PROPOSED PROSPECTING MINING RIGHT APPLICATION FOR KLIPVLEY KAROO KOP 153 , WESTERN CAPE PROVINCE

Aquatic Biodiversity Theme Compliance Statement

June 2023

Prepared for:

Prepared by:

Megan Smith
Megan.smith@enviroworks.co.za

CONTENTS

TABLES

FIGURES

DOCUMENT CONTROL

Quality and revision record

Quality approval

	Capacity	Name	Signature	Date
Author:	Environmental Specialist (MSc Biological Sciences, UCT 2019). SACNASP: 130295 (Pr.Nat.Sci) – Ecological Science	Megan Smith		26/06/2023
Review Specialist	Ecologist (M.Sc Botany) SACNASP Reg. no 400328/11	Elbi Bredenkamp		26/06/2023

This report has been prepared in accordance with Enviroworks Quality Management System.

Revision record

Revision Number	Objective	Change	Date
		-	

DISCLAIMER

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time, and budget. Discussions are to some extent made on reasonable and informed assumptions built on bona fide information sources, as well as deductive reasoning. Since environmental impact studies deal with dynamic natural systems additional information may come to light at a later stage during the impact assessment phase. The author does not accept responsibility for conclusions made in good faith based on own databases or on the information provided. Although the author exercised due care and diligence in rendering services and preparing documents, he accepts no liability, and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, directly or indirectly by the authors and by the use of this document. This report should therefore be viewed and acted upon with these limitations in mind.

1. INTRODUCTION

1.1 Project description

Enviroworks were appointed to undertake a Aquatic Biodiversity Theme assessment for the proposed prospecting rights application for the Klipvley 153 (Portions 1,2,3 and the remainder), South Africa. The proposed extent of the area for prospecting (3635 ha) is located 40 km west of the town Lutzville, within the western Cape Province. Each drill site will approximately result in a disturbance area of 50 m^2 .

The existence and possible size of heavy mineral deposits in the application area were determined by the Applicant (Mineral Sands Resources) as follows:

- Data review and desk top studies will involve the following desk-top activities: data acquisition from government and private sources, and analysis of any existing/previous prospecting and drilling data, satellite (Landsat) imagery, aerial photos, and terrain data, as well as geological map interpretation. The synthesis and interpretation of such information will contribute towards providing a clearer picture of the location and characteristics of the heavy mineral deposit/s and will guide the in-field prospecting programme.

- Mapping and surface sampling: Surface mapping will be conducted by the project geologist and assistants and will take place over a period of 3 months. Such mapping will encompass GPS controlled traverses, and aerial photo mapping. Surface sampling. Where heavy mineral concentrations are noted on surface 25-liter surface samples will be collected manually with a shovel and plastic sampling bag for concentration and laboratory analysis to determine the type of minerals present and the tenor of mineralization. Each pit will be 50cm x 50cm in size and dug to a maximum depth of 1m. The final number of samples will be determined by the size of surface mineralized areas if any, 200 samples are planned for initially. Each sample locality will be backfilled and fully rehabilitated concurrently with sampling.

- Reconnaissance Drilling will involve surveying and pegging of the anticipated deposit. This sub-phase will include the following activities: Surveying of the mapped area to be prospected. A grid (average 500m x 500m) will be marked on the map, after which those positions will be marked in the field by a surveyor with labelled droppers (pegs). Shallow small diameter auger drilling will take place at these positions down to a depth of 4m. A total of 100 auger drill holes are planned initially and may be followed up with additional drilling. Access routes to the drill sites will also be located (existing roads will used and new tracks only permitted in exceptional circumstances).

- Evaluation drilling will be conducted with the Air-core drilling method to access the deeper lying sediment package. Existing geological information in the area indicate mineralization down to 10m depth. A total of 250 Air-core holes are planned to an average depth of 30m. More drilling may be

required depending on results. Drill cutting will be sampled and analysed for heavy mineral content as described above for surface sampling.

- Analytical desk-top study. All the data collected will be analysed and compiled into a final report/model in order to determine the potential of the project and to outline possible future drill sampling programs if any.

The prospecting will be conducted in 3 phases, each one dependent on the results of the above.

- Phase 1 will involve the following desk-top activities: data acquisition from government and private sources, and analysis of any existing/previous prospecting and drilling data, satellite (Landsat) imagery, aerial photos, and terrain data, as well as geological map interpretation. The synthesis and interpretation of such information will contribute towards providing a clearer picture of the location and characteristics of the heavy mineral deposit/s, and will guide the in-field prospecting programme.

- Phase 2: Surface mapping will be conducted by the project geologist and assistants, and will take place over a period of 3 months. Such mapping will encompass GPS controlled traverses, and aerial photo mapping. Surface sampling. Where heavy mineral concentrations are noted on surface 25 liter surface samples will be collected manually with a shovel and plastic sampling bag for concentration and laboratory analysis to determine the type of minerals present and the tenor of mineralization. Each pit will be 50cm x 50cm in size and dug to a maximum depth of 1m. The final number of samples will be determined by the size of surface mineralized areas if any, 200 samples are planned for initially. Each sample locality will be backfilled and fully rehabilitated concurrently with sampling.

- Phase 3 will involve surveying and pegging of the anticipated deposit. This sub-phase will include the following activities: Surveying of the mapped area to be prospected. A grid (average 500m x 500m) will be marked on the map, after which those positions will be marked in the field by a surveyor with labelled droppers (pegs). Shallow small diameter auger drilling will take place at these positions to an average depth of 4m. A total of 100 auger drill holes are planned initially and may be followed up with additional drilling Access routes to the drill sites will also be located (existing roads will used and new tracks only permitted in exceptional circumstances)

- Phase 4 will be conducted with Air Core drilling method to access the deeper lying sediment package. A total of 250 Air-core holes are planned down to an average depth of 30m. More drilling may be required depending on results. Drill cutting will be sampled and analyzed for heavy mineral content as described above for surface sampling.

- Phase 5 will involve analytical desk-top study. All the data collected will be analyzed and compiled into a final report/model in order to determine the potential of the project and to outline possible future drill sampling programs if any.

2. OBJECTIVES

2.1 Watercourse delineation

The protection of watercourses is of utmost importance to the Department of Water and Sanitation (DWS). This report was compiled to inform the WULA under the NWA and the Water Use Licence Application and Appeals Regulations, 2017 (GN R. 267 of 24 March 2017). The watercourse delineation and assessment were done to delineate the watercourses and determine the Present Ecological State (PES) and Environmental Importance and Sensitivity (EIS) of the watercourses to ensure protection thereof.

2.2 Water Use Risk matrix

The objective of the Risk Matrix is to assess the risk associated with a Section 21 (c) – Impeding or diverting the flow of water in a watercourse & (i) – Altering the beds, banks, course or characteristics of a watercourse - Water Use. The proponent proposes to conduct prospecting activities, potentially within the regulated area of watercourses. The proximity of the development to the watercourses triggers the need for a Risk Assessment Matrix according to Section 21 (c) & (i) of the NWA.

The Constitution of the Republic of South Africa (1996) promotes sustainability; social, ecological and developmental issues are considered to be equally important. The South African National Water Policy (1997) and the NWA were promulgated to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in an equitable, efficient and sustainable manner (Department of Water and Sanitation, 2014).

Watercourses are essential for the maintenance of adequate supply of surface and underground water; provide hydrological stability and flooding- and erosion control; as well as sustaining biota. Due to the potential of the proposed infrastructure to impact freshwater courses (proximity to watercourses), the proposed project potentially triggers (c) & (i) water uses according to the NWA. As S21 (c) & (i) water use related activities impact watercourses and thus their functions, the objectives of regulating S21 (c) & (i) water use entail inter alia (taken from Department of Water and Sanitation, 2014):

Protecting watercourses by:

- promoting sustainable utilisation;
- prevention of degradation; and
- ensuring rehabilitation of watercourses.

Preventing pollution of watercourses, i.e. the direct or indirect alteration of the physical, chemical or biological properties of a watercourse so as to make it:

- less fit for any beneficial purpose for which it may reasonably be expected to be used; or
- harmful or potentially harmful-

- to the welfare, health or safety of human beings;
- to any aquatic or non-aquatic organisms;
- to the resource quality; or
- to property.

According to Government Notice 509 of 2016 - GENERAL AUTHORISATION IN TERMS OF SECTION 39 OF THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998) FOR WATER USES AS DEFINED IN SECTION 21(C) OR SECTION 21(I), IMPEDING OR DIVERTING THE FLOW OF WATER IN A WATERCOURSE (SECTION 21(C)), OR ALTERING THE BED, BANKS, COURSE OR CHARACTERISTICS OF A WATERCOURSE (SECTION 21(I)) OF THE NATIONAL WATER ACT (ACT NO. 36 OF 1998) a project can be excluded from a General Authorisation according to Section 3 – unless it triggers any of the activities from (a) to (e) of Section 3, and Section 3 states –

A General Authorisation does not apply -

(a) to the use of water in terms of section 21(c) or (i) of the Act for the rehabilitation of a wetland as contemplated in General Authorisation 1198 published in Government Gazette 32805 dated 18 December 2009,
(b) to the use of water in terms of section 21(c) or (i) of the Act within the regulated area of a watercourse where the Risk Class is Medium or High as determined by the Risk Matrix, (Appendix A of the GA Regulations) completed by a suitably qualified SACNASP professional member;

(c) in instances where an application must be made for a water use license for the authorisation of any other water use as defined in section 21 of the Act that may be associated with a new activity;

(d) where storage of water results from the impeding or diverting of flow or altering the bed, banks, course or characteristics of a watercourse; and

(e) to any water use in terms of section 21(c) or (i) of the Act associated with construction, installation or maintenance of any sewerage pipelines, pipelines carrying hazardous materials and to raw water and wastewater treatment works.

2.3 Aquatic Biodiversity Compliance Statement

- To confirm or dispute the environmental sensitivity as identified by the Screening Tool, such as new developments or infrastructure or the change in vegetation cover.
- Motivate with evidence (e.g., photographs) the verification of the environmental sensitivity.
- Indicate whether or not the proposed development will have an impact on the aquatic features.

