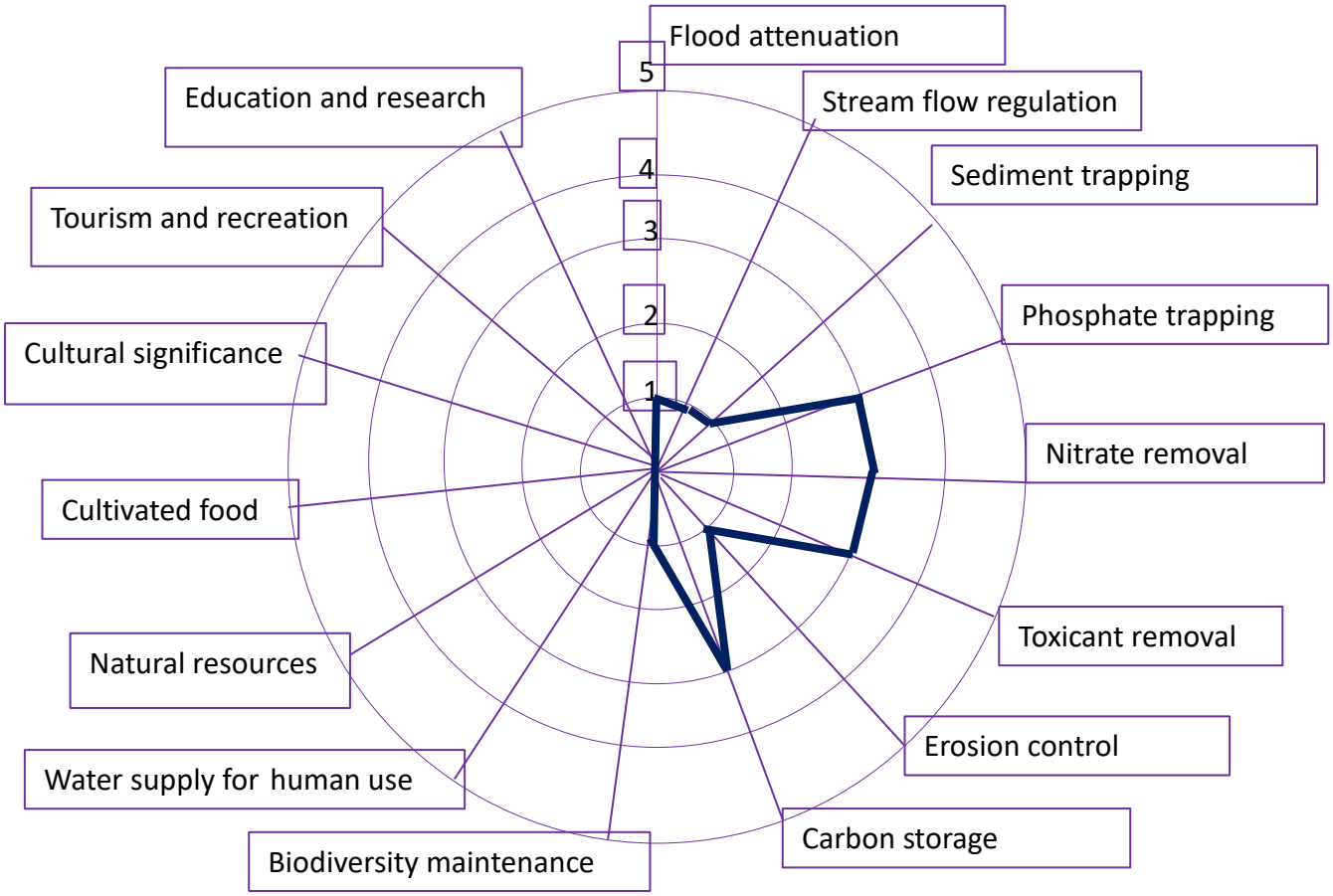

Figure 7. Resource Economics Footprint of the Drainage Line

17 Conclusions

The pond on Zouterivier Farm is nothing more than an artificially constructed, HDPE lined pond that was previously used for a farming operation. It is mostly dry, with only a little wetness during high rainfall events in the winter. There is no viable aquatic habitat to speak of. The pond is overgrown with invasive port Jackson.