3. MINIMUM REQUIREMENTS IN TERMS OF PROTOCOLS

This Compliance Statement is compiled to follow the protocol for specialist assessment and minimum report content requirements for environmental impacts on plant species, animal species, and terrestrial biodiversity as specified in Procedures for the Assessment And Minimum Criteria For Reporting On Identified Environmental

Themes In Terms Of Sections 24(5)(A) And (H) And 44 Of The National Environmental Management Act, 1998, When Applying For Environmental Authorisation (GN. No. 1150 of 30 October 2020 and GN No. 43110 of 20 March 2020). Please see Table 1 and 2 for a content cross reference checklist.

Table 1: Content cross-reference checklist for the protocol for the specialist assessment and minimum report content requirements for environmental impacts on Aquatic biodiversity as per GN R 43110, with corresponding section names in the report.

Requirement	Section of this report
Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Section 10 and 11
A signed statement of independence by the specialist;	Section 10 and 11
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 3
A baseline profile description of biodiversity and ecosystems of the site	Section 5
A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Section 3
In the case of a linear activity, confirmation from the terrestrial biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;	N/A
Where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMPr;	Section 6
A description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 9
Any conditions to which the compliance statement is subjected.	Section 8

4. BACKGROUND

4.1 Receiving Environment

4.1.1. Climate

The climate of the proposed site is classified as Mediterranean, often experiencing hot summers that can reach up to 18.9˚C in February and cold winters with minimum temperatures of 13.7˚C in July. Mean annual rainfall in the area is approximately 304 mm. In terms of the dune environment, the system is driven by the predominant wind system which is a stable dominant wind from the South – South Southeast. There is very little variation in the wind pattern and the dunes show a typical dominant wind direction. The major dune sand movement will be from the S- SSE.

4.1.3 General Vegetation description

The proposed prospecting site (demarcated in blue) consists of Namaqualand Heuweltjie Strandveld and Namaqualand Inland Duneveld (Figure 2).

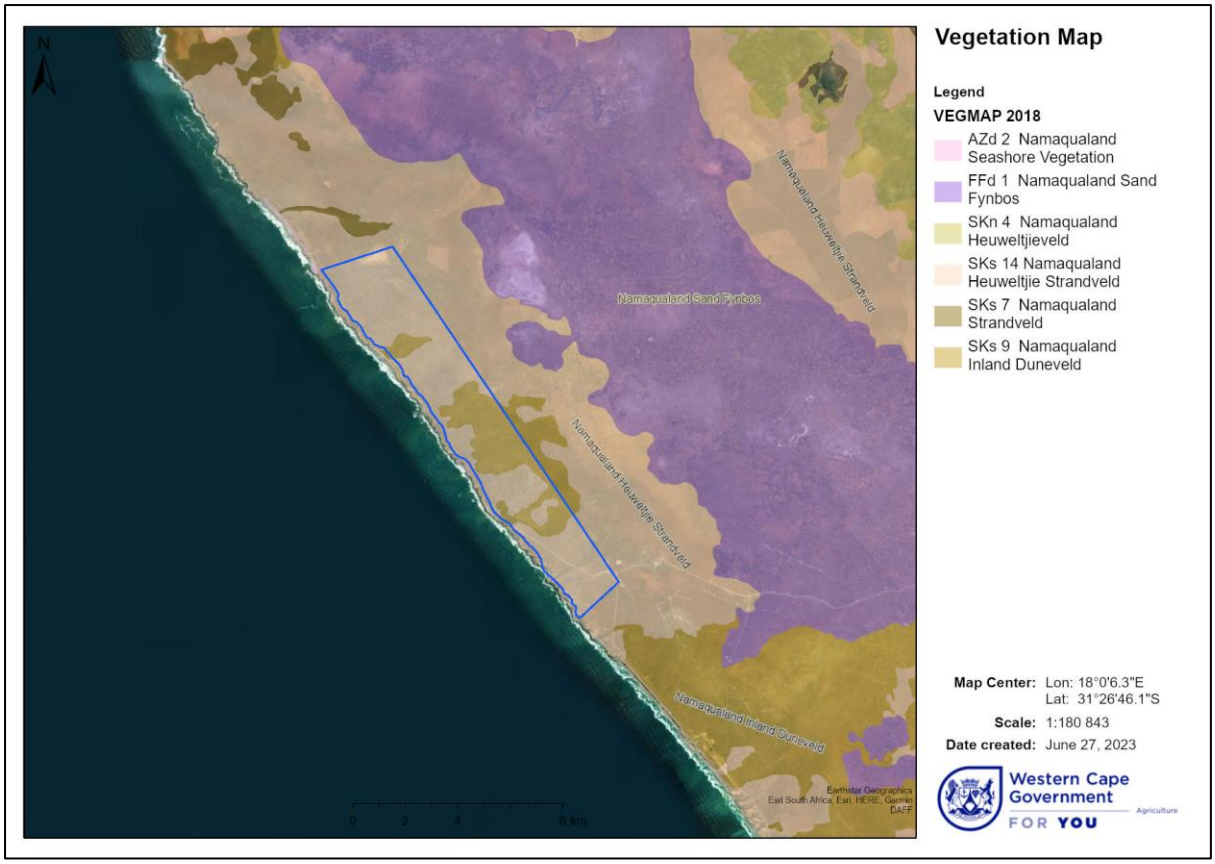

Figure 1 Vegetation types within the kaalfontein farm (demarcated in blue)

4.2 Study Area

4.2.1 Olifants/Doorn Management Area

The study area is situated within the Olifants/Doorn Water Management Area (WMA) and Quaternary Catchment F60E.

The major river in the WMA is the Olifants River, of which the Doring River (draining the Koue Bokkeveld and Doring areas) and the Sout River (draining the Knersvlakte) are the main tributaries. The Olifants River rises in the mountains in the south-east of the WMA and flows in a north-westerly direction. Its deep narrow valley widens and flattens downstream of Clanwilliam until the river flows through a wide floodplain downstream of Klawer. The Doring River is a fan shaped catchment and rises in the south, flowing in a northerly direction. It is first joined by the Groot River and then by the Tra-Tra River flowing from the west and the Tankwa River from the east, before flowing in a westerly direction to its confluence with the Olifants River just upstream of Klawer.

The surface water quality of the Olifants-Doorn WMA is quite variable. Water quality in the upper Olifants River, upstream of Clanwilliam Dam, is “ideal” and is suitable for all uses. There is evidence of elevated phosphate concentrations which may be the result of agricultural activities and wastewater return flows in the Citrusdal area. Physical and chemical characteristics of the WMA geology have a strong influence on the water quality. Water quality in the Upper Olifants and Koue Bokkeveld is good and suitable for all uses. The quality of water in the upper Doring River (E22), when flowing, is suitable for agriculture and domestic water supplies, however, at

the end of summer the quality deteriorates. Highly saline flows from the Tankwa Karoo tributaries have a sporadic influence. In the upper portions of the Sandveld sub-area water quality is poor, resulting from agricultural activities on the Malmesbury shales which are high in salts. Agricultural activities influence the water quality significantly throughout the WMA, especially during the summer months

The Olifants River and its tributary, the Doring River, are important from a conservation perspective because they contain a number of species of indigenous and endemic fish that occur in no other river systems, and that are endangered. Some of the tributaries are virtually unspoiled and are of high to very high ecological importance. The Olifants estuary is one of only three permanently open estuaries on the west coast of South Africa and represents a critical habitat to many estuarine associated fish and bird species.

Based on previous studies and on availability of monitoring information, the following water quality issues and landuse concerns are summarised for this WMA:

Microbial water quality in the Upper Olifants River

There is evidence of elevated phosphate concentrations which may be the result of agricultural activities and wastewater return flows in the Citrusdal area. Agricultural activities in this WMA include a wide variety of crops including: wine and table grapes, rooibos tea, citrus and deciduous fruit, wheat, potatoes, flower and wild flower cultivation, livestock, and fisheries. Irrigation water use is thus the largest water user. Irrigation is with good quality water from irrigation canals, but farmers need to overirrigate in order to leach out salts that accumulate in the irrigated soils. The leached water runoff is returned to the middle and lower Olifants River resulting in a progressive deteriorating of water quality.

The good quality water is stored in Clanwilliam Dam and Bulshoek Dam from where it is distributed via a system of canals to irrigation farmers in the middle and lower Olifants River valley. In the Olifants River downstream of Clanwilliam Dam and upstream of the Doring River confluence, the water quality is progressively impacted by irrigation return flows from the highly cultivated Lower Olifants River irrigation scheme. The result is that water in the lower Olifants River just before the estuary is “unacceptable” and salinity exceeds the requirement for irrigation use.

Nutrient enrichment in the Upper Olifants River

The Citrusdal valley experiences nutrient enrichment which is largely attributed to agricultural returnflows, especially in the summer months when the flow is relatively low in the river. Treated domestic wastewater, municipal solid waste management and informal settlements contribute towards this problem. Effluent from fruit and wine industries also needs to be monitored in Citrusdal.

Impacts of agro-chemicals

Concerns have been raised about the impacts of residues from agricultural chemicals such as pesticides and herbicides on surface and sub-surface waters in intensive irrigation areas. Such impacts have not been studied

in the middle and lower Olifants River but research in similar irrigation developments have shown that residues should at least be monitored.

Sand mining

Concerns have been expressed about sand mining activities in the WMA (eg in non-perenial rivers in the Vanryhnsdorp area). It is poorly controlled and results in an increase in turbidity and suspended sediment concentrations, increased salinity, which causes silting of rivers and streams and smothering of habitat of aquatic organisms.

Proposed mining and associated impacts on Verlorenvlei

Concerns have been expressed about the proposed development of a tungsten mine in the catchment of the Verlorenvlei wetland and the impacts this may have on salinity and ecosystem health in this ecologically sensitive wetland.

5. SITE SENSITIVITY VERIFICATION AND METHODOLOGY

5.1 Desktop study

Watercourses were firstly identified from a desktop study and use was made of topographic maps, geo-referenced Google Earth images, local and national data sets of watercourses[1] . A desktop delineation of suspected wetland areas and watercourses was undertaken by identifying rivers and wetness signatures from the digital base maps. Areas suspected to be wetlands and watercourses were then further investigated in the field.

Sensitivity of the area was also further determined via desktop analysis using:

- The Department of Forestry, Fisheries, and Environment (DFFE) screening tool report for the development footprint
- Satellite imagery (Google Earth, 2021)
- Global Biodiversity Information Facility (GBIF)[2]
- Critical Biodiversity Areas of the Northern Cape
- National Wetland Map 5[3]
- National Freshwater Ecosystem Priority Areas[4]
- Western Cape Biodiversity Sector Plan
- International Union for Conservation of Nature (IUCN)[5]
- iNaturalist[6]
- Plants of Southern Africa [7]

5.2 Date and season of site visit

A site visit took place on 19 May 2023 to verify the desktop study's results of watercourses within 500m of the expansion works. A walkthrough was done, assessing environmental conditions and pictures were taken of the environment.

[1] H Van Deventer et al., "South African National Biodiversity Assessment 2018: Technical Report. Volume 2a: South African Inventory of Inland Aquatic Ecosystems (SAIIAE)" (Council for Scientific and Industrial Research (CSIR) and South African National Biodiversity Institute (SANBI): Pretoria, South Africa, 2018).
[2] "Global Biodiversity Information Facility," n.d., https://www.gbif.org/.
[3] Heidi van Deventer et al., "National Wetland Map 5 – An Improved Spatial Extent and Representation of Inland Aquatic and Estuarine Ecosystems in South Africa," *BioRxiv*, May 17, 2019, 640441, https://doi.org/10.1101/640441.
[4] "Council for Scientific and Industrial Research. NFEPA River FEPAs 2011 [Vector Geospatial Dataset]."
[5] "IUCN 2020," The IUCN Red List of Threatened Species. Version 2019-3., accessed July 29, 2020, https://www.iucnredlist.org.
[6] "INaturalist," n.d., https://www.inaturalist.org.
[7] SANBI, "Plants of Southern Africa," n.d., http://posa.sanbi.org/.

5.3 Wetland Classification

Hydro-geomorphic form: The hydro-geomorphic types of wetlands represented in Table 1 are based on the landscape and landforms that wetland occur in. The wetlands in this study were subsequently classified according to their hydro-geomorphic determinants to Level 4 [8].

[8] D Ollis et al., "CLASSIFICATION SYSTEM FOR WETLANDS AND OTHER AQUATIC ECOSYSTEMS IN SOUTH AFRICA." (SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE, 2013).

Table 2 Hydrogeomorphic forms of wetland habitat units[9]

LEVEL 4: HYDROGEOMORPHIC (HGM) UNIT		
HGM type	*Longitudinal zonation/Landform/ Outflow drainage*	*Landform/Inflow drainage*
A	**B**	**C**
River	Mountain headwater stream	Active channel
		Riparian zone
	Mountain stream	Active channel
		Riparian zone
	Transitional	Active channel
		Riparian zone
	Upper foothills	Active channel
		Riparian zone
	Lower foothills	Active channel
		Riparian zone
	Lowland river	Active channel
		Riparian zone
	Rejuvenated bedrock fall	Active channel
		Riparian zone
	Rejuvenated foothills	Active channel
		Riparian zone
	Upland floodplain	Active channel
		Riparian zone
Channelled valley-bottom wetland	[not applicable]	[not applicable]
	[not applicable]	[not applicable]
Unchannelled valley-bottom wetland	[not applicable]	[not applicable]
	[not applicable]	[not applicable]
Floodplain wetland	Floodplain depression	[not applicable]
	Floodplain flat	[not applicable]
Depression	Exorheic	With channelled inflow
		Without channelled inflow
	Endorheic	With channelled inflow
		Without channelled inflow
	Dammed	With channelled inflow
		Without channelled inflow
Seep	With channelled outflow	[not applicable]
	Without channelled outflow	[not applicable]
Wetland flat	[not applicable]	[not applicable]

5.4 Determining the State of a Watercourse

The state of a watercourse is expressed in terms of its bio-physical components (characteristics):

- Drivers (physico-chemical, geomorphology, hydrology) which provide a particular habitat template; and,
- Biological responses (fish, riparian vegetation and aquatic invertebrates).

The **Present Ecological State** (PES) refers to the current state or condition of a watercourse in terms of all its characteristics and reflects the change to the watercourse from its reference condition.

The method used to determine the PES for watercourses was the Index of Habitat Integrity (IHI) which measures the impact of human disturbance on riparian and instream habitats (Kleynhans, 1996). The IHI is a rapid assessment of the severity of impacts affecting habitat integrity within a river reach. It can be applied to both perennial and non-perennial watercourses (Dabrowski, 2019; Kleynhans, 1996). Each impact on the riparian and

[9] Ollis et al.

instream habitat is given a score between 0 – 20 based on the degree of modification (Table 3). An IHI class (i.e. ecological category) is then determined based on the resulting score (Table 3).

Table 3 Scoring of criteria to determine the PES of rivers and drainage lines according to Kleynhans (1996).

Criteria	Score	Comments
Instream Habitat		
Water abstraction		
Flow modification		
Bed modification		
Channel modification		
Physico-chemistry		
Inundation		
Alien macrophages		
Introduced aquatic fauna		
Rubbish dumping		
Riparian habitat		
Vegetation removal		
Exotic vegetation		
Bank erosion		
Channel modification		
Water abstraction		
Inundation		
Flow modification		
Physico-chemistry		

Table 4 Criteria for PES calculations for watercourses.

Ecological Category	Score	Description
A	> 90-100%	**Unmodified**, natural.
B	80-90%	**Largely natural** with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged.
C	60-79%	**Moderately modified**. Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.
D	40-59%	**Largely modified**. A large loss of natural habitat, biota and basic ecosystem functions has occurred.
E	20-39%	**Seriously modified**. The loss of natural habitat, biota and basic ecosystem functions is extensive.
F	0-19%	**Critically/Extremely modified**. Modifications have reached a critical level and the system has been modified completely with an almost complete loss of natural habitat and biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible.

The method used to determine the PES of wetlands is based on a Rapid Assessment version of WET-Health by Kotze *et al.*, (2009). This method is based on assigning a score between 0-10 to simple criteria (Table 4). A PES class is then determined based on the resulting score (Table 5).

Table 5 Criteria used to determine the PES of a wetland.

PES assessment per driver		
Hydrology	**Description**	**Impact score rating (0-10)**
None	No discernible modifications, or the modifications are of such a nature that they have no impact on the hydrological integrity	0-0.9
Small	Although identifiable, the impact of the modifications on the hydrological integrity is small	1-1.9
Moderate	The impact of the modifications on the hydrological integrity is clearly identifiable, but limited	2-3.9

PES assessment per driver		
Large	The impact of the modifications is clearly detrimental to the hydrological integrity. Approximately 50% of the hydrological integrity has been lost	4-5.9
Serious	Modifications clearly have an adverse effect on the hydrological integrity. 51% to 79% of the hydrological integrity has been lost.	6-7.9
Critical	Modifications are so great that the hydrological functioning has been drastically altered. 80% or more of the hydrological integrity has been lost	8-10
	Impact score rating (0-10)	
Geomorphology	**Description**	**Impact score rating (0-10)**
None	Unmodified, natural.	0-0.9
Small	Largely natural. A slight change in geomorphic processes is discernable but the system remains largely intact	1-1.9
Moderate	Moderately modified. A moderate change in geomorphic processes has taken place but the system remains predominantly intact	2-3.9
Large	Largely modified. A large change in geomorphic processes has occurred and the system is appreciably altered	4-5.9
Serious	Greatly modified. The change in geomorphic processes is great but some features are still recognizable	6-7.9
Critical	Modifications have reached a critical level as geomorphic processes have been modified completely	8-10
	Impact score rating (0-10)	
Vegetation	**Description**	**Impact score rating (0-10)**
None	Vegetation composition appears entirely natural.	0-0.9
Small	A very minor change to vegetation composition is evident at the site (e.g. abundance of ruderal, indigenous invasive slightly higher than would be the case naturally).	1-1.9
Moderate	Vegetation composition has been moderately altered but introduced, alien and/ or increased ruderal species are still clearly less abundant than characteristic indigenous wetland species	2-3.9
Large	Vegetation composition has been largely altered and introduced, alien and/ or increased ruderal species occur in approximately equal abundance to the characteristic indigenous wetland species	4-5.9
Serious	Vegetation composition has been substantially altered but some characteristic species remain, although the vegetation consists mainly of introduced, alien and/or ruderal species	6-7.9
Critical	Vegetation composition has been almost totally altered, and in the worst case all indigenous vegetation has been lost (e.g. as a result of a parking lot).	8-10
	Impact score rating (0-10)	
	AVERAGE	
Generalized PES assessment		
PES	**Description**	**Impact score rating (0-10)**
None	Unmodified, natural	0-0.9
Small	Largely natural with few modifications. A slight change in ecosystem processes is discernable and a small loss of natural habitats and biota may have taken place.	1-1.9
Moderate	Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact.	2-3.9
Large	Largely modified. A large change in ecosystem processes and loss of natural habitat and biota and has occurred	4-5.9
Serious	The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable	6-7.9
Critical	Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.	8-10
	Impact score rating (0-10)	

The **Ecological Importance and Sensitivity (EIS)** of a watercourse is an expression of its importance to the maintenance of ecological diversity and functioning on local and wider scales, and both abiotic and biotic components of the system are taken into consideration. Sensitivity refers to the system's ability to resist disturbance and its capability to recover from disturbance once it has occurred.

For watercourses, the EIS is based on a rapid instream and riparian habitat ecological importance and sensitivity assessment, using a modified version of DWAF EIS tool for rivers, from Nkurenkuru Ecology and Biodiversity (2020). This method is based on assigning a score between 0-4 to simple criteria (Table 6). The level of confidence in the score is given. The average scoring of these criteria places the watercourse in an EIS Category according to Table 7.

Table 6 Outcome of a rapid instream and riparian habitat ecological importance and sensitivity assessment, using a modified version of DWAF EIS tool for rivers, from Nkurenkuru Ecology and Biodiversity (2020).