The sole reason for this elaborate and complete Freshwater Report and WULA is to fulfil legal requirements and not to protect and conserve aquatic habitat.

It is therefore suggested that the construction of the proposed cell phone tower is authorized with General Authorization. A License is not required. In fact, a DWS letter of consent would suffice.

18 References

Anonymous. Date unknown. *A practical field procedure for identification and delineation of wetlands and riparian areas.* Department of Water Affairs and Forestry, Pretoria.

Kleynhans, C.J. 1999. *Assessment of Ecological Importance and Sensitivity*. Department of Water Affairs and Forestry. Pretoria.

Kotze, G., G. Marneweck, A. Batchelor, D. Lindley & Nacelle Collins. 2009. *A technique for rapidly assessing ecosystem services supplied by wetlands.* Water Research Commission, Pretoria.

Mucina, L & MC Rutherford. 2006. *The Vegetation of South Africa, Lesotho and Swaziland*. South African National Biodiversity Institute, Pretoria

Rountree, M., A. L. Batchelor, J. MacKenzie & D. Hoare. 2008. *Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas.* Department of Water Affairs and Forestry, Pretoria, South Africa.

19 Declaration of Independence

I, Dirk van Driel, 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 and;
- 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 vested interest in the proposed activity;
- Have disclosed to the applicant, EAP and competent authority any material information have or may have 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 and meet the responsibilities in terms of the NEMA, the Environmental Impacts Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R543) 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 on 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 facilitated in such a manner that all interested and affected parties were provided with reasonable opportunity to participate and to provide comments on the specialist input / study;
- Have ensured that all the comments of all the interested and affected parties on the specialist input were considered, recorded and submitted to the competent authority in respect of the application;
- Have ensured that the names of all the 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, weather such information is favourable or not and;
- Am aware that a false declaration is an offence in terms of regulation 71 of GN No. R543.

Signature of the specialist:  16 July 2021

20 Résumé

Dr Dirk van Driel
PhD, MBA, PrSciNat, MWISA
Water Scientist

PO Box 681
Melkbosstrand 7437
saligna2030@gmail.com
079 333 5800 / 022 492 2102

Experience

WATSAN Africa, Cape Town. Scientist **2011 - present**

USAID/RTI, ICMA & Chemonics. Iraq & Afghanistan **2007 -2011**
Program manager.

City of Cape Town **1999-2007**
Acting Head: Scientific Services, Manager: Hydrobiology.

Department of Water & Sanitation, South Africa **1989 – 1999**
Senior Scientist

Tshwane University of Technology, Pretoria **1979 – 1998**
Head of Department

University of Western Cape and Stellenbosch University 1994- 1998 part-time

- Lectured post-graduate courses in Water Management and Environmental Management to under-graduate civil engineering students
- Served as external dissertation and thesis examiner

Service Positions

- Project Leader, initiator, member and participator: Water Research Commission (WRC), Pretoria.
- Director: UNESCO West Coast Biosphere, South Africa
- Director (Deputy Chairperson): Grotto Bay Home Owner's Association
- Member Dassen Island Protected Area Association (PAAC)

Membership of Professional Societies

- South African Council for Scientific Professions. Registered Scientist No. 400041/96
- Water Institute of South Africa. Member