Determinant	Score	Confidence	Comments
1. Rare & Endangered Species			
2. Populations of Unique Species			
3. Species/taxon Richness			
4. Diversity of Habitat Types or Features			
5 Migration route/breeding and feeding site for wetland species			
6. Sensitivity to Changes in the Natural Hydrological Regime			
7. Sensitivity to Water Quality Changes			
8. Flood Storage, Energy Dissipation & Particulate/Element Removal			
9. Protected Status			
10. Ecological Integrity			
Total			
Median			
Overall ecological sensitivity & importance			

Table 7 Criteria for EIS calculations for watercourses.

EIS Categories	Score	Description
Low/Marginal	**D**	Not ecologically important and sensitive at any scale. Biodiversity ubiquitous and not sensitive to flow and habitat modifications.
Moderate	**C**	Ecologically important and sensitive on provincial/local scale. Biodiversity not usually sensitive to flow and habitat modifications.
High	**B**	Ecologically important and sensitive. Biodiversity may be sensitive to flow and habitat modifications.
Very High	**A**	Ecologically important and sensitive. On national even international level. Biodiversity usually very sensitive to flow and habitat modifications.

The method used to assess the EIS of wetlands is a refinement of the DWA Resource Directed Measures for Water Resources: Wetland Ecosystems method (Department of Water Affairs and Forestry, 1999) as used by Day (2020). It includes an assessment of ecological (e.g. presence of rare and endangered fauna/flora), functional (e.g. groundwater storage/recharge) and socio-economic criteria (e.g. human use of the wetland). Scoring of these criteria places the wetland in a Wetland Importance Class (A-D) according to Table 8.

Table 8 Wetland Importance Class integrating Ecological Importance and Sensitivity (EIS), and functional and socio-cultural importance modifiers (from Day, 2020).

Importance class (one or more attributes may apply)	Range of Median	Wetland Importance Class
Very high Representative of wetlands that: •support key populations of rare or endangered species; • have a high level of habitat and species richness; • have a high degree of taxonomic uniqueness and/or intolerant taxa; • provide unique habitat (e.g. salt marsh or ephemeral pan; physiognomic features, spawning or nursery environments); • is a crucial avifaunal migratory node (e.g. RAMSAR wetlands); • may provide hydraulic buffering and sediment retention for large to major rivers that originate largely outside of urban conurbations; • have groundwater recharge/discharge comprising a major component of the hydrological regime of the wetland; • are highly sensitive to changes in hydrology, patterns of inundation, discharge rates, water quality and/or disturbance; and • are of extreme importance for conservation, research or education.	>3 <=4	A
High Representative of wetlands that: • support populations of rare or endangered species, or fragments of such populations that are present in other similar and geographically-adjacent wetlands; • contain areas of habitat and species richness; • contain elements of taxonomic uniqueness and/or intolerant taxa; • contain habitat suitable for specific species (e.g. physiognomic features); • provide unique habitat (e.g. salt marsh or ephemeral pan; spawning or nursery environments, heronries); • may provide hydraulic buffering and sediment retention for rivers that originate largely outside of urban conurbations, or within residential fringes of urban areas; • have groundwater recharge/discharge comprising a component of the hydrological regime of the wetland; • may be sensitive to changes in hydrology, patterns of inundation, discharge rates, water quality and/or human disturbance; and • are important for conservation, research, education or eco-tourism.	> 2 <= 3	B
Moderate Representative of wetlands that: • contain small areas of habitat and species richness; • provide limited elements of habitat that has become fragmented by development (e.g. salt marsh, ephemeral pan; roosting sites and heronries); • provide hydraulic buffering for rivers that originate in urban areas; • are moderately sensitive to changes in hydrology, patterns of inundation, discharge rates and/or human disturbance; • perform a moderate degree of water quality enhancement, but are insensitive to sustained eutrophication and/or pollution; and • are of importance for active and passive recreational activities.	>1 <= 2	C
Low/marginal Representative of wetlands that: • contain large areas of coarse (reeds) wetland vegetation with minimal floral and faunal diversity; • have a high urban watershed: wetland area ratio; • are important for active and passive recreation; • provide moderate to high levels of hydraulic buffering; • may be eutrophic and generally insensitive to further nutrient loading; • are generally insensitive to changes in hydrology, patterns of inundation, discharge rates and/or human disturbance; • have regulated water; and • contain large quantities of accumulated organic and inorganic sediments.	>0 <= 1	D

Rating	Explanation
None, Rating = 0	Rarely sensitive to changes in water quality/hydrological regime
Low, Rating =1	One or a few elements sensitive to changes in water quality/hydrological regime
Moderate, Rating =2	Some elements sensitive to changes in water quality/hydrological regime

Importance class (one or more attributes may apply)		Range of Median	Wetland Importance Class
High, Rating =3	Many elements sensitive to changes in water quality/ hydrological regime		
Very high, Rating =4	Very many elements sensitive to changes in water quality/ hydrological regime		

5.5 Watercourse boundary delineation

A number of indicators or site criteria can be assessed to identify likely wetland areas. This approach allows for the identification of indirect indicators of prolonged saturation by water to be assessed, rather than only being able to assess the presence of a high-water table at a site (which would then limit site assessments to the wet season of normal or wet rainfall years). Four indicators have been developed to assist with the identification of wetlands[10]. These are:

1) The position in the landscape, which will help identify those parts of the landscape where wetlands are more likely to occur;

2) The type of soil form (i.e. the type of soil according to a standard soil classification system), since wetlands are associated with certain soil types;

3) The presence of wetland vegetation species, and

4) The presence of redoxymorphic soil features, which are morphological signatures that appear in soils with prolonged periods of saturation (due to the anaerobic conditions which result in redoximorphic reactions).

The presence of these distinctive indicators in an area would imply that the frequency and duration of saturation is sufficient to classify the area as a wetland, and the advantage of using these indicators over the examination of water table depth or vegetation alone is that these four indicators can be used at any time of the year (i.e., the indicators, with the possible exception of the vegetation species, are present in the dry season and in dry years).

5.6 Impacts and Risk Assessment

Impacts were assessed using a common, defensible method that is based on DWS 2015 publication: Section 21 (c) and (i) Water Use Risk Assessment Protocol, of assessing significance that will enable comparisons to be made between risks of potential impacts and will enable transparency of the process upon which risks of impacts have been assessed. The first part of the assessment is the identification of environmental activities, aspects and impacts. The impacts are rated according to criteria set out in Appendix B. The purpose of the rating is to develop a clear understanding of influences and processes associated with each impact. The severity, spatial scope and duration of the impact together comprise the consequence of the impact and when summed can obtain a maximum value of 15. The frequency of the activity and the frequency of the impact together comprise the

[10] Department of Water Affairs and Forestry, "Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas," 2008.

likelihood of the impact occurring and can obtain a maximum value of 10. The values for likelihood and consequence of the impact are then read off a significance rating matrix and are used to determine whether mitigation is necessary.

6. RESULTS

6.1. Desktop Assessment

6.1.2 Sensitive areas

The proposed development footprint is situated in- and is surrounded by a Critical Biodiversity Area (CBA), Other Natural Areas and Aquatic Ecological Support Areas (Figure 2).

Figure 2 Sensitivity of the proposed prospecting footprint

CBAs are areas of high biodiversity and ecological value. These areas are required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure. CBAs that are likely to be in a natural condition are classified as Category 1 CBAs and those that are potentially degraded or represent secondary vegetation are classified as Category 2 CBAs. Only low-impact, biodiversity-sensitive land uses are considered appropriate within CBAs (Pool-Stanvliet et al., 2017). These areas are also to be managed for biodiversity conservation purposes, restored where required and incorporated into the Protected Area network.

Ecological Support Areas (ESAs) are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds), but which nevertheless play a vital role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs.

Other Natural Areas are areas not currently identified as a priority but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although not prioritised, they are still an important part of the natural ecosystem. The conservation targets for these areas are to minimize habitat and species loss and ensure ecosystem functionality through strategic landscape planning. There is flexibility in permissible land-uses.

Since the proposed development footprint is situated in sensitive areas identified by the Western Cape Biodiversity Spatial Plan, the footprint is considered to hold conservation importance within these sensitive areas. Nevertheless, care should be taken to avoid development in these sensitive areas to conserve their ecological importance. The state of these areas is discussed in Section 6.4.5. Note that the CBAs and Other Natural Areas have been excluded from this assessment as they will be included in the Plant Species, Animal Species and Terrestrial Biodiversity Assessment.

6.1.2 Aquatic features

Two main watercourse types are mapped on the prospecting right application footprint: Depression Wetland and non-perennial rivers (Figure 3).

Depression wetlands occur in topographic depressions (i.e., closed elevation contours) that allow the accumulation of surface water. Depression wetlands may have any combination of inlets and outlets or lack them completely. Potential water sources are precipitation, overland flow, streams, or groundwater/interflow from adjacent uplands. The predominant direction of flow is from the higher elevations toward the centre of the depression. The predominant hydrodynamics are vertical fluctuations that range from diurnal to seasonal. Depression wetlands may lose water through evapotranspiration, intermittent or perennial outlets, or recharge to groundwater.

Figure 3: Watercourses on the property footprint (demarcated in blue).

6.1.3 Results of the Screening Tool Report

The Screening Tool Report identified the project footprint and surrounding area as having a very high sensitivity for the Aquatic Biodiversity Theme (Figure 4) which is likely due to the presence of the Depression Wetland.

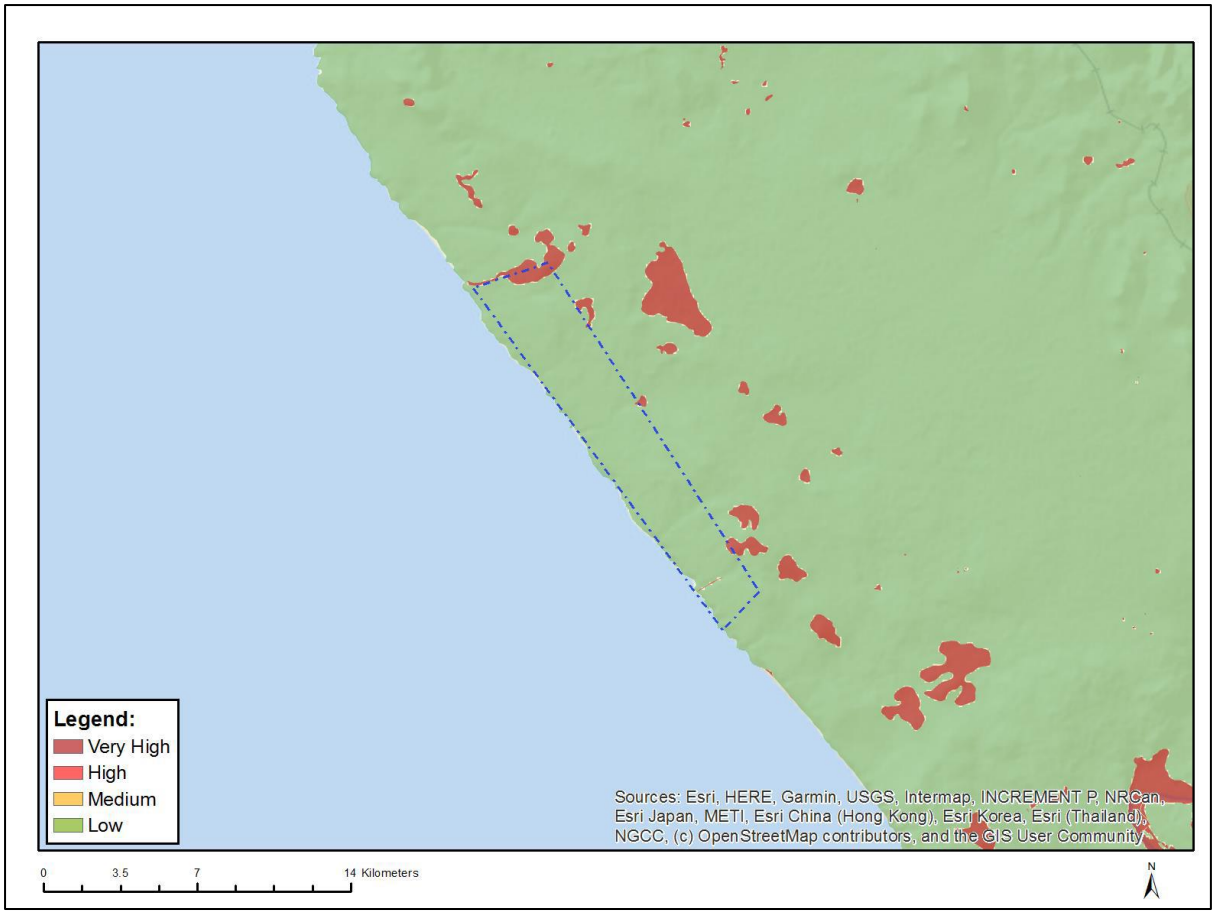

Figure 4: Map of aquatic biodiversity theme sensitivity, as taken from the Screening Tool Report compiled for the project.

6.2 Site Assessment

6.2.1 Aquatic features

Based on the site inspection, a depression wetland and non-perennial rivers were confirmed on the prospecting right application area (Figure 5).

The depression wetland is considered natural with limited disturbance impacts. The wetland has a high clay content and due to heavy rainfall, little to no plants are found within the depression (Figure 6). With heavy rainfall, the depression will be saturated and is highly likely to function as a foraging ground and habitat for various fauna. This is also given the large natural and intact area around the depression which supports a high diversity plant species

The non-perennial river supports a high abundance and diversity of large shrubs such as *Roepera morgsana , Caroxylon aphyllum, Osteospermum monstrosum*, and *Lycium cinereum* (Figure 7). These rivers are in good ecological condition and are likely to support a variety of ecosystem services such as foraging ground for fauna. As per Section 6.1.2, some of the identified non-perennial rivers are included in Ecological Support Areas (ESA). Given that the rivers are in good condition, these specific rivers are expected to contribute significantly to

functioning of the ESA. The rivers have been subject to some disturbance, including the development of roads and downstream mining activities which is expected to affect the functioning of these rivers.

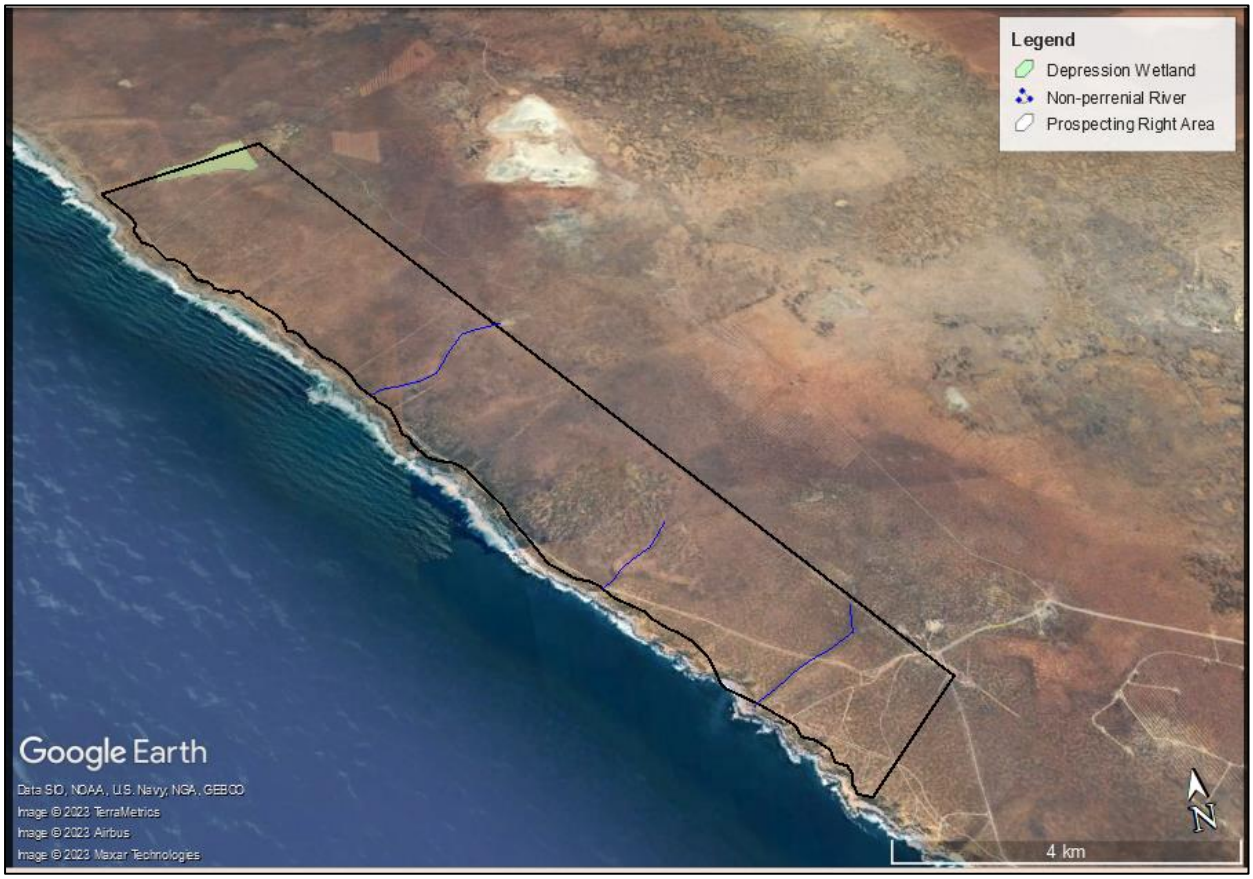

Figure 5: Watercourses on the prospecting right area footprint (demarcated in black)

Figure 6 Ecological condition of the depression wetland

Figure 7 General ecological condition of one of the non-perennial rivers

6.2.2 PES and EIS of watercourses

Present Ecological State (PES) is a measure of aquatic ecosystem condition, compared to that of the system in its natural or "reference" condition. The depression wetland and the perennial rivers have PES scores of B. The watercourses are largely natural with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged. Factors that have contributed are changes in the catchment hydrology and land use that contributes the small changes in flow, and changes to the channel characteristics by the development of a roads.

The wetland and the rivers can be classified as have an EIS category of B, thus being classified as ecologically important and sensitive. Biodiversity may be sensitive to flow and habitat modifications. These watercourses have been impacted by current and past agriculture, and road infrastructure. The habitat and species richness are ecologically significant. During high rainfall events, the river can provide some stormwater management, erosion control, flood attenuation and does provide a breeding and feeding ground to various faunal species.

6.2.3 Buffer delineation

The proposed prospecting works are planned within delineated rivers and a wetland. Buffer/regulated areas around the watercourses have been recommended based on Buffer Zone Guidelines for Wetlands, Rivers, and

Estuaries. A general 17 m buffer around the rivers and 15 m around depression wetland has been recommended to mostly reduce the risk of sediment loading and erosion.

6.2.4 Site verification

The specific drilling sites are expected to be within 500m and 100m of the rivers and a wetland. However, the rivers area expected to be overall impacted by grazing, downstream mining activities and the development of a road . The PES and EIS of the rivers and wetland is concluded to be B.

In terms of conservation significance, the rivers included in the Ecological Support Areas as a whole are expected to contribute to the Ecological Support area functioning and objectives. The wetland and rivers are likely to inhabit various aquatic fauna and flora, provide ecosystem services and has good levels of ecosystem functioning. Therefore, the rivers and wetland are still necessary for some species to be maintained and efforts to improve the condition of the rivers should be invested in.

Taking into consideration the expected sensitivity of the footprint, sensitive features identified by the Screening Tool, the results from the expected baseline biodiversity and ecosystem of the site, it can be concluded that the **development footprint is of low sensitivity for the Aquatic Biodiversity Theme, given that the drilling sites will avoid the watercourses and their respective buffers. Should the drilling sites be developed in the watercourses or within the buffers, the sensitivity rating will be increased to medium-high.**

7. IMPACT MANAGEMENT OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR

7.1 Construction/Site Establishment/Operations Impacts

Activity: Handling waste, general- and hazardous material on the site during site establishment and operational activities

Aspects: Spillage from construction vehicles and waste dumping does not lead to contamination of watercourses and soils of the surrounding environment as wind and surface runoff can carry contaminated/polluted water downstream.