Reports

- Process Review Kathu Wastewater Treatment Works
- Effluent Irrigation Report Tydstroom Abattoir Durbanville
- River Rehabilitation Report Slangkop Farm, Yzerfontein
- Fresh Water and Estuary Report Erf 77 Elands Bay
- Ground Water Revision, Moorreesburg Cemetery
- Fresh Water Report Delaire Graff Estate, Stellenbosch
- Fresh Water Report Quantum Foods (Pty) Ltd. Moredou Poultry Farm, Tulbagh
- Fresh Water Report Revision, De Hoop Development, Malmesbury
- Fresh Water Report, Idas Valley Development Erf 10866, Stellenbosch
- Wetland Delineation Idas Valley Development Erf 10866, Stellenbosch
- Fresh Water Report, Idas Valley Development Erf 11330, Stellenbosch
- Fresh Water Report, La Motte Development, Franschhoek
- Ground Water Peer Review, Elandsfontein Exploration & Mining
- Fresh Water Report Woodlands Sand Mine Malmesbury
- Fresh Water Report Brakke Kuyl Sand Mine, Cape Town
- Wetland Delineation, Ingwe Housing Development, Somerset West
- Fresh Water Report, Suurbraak Wastewater Treatment Works, Swellendam
- Wetland Delineation, Zandbergfontein Sand Mine, Robertson
- Storm Water Management Plan, Smalblaar Quarry, Rawsonville
- Storm Water Management Plan, Riverside Quarry
- Water Quality Irrigation Dams Report, Langebaan Country Estate
- Wetland Delineation Farm Eenzaamheid, Langebaan
- Wetland Delineation Erf 599, Betty's Bay
- Technical Report Bloodhound Land Speed Record, Hakskeenpan
- Technical Report Harkerville Sand Mine, Plettenberg Bay
- Technical Report Doring Rivier Sand Mine, Vanrhynsdorp
- Rehabilitation Plan Roodefontein Dam, Plettenberg Bay
- Technical Report Groenvlei Crusher, Worcester
- Technical Report Wiedouw Sand Mine, Vanrhynsdorp
- Technical Report Lair Trust Farm, Augrabies
- Technical Report Schouwtoneel Sand Mine, Vredenburg
- Technical Report Waboomsrivier Weir Wolseley
- Technical Report Doornkraal Sand Mine Malmesbury
- Technical Report Berg-en-Dal Sand Mine Malmesbury
- Wetland Demarcation, Osdrif Farm, Worcester
- Technical Report Driefontein Dam, Farm Agterfontein, Ceres
- Technical Report Oewerzicht Farm Dam, Greyton
- Technical Report Glen Lossie Sand Mine, Malmesbury
- Preliminary Report Stellenbosch Cemeteries
- Technical Report Toeka & Harmony Dams, Houdenbek Farm, Koue Bokkeveld
- Technical Report Kluitjieskraal Sand & Gravel Mine, Swellendam
- Fresh Water Report Urban Development Witteklip Vredenburg
- Fresh Water Report Groblershoop Resort, Northern Cape
- Fresh Water Report CA Bruwer Quarry Kakamas, Northern Cape
- Fresh Water Report, CA Bruwer Sand Mine, Kakamas, Northern Cape
- Fresh Water Report, Triple D Farms, Agri Development, Kakamas
- Fresh Water Report, Keren Energy Photovoltaic Plant Kakamas
- Fresh Water Report, Keren Energy Photovoltaic Plant Hopetown
- Fresh Water Report Hopetown Sewer