Mitigation:

- All rubble and litter should be cleared from the site and stored in designated waste bins and/or stockpile areas respectively.
- Strict waste management should be implemented during activities.
- Sufficient waste receptacles should be placed around the facility to encourage people to use them.
- The principle of reduce, re-use and recycle should be followed.
- Construction site should be kept clean and tidy.
- Any waste should be disposed in a registered landfill and not be allowed to be dumped in the surrounding landscape.
- No dumping of waste or any other materials is allowed within any stormwater channels, drainage lines or the watercourses.
- Storage of material, waste, spoil and construction equipment on or in stormwater drainage or inside of demarcated protected areas – is strictly prohibited.
- All surfaces used for waste storage should have an impermeable surface.
- Drip trays to be placed beneath stationary vehicles and generators.
- Machinery should be maintained and inspected for leaks. All hazardous chemicals should be handled and stored on impermeable surfaces.
- Hazardous chemicals should be kept on an impermeable bund area.
- Stormwater and run-off should be managed and diverted to not be in contact with waste.
- Regularly inspect all construction vehicles for leaks. Re-fuelling of vehicles must take place on a sealed surface area surrounded by berms to prevent ingress of hydrocarbons into topsoil.
- If any spills occur, they should be immediately cleaned up.
- An emergency response plan should be available for any chemical spill or ecological damage.
- Spill kits and material safety data sheets must be stored on site: In case of accidental spills of oil, petroleum products etc., good oil absorbent materials must be on hand to allow for the quick remediation of the spill. The kits should also be well marked and all personnel should be educated to

deal with the spill. Vehicles must be kept in good working order and leaks must be fixed immediately on an oil absorbent mat. The use of a product such as Sunsorb is advised.

- Proper toilet facilities must be available during constructional. Chemical toilets must be provided which should always be well serviced and spaced as per occupational health and safety laws and placed outside the 1:100 year flood lines.
- No dirty water runoff from the construction and decommissioning site must be permitted to reach the watercourses around the proposed site.

Activity: Site establishment and operational activities and the spread of Alien Invasive Species.

Aspect: Disturbance of soil that creates opportunity for invasion which may lead to significant alien invasive species establishment and spread.

Mitigation:

- Establishment/operations activities should be limited to the smallest possible area.
- Construction vehicles should use existing authorised service roads.
- Implement suitable alien invasive species establishment prevention measures during the construction phase such as proper storage, transport and disposal of plant material and minimising disturbance to the areas surrounding the development footprint.
- Alien invasive vegetation material cleared during construction activities must be adequately contained and disposed of at a suitable, certified 'green waste' disposal site to prevent further spreading.
- Areas around the proposed project footprint must be adequately rehabilitated to prevent significant alien invasive species establishment.
- No herbicides may be used.

Activity: Site establishment and operational, erosion control & storm water management

Aspects: Establishment and operations of the drilling may result in erosion on site and within 500m of wetlands and 100m of a river.

Mitigation:

- Implement suitable erosion prevention measures during all phases.
- Soil erosion must be controlled as an ongoing management strategy throughout the various phases of the proposed development activities.
- Make use of surface erosion control measures within disturbed areas to avoid erosion in times of high risk (e.g. rain season and time of high wind speeds).
- Stormwater management should prevent excessive sediment to be carried into drainage channels and the natural environment.

- Removal of debris and other obstructing materials from the site must take place and erosion preventing structures must be constructed. This is done to prevent damming of water and increasing flooding danger.
- Disturbed areas, that will not form part of the footprint but which were disturbed as part of the construction activities, should be rehabilitated and re-vegetated using site-appropriate vegetation and/or seed mixes, to prevent gulley erosion.
- Sheet runoff from cleared areas needs to be curtailed.
- No materials of any kind are allowed to be stored in the stormwater channels.
- Areas around the proposed project footprint, must be adequately rehabilitated to prevent significant erosion.
- Avoid the use of concrete lined channels for storm water management as this can increase the speed of water. This in turn increases erosion potential that can cause erosion on site and in watercourse banks and increase siltation downstream. If concrete-lined channels are used; they should end in silt traps.
- Soil disturbance must be kept to a minimum within and around the footprints.

Activity: Site establishment and operational activities including clearance of vegetation and changes to hydrology due to development within the regulated area of a watercourse.

Aspects: Clearance of vegetation and soil, general construction, and development of infrastructure within 500m of a wetland may result in changes to drainage patterns and siltation in downstream wetlands.

- The development footprint must remain as small as practically possible.
- All buffers as stated in Section 6.2.3 must be adhered to.
- All bare areas must be rehabilitated via a Revegetation Method Statement
- Vehicles must use already developed roads as far as possible.
- Dust control mechanisms must be implemented during the construction phase.
- All stockpiles must be stored outside of wetland buffers.
- Stockpiles must be covered in periods high wind and rain.

7.2 Monitoring

- An Environmental Control Officer (ECO) must be appointed to ensure compliance with the requirements during all phases.
- The risk of contamination in the environment of chemical spills and oil leaks should be closely monitored during construction and decommissioning phases.
- Preconstruction measures must be in place to ensure sediments are trapped and erosion controlled.

- Stormwater management should be closely monitored and any water diversions around the construction site and development should be inspected for signs of erosion and sedimentation.
- Regular inspection of the drilling areas and of erosion preventing devices is needed and any new erosion gullies must be remediated immediately.

7.3 Risk Ratings of Potential Impacts

Based on Appendix B, the risk of the proposed development on the wetland and river is Moderate. However, this Risk can be further decreased to a Low level by implementing the proposed mitigation measures in Section 7.1 . Provided that the mitigation measures will be implemented, it is expected that a General Authorisation will suffice for the proposed development.

8. CONCLUSION

It is anticipated that the prospecting activities will impact the Aquatic Biodiversity identified by the Screening Tool because:

- The developments were small and resulted in minimal disturbance and are expected to avoid the watercourses and their buffers

Taking into consideration the expected sensitivity of the footprint, sensitive features identified by the Screening Tool, the results from the expected baseline biodiversity and ecosystem of the site, it can be concluded that the specific drill sites are of **low** sensitivity for the Aquatic Theme, **given that the drilling sites will avoid the watercourses and their respective buffers**. Provided that all the management outcomes are adhered to, this Compliance Statement is considered sufficient to meet the requirements for authorisation under the Aquatic Biodiversity Theme Minimum requirements.

9. CONDITIONS TO WHICH THIS STATEMENT IS SUBJECTED

- This signed copy of the compliance statement must be read as an appendix to the Basic Assessment Report (BAR) for this project.
- This Compliance Statement is subject to the condition that the information supplied to the specialist regarding the project scope, design, layout, location or any other project specifications will not be significantly deviated from.
- All mitigation measures and requirements as specified in this compliance statement, the BAR and EMPr will adhered to during all project phases.

10. ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

- A desktop delineation of the wetland and riparian area was done before the site visit. This is thought to be an acceptable method.

- The watercourse assessment is confined to the proposed project footprint and does not include the neighbouring and adjacent properties, which were only considered as part of the desktop assessment.
- Global Positioning System (GPS) technology is inherently inaccurate and some inaccuracies due to the use of handheld GPS instrumentation may occur. If more accurate assessments are required, the watercourses will need to be surveyed and pegged according to surveying principles.
- The risk assessment was applied on the basis that the stipulated mitigation measures and all specialist recommendations will be implemented, and therefore the results presented demonstrate the impact significance of perceived impacts on the receiving freshwater environment post-mitigation.
- All information provided by the EAP, applicant and engineering design team to the environmental specialist was correct and valid at the time that it was provided.
- The proposed project footprint as provided by the engineering design team is correct and will not be significantly deviated from.
- Significant reliance on visual eco-morphological observations was made to derive an understanding of the state of the habitat within the subject site. This state may change under a different meteorological regime.
- Freshwater resources that fall outside of the affected catchment (but still within the 500 m DWS regulated area) and are not at risk of being impacted (such as upslope water resources) by the specific activity were not delineated nor assessed. Such features were flagged during a baseline desktop assessment prior to the site visit.
- This assessment deals primarily with inland wetlands (i.e. no existing connection to the ocean and these ecosystems are characterised by the complete absence of marine exchange and/or tidal influence) Dean Ollis et al., *Classification System for Wetlands and Other Aquatic Ecosystems in South Africa* (South African National Biodiversity Institute, 2013)..
- Selection of assessment techniques and tools were based on the assessment practitioner's knowledge and experience of these tools and their attributes and shortcomings.
- The assessment techniques and tools are currently the most appropriate available tools and techniques to undertake assessments of freshwater resources; they are rapid assessment tools that rely on qualitative information and expert judgment. While these tools have been subjected to peer review processes, the methodology for these tools are ever evolving and will likely be further refined in the future. For the purposes of this assessment, the assessments were undertaken at rapid levels with somewhat limited field verification: it therefore provides an indication of the PES of the portions of the affected systems rather than providing a definitive measure.
- PES and EIS were only determined for the affected/regulated areas even though upstream and downstream as well as catchment impacts were considered (based on available desktop information).
- The Ecological Sensitivity and Importance of the Harts River and canal was inferred and determined from previous water quality reports.

11 APPENDIX A

11.1 DETAILS OF THE SPECIALIST

Name	Megan Smith
Contact Details	076 965 8002
Qualification	M.Sc (Ecology) – University of Cape Town
EAPASA registration	2020/2855 (Cand. EAP)
Field of expertise	Botany & Ecology

11.1.1. Signed declaration of interest of the specialist

I Megan Smith, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
  - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.

Signature of the Specialist: Date: 26/06/2023

11.1.2. Curriculum vitae of specialist: Megan Smith

Name:	Megan
Surname:	Smith
Highest qualification:	MSc Biological Sciences (UCT)
South African Association of Botanists	Ordinary member since 2020
Botanical Society of southern Africa	No. 80495
IAIAsa membership	No. 6459
EAPASA Registration	2020/2855 (Candidate EAP)
SACNASP Registration	130295 (Pr.Nat.Sci) – Ecological Science
Years' experience conducting botanical/ecological related works in the Cape Floristic Region	>6 years

RELEVANT QUALIFICATIONS AND TRAINING

- MSc Biological Sciences (UCT): Specialising in Plant Ecology
- BSc Hons Botany (NMU)
- BSc Environmental Sciences (NMU)
- Scientific writing training led by Dr Pippin Anderson (August 2019)
- Fynbos plant identification training (July 2019)
- CDM calibration training by Renew Technologies (August 2020)
- ISO 14001:2015 Lead auditor training by SACAS (March 2021)
- Hydropedology and wetland delineation course led by WETrust and digital Soils Africa (September 2021)

WORK EXPERIENCE

- March 2015 – September 2016: Research assistant determining sustainable cultivation practices of Honeybush (*Cyclopia* spp.) at NMU
- March 2019 – April 2020: Restoration Ecology and Conservation Planning intern at SANBI
- March 2019- December 2021: Lead several Fynbos Identification courses for amateur botanists
- April 2020 – current: Ecological specialist and legal assistant at Enviroworks
- November 2022 – Current: Lead of Ecological Specialist Services at Enviroworks

PUBLISHED ARTICLES:

- Smith, M., Rebelo, A.G. 2020. The Amazing Nature Race. Veld and Flora 106: 16-21.
- Smith, M., Rebelo, A., Rebelo, A.G. 2020. Passive restoration of Critically Endangered Cape Flats Sand Fynbos at lower Tokai Park section of Table Mountain National Park, Cape Town. ReStory
- Smith, M., Rebelo, A., Rebelo, A.G. 2020. Saving Critically Endangered Peninsula Granite Fynbos from extinction at Tokai Park, Cape Town. ReStory.
- Smith, M., Rebelo, A.G. 2020. iNaturalist: your portal into nature and becoming a citizen scientist. African Wildlife and Environment 75.

BASIC ASSESSMENT/ FULL SCOPING AND EIA PROCESS

- The proposed development of a thirty-five metre (35m) telecommunication base station and associated infrastructure on Portion 42 of Farm 428, Plettenberg Bay, Western Cape Province, SBA Towers South Africa.
- The proposed development of a twenty-five metre (25m) telecommunication base station and associated infrastructure on Lorraine Farm, the Remainder of Farm 790, Phillipi Western Cape Province, SBA Towers South Africa.
- The proposed development of a desalination or reverse osmosis plant, Tormin Mine, Western Cape Province, Mineral Sands Resources
- Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods.
- Proposed expansion of the Samrand Data Centre, African Data Centres.
- Proposed development of the Lendlovu Lodge, Addo Elephant Park, Eastern Cape Province, SANParks (in progress).
- Proposed Development of One Hundred and Fifty Metres (150m) Fence And Associated Four Hundred Metres (400m) Access Road, Saldanha Port, Western Cape Province, Transnet Ports Authority.

WATER USE LICENSE APPLICATION

- Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods (in progress).
- Proposed development of a community hall and associated parking lot on erven 4978 & erven 4979 on a portion of Portion 6 of the Remaining Extent (Re) of the Farm Selosesha Townlands No. 900, Thaba 'Nchu, Free State Province, Mission Point (in progress).

ENVIRONMENTAL MANAGEMENT PLANS

- The proposed development of a thirty-five metre (35m) telecommunication base station and associated infrastructure on Portion 42 of Farm 428, Plettenberg Bay, Western Cape Province, SBA Towers South Africa.
- The proposed development of a twenty-five metre (25m) telecommunication base station and associated infrastructure on Lorraine Farm, the Remainder of Farm 790, Phillipi Western Cape Province, SBA Towers South Africa.
- The proposed development of a desalination or reverse osmosis plant, Tormin Mine, Western Cape Province, Mineral Sands Resources
- Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods.
- Proposed development of the Lendlovu Lodge, Addo Elephant Park, Eastern Cape Province, SANParks (in progress).
- Proposed Development of One Hundred and Fifty Metres (150m) Fence and Associated Four Hundred Metres (400m) Access Road, Saldanha Port, Western Cape Province, Transnet Ports Authority
- Proposed expansion of the Samrand Data Centre, African Data Centres.

BOTANICAL, FAUNAL, AND TERRESTRIAL IMPACT STUDIES

- Botanical Impact Assessment: Rezoning and the development of fifteen (15) resort units on Portion 12 of the Farm Riet Valley no. 452, Hessequa Local Municipality, Western Cape Province (Faunal Compliance Statement and Botanical Impact Assessment), Hessequa Municipality.

- Botanical survey and delineation of sensitive areas for the proposed development of a six-point three kilometre (6.3km) long pipeline along Macassar Road, Macassar, Cape Town, Western Cape Province, BVi Consulting Engineers Western Cape.
- Botanical, Faunal and Terrestrial Biodiversity Compliance Statement; Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods.
- Protected Tree and Animal Species Survey: Ramatlabama Poultry Farm, Mahikeng, Northwest Province, Supreme Poultry (in progress).
- Botanical, Terrestrial and Faunal Compliance Statement: Proposed development of a Battery Energy Storage Facility, Ashton, Western Cape Province.
- Botanical and Faunal Site Sensitivity: Proposed housing development on Erven 2244 & 2245; Private Landowner.
- Botanical, Faunal, and Terrestrial Impact Assessment: Proposed sand mining permit on Erf 656, Schaap Kraal, located in the Wynberg Magisterial District, Atlantic Sands.
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Site Verification: Proposed Photovoltaic Solar Energy Facilities (PEFS) And Grid Connections Near Welkom, Free State Province: Khauta Solar PV Cluster, WKN Windcurrent SA
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Impact Assessment (Including a Dune Impact Assessment): Proposed Development of One Hundred and Fifty Metres (150m) Fence and Associated Four Hundred Metres (400m) Access Road, Saldanha Port, Western Cape Province, Transnet Ports Authority.
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Scoping Report, Proposed Mixed-Use Development on Farm 820, Bot River, Western Cape Province, Wildekrans Estate
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Theme Compliance Statement: S24g Environmental Rectification for The Operation of Facilities For The Treatment Of Wastewater With A Daily Throughput Of 4200 Cubic Meters, Moedi Engineers.
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Theme Compliance Statement: Proposed Upgrades To The Geelbek Restaurant, West Coast National Park, Langebaan, SANParks.
- Plant Species, Animal Species and Terrestrial Biodiversity Theme Compliance Statement: Proposed Prospecting Right Application for Four Drill Holes, Vorstershoop, North West.
- Threatened Species Survey and Plant Removal Permit Application: Proposed Development of One Hundred and Fifty Metres (150m) Fence And Associated Four Hundred Metres (400m) Access Road, Saldanha Port, Western Cape Province, Transnet Ports Authority.

REHABILITATION IMPLEMENTATION PLANS

- Protocols for restoring Critically Endangered Cape Flats Sand Fynbos within lower Tokai Park, Cape Town, South African National Biodiversity Institute.
- Proposed development of a six-point three kilometre (6.3km) long pipeline along Macassar Road, Macassar, Cape Town, Western Cape Province, BVi Consulting Engineers Western Cape.
- Rehabilitation implementation plan for Tormin Mine, Western Cape Province, Mineral Sands Resources
- Overseeing rehabilitation works and compilation of quarterly monitoring reports and annual updates of the rehabilitation plan: Tormin Mine, Western Cape Province, Mineral Sands Resources (in progress)
- Rehabilitation Method Statement for 132 kV and 33 kV transmission lines, transmission substation, cabling line trenches, and access roads on Roggeveld Wind Farm, Western Cape, Raubex Infra.
- Reseeding Method Statement: 132 kV and 33 kV tranmission lines, transmission substation, cabling line trenches, and access roads on Roggeveld Wind Farm, Western Cape, Raubex Infra.
- Reseeding training: Roggeveld Wind Farm, Western Cape, Raubex Infra.

- Rehabilitation Method Statement for Areas Disturbed by The Buffer Yard And Lay Down Area on Roggeveld Wind Farm, Raubex Infra.
- Overseeing rehabilitation works and compilation of quarterly monitoring reports: Roggeveld Wind Farm, Western Cape Province, Raubex Infra (in progress).
- Environmental Rehabilitation Plan for All the Areas Affected by The Continuous Spillage of Raw Sewage In and Around Upington, Dawid Kruiper Municipality, Northern Cape Province, Stabilis Environmental On Behalf Of Dawid Kruiper Municipality.
- Rehabilitation Plan Proposed Upgrade of The Bayside Stormwater Canal, Tableview, Cape Town, Western Cape Province, BVi Consulting Engineers
- Rehabilitation Plan and Aquatic Impact Assessment for All the Areas Affected by The Spillage of Raw Sewage, Caledon, Theewaterskloof Municipality (In progress).
- Rehabilitation Plan: Illegal Clearance of More Than 1 Hectare/300 m^2 Of Indigenous Vegetation at Farmall Agricultural Holding, Fourways, City of Johannesburg Metropolitan Municipality, Life Co.
- Rehabilitation Plan: Residential development on portion 205 of Farm 559, Hangklip, Western Cape Province, private landowner (in progress)

WETLAND DELINEATION AND SECTION 21 (C) &(I) RISK MATRIXES

- Wetland Delineation and Section 21 (c) and (i) risk matrix: Residential development on portion 205 of Farm 559, Hangklip, Western Cape Province, private landowner.
- Freshwater Impact Assessment: Proposed development of a community hall and associated parking lot on erven 4978 & erven 4979 on a portion of Portion 6 of the Remaining Extent (Re) of the Farm Selosesha Townlands No. 900, Thaba 'Nchu, Free State Province, Mission Point.
- Wetland Delineation and Section 21 (c) and (i) risk matrix: Proposed Residential Development on Remainder of Erf 4413, Betty's Bay Western Cape Province, private landowner.
- Freshwater Impact Assessment: Proposed Development of The R300/Bottlery Road Cabling Route, City Of Cape Town, Western Cape Province, Element Consulting on behalf of City of Cape Town.
- Watercourse verification and Section 21 (c) and (i) risk matrix: Proposed housing development on Erven 2244 & 2245; Private Landowner.
- Aquatic Biodiversity Theme Compliance Statement and Section (c) and (i) Risk Matrix: The Proposed Development of a Twenty-Five Metre (25m) Monopole Telecommunications Mast on Portion 1 Of The Farm No. 1248, Sonop Primary School, Western Cape, SBA Towers.
- Aquatic Biodiversity Theme Compliance Statements and Section 21 (c) and (i) risk matrix: S24g Environmental Rectification for The Operation Of Facilities For The Treatment Of Wastewater With A Daily Throughput Of 4200 Cubic Meters, Moedi Engineers (Itsoseng, Itekeng, Coligny, and Lichtenburg) (in progress).
- Aquatic Biodiversity Theme Compliance Statement: Proposed Prospecting Right Application for Four Drill Holes, Vorstershoop, North West.
- Aquatic Biodiversity Compliance Statement and Section 21 (c) and (i) risk matrix: Proposed Development of gravity outflow pipelines and oxidation ponds, Schweizer Reneke, North West Province.
- Aquatic Biodiversity Theme Impact Assessment and Section 21 (c) and (i) risk matrix: The Proposed Cultivation Of 19,8 Ha Pomegranate Farming on The Remainder Portion of The Farm Jagfontein No. 85 Near Calitzdorp, Western Cape Province
- Wetland Verification and Section 21 (c) and (i) Risk Matrix: Proposed Housing Development on Erf 1341, Greyton.