- Fresh Water Report Hoogland Farm Agricultural Development, Touws River
- Fresh Water Report Klaarstroom Waste Water Treatment Works
- Fresh Water Report Calvinia Sports Grounds Irrigation
- Fresh Water Report CA Bruwer Agricultural Development Kakamas
- Fresh Water Report Zwartfontein Farm Dam, Hermon
- Statement Delsma Farm Wetland, Hermon
- Fresh Water Report Lemoenshoek Farms Pipelines Bonnyvale
- Fresh Water Report Water Provision Pipeline Brandvlei
- Fresh Water Report Erf 19992 Upington
- Botanical Report Zwartejongensfontein Sand Mine, Stilbaai
- Fresh Water Report CA Bruwer Feldspath Mine, Kakamas
- Sediment Yield Calculation, Kenhardt Sand Mine
- Wetland Demarcation, Grabouw Traffic Center
- Fresh Water Report, Osdrift Sand Mine, Worcester
- Fresh Water Report, Muggievlak Storm Water Canal, Vredenburg
- Fresh Water Report, Marksman's Nest Rifle Range, Malmesbury
- Biodiversity Report, Muggievlak Storm Water Canal, Vredenburg
- Strategic Planning Report, Sanitation, Afghanistan Government, New Delhi, India
- Fresh Water Report, Potable Water Pipeline, Komaggas
- Fresh Water Report, Wastewater Treatment Works, Kamieskroon
- Fresh Water Report, Turksvy Farm Dam, Upington
- Fresh Water Report, Groblershoop Urban Development, IKheis Municipality
- Fresh Water Report, Boegoeberg Urban Development, IKheis Municipality
- Fresh Water Report, Opwag Urban Development, IKheis Municipality
- Fresh Water Report, Wegdraai Urban Development, IKheis Municipality
- Fresh Water Report, Topline Urban Development, IKheis Municipality
- Fresh Water Report, Grootdrink Urban Development, IKheis Municipality
- Fresh Water Report, Gariep Urban Development, IKheis Municipality
- Fresh Water Report, Bonathaba Farm Dam, Hermon
- Botanical Report, Sand Mine Greystone Trading, Vredendal
- Botanical Report Namakwa Klei Stene, Klawer
- Fresh Water Report Buffelsdrift Quarry, George
- Fresh Water Report Styerkraal Agricultural Development, Onseepkans.
- Technical Report Arabella Country Estate Wastewater Treatment Works, Kleinmond
- Fresh Water Report Calvinia Bulk Water Supply
- Fresh Water Report Swartdam Farm Dams, Riebeeck Kasteel
- Fresh Water Report Erf 46959, Gordon's Bay
- Fresh Water Report Melkboom Farm Dam, Trawal
- Stormwater Management Plan, Bot River Bricks
- Freshwater Report Sanddrif Farm, Joubertina

21 Appendix

21.1 Letter BGCMA

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

WESTERN CAPE REGION
Private Bag X 16, Sanlamhof, 7532 / 52 Voortrekker Road, Bellville 7530
Tel #: (021) 941 6000 Fax #: (021) 941 6077

Enquiries : R Singo
Tel # : (021) 941 6140
Email : SingoR@dws.gov.za
Reference : 16/2/7/G21D/A/11

Attention: Anthony Mader
EnviroAfrica CC
P.O. Box 5367
HELDERBERG
7135

Dear Sir

PRE-APPLICATION DRAFT BAR FOR THE PROPOSED DEVELOPMENT OF A 35M HIGH TELECOMMUNICATION MAST ON PORTION 22 OF FARM 22, ZOUTERIVIER

Your document dated June 2021 with Reference Number: 16/3/3/6/7/1/A5/87/2062/21from DEA&DP refers.
This Department has perused the above-mentioned document and has the following comments:

1. According to the report, a non-operational, artificial wetland which forms part of stormwater management on the property is located within 32m of the proposed site for development. Please note that any development within the 1:100 year flood line or within 500m from any boundary of a wetland or water resource triggers water use activities and must be authorised and registered in terms of Section 21 (c) *"impeding or diverting the flow of water in a watercourse"* and (i) *"altering the bed, banks, course or characteristics of a watercourse"* of the National Water Act, 1998 (Act No. 36 of 1998).

2. The Applicant, is hereby advised to apply and obtain a Water Use Authorisation as prescribed in Section 21 (c) and (i) of the National Water Act, 1998 (Act No. 36 of 1998). The application should be submitted online via the Departmental Electronic Water Use License Application and Authorisation System (e-WULAAS) by following the link: http://164.151.129.107/ewulaas/.

3. In terms of Section 21 (c) and (i), Government Gazette No. 40229 in Government Notice 509 dated 28 August 2016, a singed Risk Matrix (Appendix A) must be completed and submitted to the Department. The risk matrix can be found on the Department's website

www.dws.gov.za under Document Library – Documents – “Section 21 (c) and (i)” – click all scroll down to “Final Risk Assessment Matrix”.

4. It is mentioned that this project will not use water during the operational and construction phase. Therefore, no abstraction of surface or groundwater may be done without prior authorisation from this Department, unless it is a Schedule 1 Use or an Existing Lawful Use.

5. Please indicate the source of the potable water supply for the staff as well as how the sewage will be managed from the proposed development.

6. Storm-water runoff must be controlled to ensure that on-site activities do not culminate into off-site pollution.

7. Solid waste must be managed in accordance with the requirements of the relevant legislation.

8. Measures to control illegal dumping of construction waste must be in place as this may result in pollution of the surface water run-off.

9. All the requirements of the National Water Act, 1998 (Act 36 of 1998) in terms of water use and pollution control management must be adhered to at all times.

10. Please note that this Department reserves the right to amend and/or add to the comments made above in the light of subsequent information received.

Please do not hesitate to contact the above office should there be any queries.

Yours Sincerely,

REGIONAL HEAD: WESTERN CAPE
Signed by: Nelisa Ndobeni
Designation: Control Environmental Officer
Date: 21 June 2021

21.2 Atlantis Sand Fynbos

VT 46 Coastal Renosterbosveld (64%) (Acocks 1953). Sand Plain Fynbos (22%) (Moll & Bossi 1983). LR 68 Sand Plain Fynbos (73%) (Low & Rebelo 1996). BHU 11 Hopefield Sand Plain Fynbos (64%) (Cowling et al. 1999b, Cowling & Heijnis 2001).

Distribution Western Cape Province: Rondeberg to Blouberg on the West Coast coastal flats; along the Groen River on the eastern side of the Dassenberg-Darling Hills through Riverlands to the area between Atlantis and Kalbaskraal, also between Klipheuwel and the Paardeberg with outliers west of the Berg River east and north of Riebeek-Kasteel between Hermon and Heuningberg. Altitude 40–250 m.

Vegetation & Landscape Features Moderately undulating to flat sand plains with a dense, moderately tall, ericoid shrubland dotted with emergent, tall sclerophyllous shrubs and an open, short restioid stratum. Restioid and proteoid fynbos are dominant, with asteraceous fynbos and patches of ericaceous fynbos in seepages.

Geology & Soils Acidic tertiary, grey regic sands, usually white or yellow. Land types mainly Db, Ha, Hb and Ca.

Climate Winter-rainfall regime with precipitation peaking from May to August. MAP 290–660 mm (mean: 440 mm). Mists (fogs) common in winter and supplying additional precipitation. Mean daily maximum and minimum temperatures 27.9°C and 7.0°C for February and July, respectively. Frost incidence about 3 days per year. See also climate diagram for FFd 4 Atlantis Sand Fynbos (Figure 4.57).

Important Taxa ([T]Cape thickets) Tall Shrubs: *Diospyros glabra*[T] (d), *Euclea racemosa* subsp. *racemosa*[T] (d), *Metalasia densa* (d), *Passerina corymbosa* (d), *Protea burchellii* (d), *P. repens* (d), *Putterlickia pyracantha*[T] (d), *Rhus laevigata*[T] (d), *Gymnosporia buxifolia*[T], *Hymenolepis parviflora*, *Wiborgia obcordata*. Low Shrubs: *Anthospermum aethiopicum* (d), *Berzelia abrotanoides* (d), *Diastella proteoides* (d), *Elytropappus rhinocerotis* (d), *Erica plumosa* (d), *Leucadendron salignum* (d), *Phylica cephalantha* (d), *Salvia lanceolata* (d), *Staavia radiata* (d), *Trichocephalus stipularis* (d), *Amphithalea ericifolia*, *Aspalathus lotoides* subsp. *lotoides*, *A. quinquefolia* subsp. *quinquefolia*, *A. ternata*, *Athanasia trifurcata*, *Cliffortia drepanoides*, *C. ferruginea*, *C. polygonifolia*, *Cryptadenia grandiflora*, *Erica ferrea*, *E. mammosa*, *Helichrysum tomentosulum*, *Hermannia alnifolia*, *Hippia pilosa*, *Lachnospermum imbricatum*, *Leonotis leonurus*, *Leucadendron cinereum*, *L. lanigerum* var. *lanigerum*, *Leucospermum hypophyllocarpodendron* subsp. *canaliculatum*, *Leysera gnaphalodes*, *Metalasia adunca*, *M. capitata*, *M. distans*, *Oedera imbricata*, *Otholobium hirtum*, *Protea acaulos*, *P. scolymocephala*, *Psoralea ensifolia*, *P. laxa*, *Rhus dissecta*[T], *Serruria decipiens*, *S. fasciflora*, *S. trilopha*. Succulent Shrub: *Crassula flava*. Woody Climbers: *Asparagus asparagoides*, *Microloma sagittatum*. Semiparasitic Shrubs: *Thesium nigromontanum* (d), *T. scabrum*. Herbs: *Annesorhiza macrocarpa*, *Arctopus echinatus*, *Castalis nudicaulis*, *Haplocarpha lanata*, *Nemesia bicornis*, *Phyllopodium cephalophorum*. Geophytic Herbs: *Aristea africana*, *Disa obtusa*, *Geissorhiza humilis*, *G. purpurascens*, *Othonna stenophylla*, *Satyrium bicorne*. Herbaceous Climber: *Cynanchum africanum*. Herbaceous Parasitic Climber: *Cassytha ciliolata*. Graminoids: *Aristida diffusa* (d), *Cannomois parviflora* (d), *Ehrharta calycina* (d), *E. villosa* var. *villosa* (d), *Ischyrolepis monanthos* (d), *Scirpoides thunbergii* (d), *Staberoha distachyos* (d), *Thamnochortus obtusus* (d), *T. punctatus* (d), *Willdenowia incurvata* (d), *W. sulcata* (d), *Cyperus textilis*, *Elegia nuda*, *Ficinia nigrescens*, *Pentaschistis curvifolia*.