ENVIRONMENTAL CONTROL OFFICER (ECO) AND AUDITING

- Environmental Control Officer: The proposed development of a backup energy centre including diesel storage and generators, on Erf 142504, Diep River, Cape Town, Western Cape Province, African Data Centres.
- The proposed construction of new and rehabilitation of existing non-motorised transport facilities in the Cape Town CBD, Western Cape Province, BVi Consulting Engineers Western Cape.
- Environmental Compliance Audit for Franki Africa Stock Yard, Durban, KwaZulu Natal Province, Franki Africa.
- The proposed development of a twenty-five metre (25m) telecommunication base station and associated infrastructure on Lorraine Farm, the Remainder of Farm 790, Phillipi Western Cape Province, SBA Towers South Africa
- The proposed maintenance of the Blue Stone Quarry Wall, Robben Island, Robben Island Museum.

MAINTENANCE MANAGEMENT PLANS

- The proposed maintenance of the Blue Stone Quarry Wall, Robben Island, Robben Island Museum.
- Proposed erosion control measures for road OP06914 on Swartvlei Lake, Sedgefield, Garden Route District Municipality.

ENVIRONMENTAL SCREENING

- Proposed upgrading of the Durbanville Public Transport Interchange, Western Cape, BVi Consulting Engineers Western Cape.
- Proposed the upgrade on national road R40 section from Hazyview (km 0.0) to Maviljan (km 32.1), BVi Consulting Engineers Western Cape.
- Proposed development of a data centre in Tatu City, Kenya, Africa Data Centre.
- Proposed construction of a back-up data energy centre on Erf 33, Atlantic Hills Business Park, Durbanville, Africa Data Centre
- Proposed development of a data centre in Grand Bassam, Côte D'ivoire, Africa Data Centre
- Proposed Development of a Data Centre In Accra, Ghana, Africa Data Centre
- Proposed Development of a Data Centre In Casablanca, Morocco, Africa Data Centre

ALIEN INVASIVE SPECIES MANAGEMENT PLANS

- Invasive species monitoring, control and eradication plan, Garden Route District Municipality, Western Cape Province, Garden Route District Municipality.
- Alien Invasive Species Management Plan and consultation services for Tormin Mine, Western Cape Province, Mineral Sands Resources.
- Alien Invasion Management Plan for Ramatlabama Poultry Farm, Mahikeng, Northwest Province, Supreme Poultry.

CLEAN DEVELOPMENT MECHANISM

- Calibration and advisory services for the CDM Methane Burning Plant at the Coastal Park and Bellville South Landfill Sites, Promethium Carbon (in progress)

RISK MATRIX (Based on DWS 2015 publication: Section 21 c and I water use Risk Assessment Protocol)

Flow regime	Physico and Chem	Habitat (geomorph + Veg)	Biota	Severity	Spatial scale	Duration	Consequence	Frequency of activity	Frequency of impact	Legal Issues	Detection	Likelihood	Significance	Risk Rating	Confidence level	Borderline LOW MODERATE Rating Classes

NAME and REGISTRATION No of SACNASP Professional member: Megan Smith Pr.Sci.Nat. 130295

Risk to be scored for construction and operational phases of the project. MUST BE COMPLETED BY SACNASP PROFESSIONAL MEMBER REGISTERED IN AN APPROPRIATE FIELD OF EXPERTISE.

					Severity															
No.	**Phases**	**Activity**	**Aspect**	**Impact**	**Flow Regime**	**Physico & Chemical (Water Quality)**	**Habitat (Geomorph + Vegetation)**	**Biota**	**Severity**	**Spatial scale**	**Duration**	**Consequence**	**Frequency of activity**	**Frequency of impact**	**Legal Issues**	**Detection**	**Likelihood**	**Significance**	**Risk Rating**	**Confidence level**	**Borderline LOW MODERATE Rating Classes**
Proposed prospecting activities	Site Establishment/Operations	Activities including clearance of vegetation and changes to hydrology due to development within the regulated area of a watercourse.	Drainage patterns change due to establishment of infrastructure	Impeding and diverting the flow of water. Siltation of water course.	1	1	2	2	1.5	1	2	4.5	1	2	5	2	10	45	Low	95	**N/A**
			Clearing of vegetation in the regulated area of a watercourse and exposing soils	Vegetation will be cleared within the regulated area of a watercourse which will result in erosion, and some loss of wetland functions.	1	1	2	2	1.5	1	2	4.5	1	2	5	1	9	40.5	Low	95	**N/A**
			Soil disturbance due to excavation activities	Siltation of water course and bank erosion of the river.	1	2	1	1	1.25	1	2	4.25	4	2	5	2	13	55.25	Low	95	**N/A**
		Handling waste, general- and hazardous material on the site during construction.	Storage of material, waste, spoil and construction equipment on or in stormwater drainage or in watercourses areas	Storage of material, waste, spoil and construction equipment on or in stormwater drainage or in watercourses areas	1	1	2	2	1.5	1	2	4.5	1	2	5	2	10	45	Low	95	**N/A**
			Accidental spilling of waste & vehicles leaks oil, litter and waste enter watercourse	Changes in surface water quality and ground water quality Impacts of impaired water quality, introduction of pollutants and increased turbidity may lead to the loss of sensitive aquatic taxa	1	2	2	2	1.75	1	2	4.75	2	2	5	3	12	57	Low	95	**N/A**
		Construction, erosion control & storm water management	Development of erosion on the footprint and immediate surrounds	Siltation & sedimentation	1	1	1	1	1	1	2	4	1	2	5	3	11	11	Low	95	**N/A**

			Siltation of downstream watercourses		2	2	2	2	1.5	1	2	4.5	1	2	5	3	11	16.5	Low	95	N/A
		Construction activities and the spread of Alien Invasive Species .	Disturbance of soil creates opportunity for invasion	Disturbance of soil that creates opportunity for invasion which may lead to significant alien invasive species establishment and spread.	2	2	1	1	1.5	1	1	3.5	1	1	5	3	10	35	Low	95	
			Application of herbicides	Run-off of harmful chemicals may enter downstream watercourses	1	2	1	2	1.5	1	2	4.5	1	1	5	2	9	40.5	Low	95	N/A

RISK ASSESSMENT KEY (Based on DWS 2015 publication: Section 21 c and I water use Risk Assessment Protocol)

Negative Rating

TABLE 1- SEVERITY

How severe does the aspects impact on the resource quality (flow regime, water quality, geomorphology, 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 that the activity is located within the delineated boundary of any wetland. The score of 5 is only compulsory for the significance rating.

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 / neighboring areas (downstream within quaternary catchment)	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 resource quality?

One day to one month, PES, EIS and/or REC not impacted	1
One month to one year, PES, EIS and/or REC impacted but no change in status	2
One year to 10 years, PES, EIS and/or REC impacted to a lower status but can be improved over this period through mitigation	3
Life of the activity, PES, EIS and/or REC permanently lowered	4
More than life of the organisation/facility, PES and EIS scores, a E or F	5

PES and EIS (sensitivity) must be considered.

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 resource quality?

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/easily can the impacts/risks of the activity be observed on the resource quality, people and property?

Immediately	1
Without much effort	2
Need some effort	3
Remote and difficult to observe	4
Covered	5

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.
56 – 169	M) Moderate Risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and require specialist input. Licence
170 – 300	(H) High Risk	Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale and lowering of the Reserve. Licence required.

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

RISK ASSESSMENT MUST BE CONDUCTED BY A SACNASP REGISTERED PROFESSIONAL MEMBER AND THE ASSESSOR MUST:

1) CONSIDER BOTH CONSTRUCTION AND OPERATIONAL PHASES OF PROPOSED ACTIVITIES;

2) CONSIDER RISKS TO RESOURCE QUALITY POST MITIGATION CONSIDERING MITIGATION MEASURES LISTED IN TABLES PROVIDED;

3) CONSIDER THE SENSITIVITY (ECOLOGICAL IMPORTANCE AND SENSITIVITY – EIS) AND STATUS (PRESENT ECOLOGICAL STATUS - PES) OF THE WATERCOURSE AS RECEPTOR OF RISKS POSED;

4) CONSIDER POSITIVE IMPACTS/RISKS REDUCTION AS A VERY LOW RISK IN THIS ASSESSMENT;

5) INDICATE CONFIDENCE LEVEL OF SCORES PROVIDED IN THE LAST COLUMN AS A PERCENTAGE FROM 0 - 100%.

ON THE EXCELL SPREADSHEET POP-UP COMMENTS ARE AVAILABLE FOR ALL COLUMNS IN THE HEADINGS WHICH EXPLAINS THE PURPOSE OF EACH COLUMN!