Endemic Taxa Low Shrubs: *Leucospermum parile* (d), *Erica malmesburiensis*, *Serruria linearis*, *S. roxburghii*, *S. scoparia*. Herb: *Steirodiscus speciosus*.

Conservation Vulnerable. Target 30%. About 6% conserved in Riverlands, Paardenberg and at Pella Research Site. Some 40% has been transformed, mainly for cultivation (agricultural smallholdings and pastures), by urban sprawl of Atlantis and for setting up pine and gum plantations. Woody aliens include *Acacia saligna*, *A. cyclops* and various species of *Eucalyptus* and *Pinus*. Erosion very low and low.

Remark 1 This unit has greater species diversity than the sand fynbos units to the north, and exemplifies the northern limit of extensive ericaceous fynbos in sand fynbos. A record 76 species in a 5 x 10 m plot have been counted (C. Boucher, unpublished data).

Remark 2 This is probably the best researched sand fynbos type due to the location of the Pella Research Site which served as base for intensive research into fynbos ecology of the sand plain lowlands in the 1980s. Because of its history of past research (and valuable historical data), the site should be revitalised for long-term research and monitoring purposes.

References Boucher (1983, 1986, 1987, 1992, 1996b), Hoffman et al. (1987), Boucher & Shepherd (1988), Jarman (1988), Jarman & Mustart (1988), Witkowski & Mitchell (1989), Musil & De Witt (1990).

21.3 Methodology used in determining significance of impacts

The methodology to be used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives is provided in the following tables:

Table 21.3.1 Nature and type of impact

Nature and type of impact	Description
Positive	An impact that is considered to represent an improvement to the baseline conditions or represents a positive change
Negative	An impact that is considered to represent an adverse change from the baseline or introduces a new negative factor
Direct	Impacts that result from the direct interaction between a planned project activity and the receiving environment / receptors
Indirect	Impacts that result from other activities that could take place as a consequence of the project (e.g. an influx of work seekers)
Cumulative	Impacts that act together with other impacts (including those from concurrent or planned future activities) to affect the same resources and / or receptors as the project

Table 21.3.2 Criteria for the assessment of impacts

Criteria	Rating	Description
Spatial extent of impact	National	Impacts that affect nationally important environmental resources or affect an area that is nationally important or have macro-economic consequences
	Regional	Impacts that affect regionally important environmental resources or are experienced on a regional scale as determined by administrative boundaries or habitat type / ecosystems
	Local	Within 2 km of the site
	Site specific	On site or within 100m of the site boundary
Consequence of impact/ Magnitude/ Severity	High	Natural and / or social functions and / or processes are severely altered
	Medium	Natural and / or social functions and / or processes are notably altered
	Low	Natural and / or social functions and / or processes are slightly altered
	Very Low	Natural and / or social functions and / or processes are negligibly altered
	Zero	Natural and / or social functions and / or processes remain unaltered
Duration of impact	Temporary	Impacts of short duration and /or occasional
	Short term	During the construction period
	Medium term	During part or all of the operational phase
	Long term	Beyond the operational phase, but not permanently
	Permanent	Mitigation will not occur in such a way or in such a time span that the impact can be considered transient (irreversible)

Table 21.3.3 Significance Rating

Significance Rating	Description
High	High consequence with a regional extent and long-term duration High consequence with either a regional extent and medium-term duration or a local extent and long-term duration Medium consequence with a regional extent and a long-term duration
Medium	High with a local extent and medium-term duration High consequence with a regional extent and short-term duration or a site-specific extent and long-term duration High consequence with either local extent and short-term duration or a site-specific extent with a medium-term duration Medium consequence with any combination of extent and duration except site-specific and short-term or regional and long term Low consequence with a regional extent and long-term duration
Low	High consequence with a site-specific extent and short-term duration Medium consequence with a site-specific extent and short-term duration Low consequence with any combination of extent and duration except site-specific and short-term Very low consequence with a regional extent and long-term duration
Very low	Low consequence with a site-specific extent and short-term duration Very low consequence with any combination of extent and duration except regional and long term
Neutral	Zero consequence with any combination of extent and duration

Table 21.3.4 Probability, confidence, reversibility and irreplaceability

Criteria	Rating	Description
Probability	Definite	>90% likelihood of the impact occurring
	Probable	70 – 90% likelihood of the impact occurring
	Possible	40 – 70% likelihood of the impact occurring
	Unlikely	<40% likelihood of the impact occurring
Confidence	Certain	Wealth of information on and sound understanding of the environmental factors potentially affecting the impact
	Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact
	Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact
Reversibility	Reversible	The impact is reversible within 2 years after the cause or stress is removed
	Irreversible	The activity will lead to an impact that is in all practical terms permanent
Irreplaceability	Replaceable	The resources lost can be replaced to a certain degree
	Irreplaceable	The activity will lead to a permanent loss of resources.

21.4 Significance

Table 21.4.1 Conservation Value

Conservation Value		
Refers to the intrinsic value of the area or its relative importance towards the conservation of an ecosystem or species or even natural aesthetics. Conservation status is based on habitat function, its vulnerability to loss and fragmentation or its value in terms of the protection of habitat or species	Low 1	The area is transformed, degraded not sensitive (e.g. Least threatened), with unlikely possibility of species loss.
	Medium / Low 2	The area is in good condition but not sensitive (e.g. Least threatened), with unlikely possibility of species loss.
	Medium 3	The area is in good condition, considered vulnerable (threatened), or falls within an ecological support area or a critical biodiversity area, but with unlikely possibility of species loss.
	Medium / High 4	The area is considered endangered or, falls within an ecological support area or a critical biodiversity area, or provides core habitat for endemic or rare & endangered species.
	High 5	The area is considered critically endangered or is part of a proclaimed provincial or national protected area.

Table 21.4.2 Scoring system

Significance	Score	Description
Insignificant	4 - 22	There is no impact or the impact is insignificant in scale or magnitude as a result of low sensitivity to change or low intrinsic value of the site.
Low	23 - 36	An impact barely noticeable in scale or magnitude as a result of low sensitivity to change or low intrinsic value of the site, or will be of very short-term or is unlikely to occur. Impact is unlikely to have any real effect and no or little mitigation is required.
Medium / Low	37 - 45	Impact is of a low order and therefore likely to have little real effect. Mitigation is either easily achieved. Impacts may have medium to short term effects on the natural environment within site boundaries.
Medium	46 - 55	Impact is real, but not substantial. Mitigation is both feasible and fairly easily possible, but may require modification of the project design or layout. These impacts will usually result in medium to long term effect on the natural environment, within site boundary.
Medium High	56 - 63	Impact is real, substantial and undesirable, but mitigation is feasible. Modification of the project design or layout may be required. These impacts will usually result in medium to long-term effect on the natural environment, beyond site boundary within local area.
High	64 - 79	An impact of high order. Mitigation is difficult, expensive, time-consuming or some combination of these. These impacts will usually result in long-term change to the natural environment, beyond site boundaries, regional or widespread.
Unacceptable	80 - 100	An impact of the highest order possible. There is no possible mitigation that could offset the impact. The impact will result in permanent change. Very often these impacts cannot be mitigated and usually result in very severe effects, beyond site boundaries, national or international.

Parameter	1	2	3	4	5
Conservation value Likelihood Duration Extent Severity	Low Unlikely Temporary Site specific Zero	Medium /Low Possible Short term Local Very low	Medium More possible Medium term Regional Low	Medium / High Probable Long term National Medium	High Definite Permanent International High

Significance = Conservation value (Likelihood + Duration + Extent + Severity)

21.5 Risk Matrix Methodology

RISK ASSESSMENT KEY (Referenced from DWA RISK-BASED WATER USE AUTHORISATION APPROACH AND DELEGATION GUIDELINES)

Negative Rating

TABLE 1- SEVERITY

How severe does the aspects impact on the environment and resource quality characterisitics (flow regime, water quality, geomorfology, biota, habitat)

Insignificant / non-harmful	1
Small / potentially harmful	2
Significant / slightly harmful	3
Great / harmful	4
Disastrous / extremely harmful and/or wetland(s) involved	5

Where "or wetland(s) are involved" it means

TABLE 2 – SPATIAL SCALE

How big is the area that the aspect is impacting on?

Area specific (at impact site)	1
Whole site (entire surface right)	2
Regional / neighbouring areas (downstream within quaternary catch	3
National (impacting beyond seconday catchment or provinces)	4
Global (impacting beyond SA boundary)	5

TABLE 3 – DURATION

How long does the aspect impact on the environment and resource quality?

One day to one month, PES, EIS and/or REC not impacted
One month to one year, PES, EIS and/or REC impacted but no change in status
One year to 10 years, PES, EIS and/or REC impacted to a lower status but can be improved over this period through mitigation
Life of the activity, PES, EIS and/or REC permanently lowered
More than life of the organisation/facility, PES and EIS scores, a E or F

TABLE 4 – FREQUENCY OF THE ACTIVITY

How often do you do the specific activity?

Annually or less	1
6 monthly	2
Monthly	3
Weekly	4
Daily	5

TABLE 5 – FREQUENCY OF THE INCIDENT/IMPACT

How often does the activity impact on the environment?

Almost never / almost impossible / >20%	1
Very seldom / highly unlikely / >40%	2
Infrequent / unlikely / seldom / >60%	3
Often / regularly / likely / possible / >80%	4
Daily / highly likely / definitely / >100%	5

TABLE 6 – LEGAL ISSUES

How is the activity governed by legislation?

No legislation	1
Fully covered by legislation (wetlands are legally governed)	5

Located within the regulated areas

TABLE 7 – DETECTION	
How quickly can the impacts/risks of the activity be observed on the environment (water resourc	
Immediately	
Without much effort	
Need some effort	
Remote and difficult to observe	
Covered	

TABLE 8: RATING CLASSES		
RATING	**CLASS**	**MANAGEMENT DESCRIPTION**
1 – 55	(L) Low Risk	Acceptable as is or consider requirement for mitigation. Impact to watercourses and resource quality small and easily mitigated. Wetlands may be excluded.
56 – 169	M) Moderate Risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and
170 – 300	(H) High Risk	Always involves wetlands. Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale
A low risk class must be obtained for all activities to be considered for a GA		

TABLE 9: CALCULATIONS

Consequence = Severity + Spatial Scale + Duration
Likelihood=Frequency of Activity + Frequency of Incident +Legal Issues + Detection
Significance \Risk= Consequence X Likelihood