Johannesburg City Parks

Golden Harvest Park Upgrades

Draft Environmental Management Programme

GDARD Reference Number: GAUT 002/22-23/E3343

August 2022

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Johannesburg City Parks

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Draft Environmental Management Programme

August 2022

Project Ref: 129-001

Prepared by: Suzanne van Rooy

VERSION CONTROL

Alta van Dyk Environmental cc

Version: Draft

Approved by: Alta van Dyk

Signed:

Position: Environmental Specialist

Date: August 2022

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Abbreviations

BAR	Basic Assessment Report
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GDARD	Gauteng Department of Agriculture and Rural Development
HGM	Hydrogeomorphic
NEMA	National Environmental Management
NWA	National Water Act
SAHRA	South African Heritage Resources Agency

1 INTRODUCTION AND BACKGROUND

An Environmental Management Programme (EMPr) is a site-specific plan developed to ensure that all necessary measures are identified and implemented in order to protect the environment and comply with environmental legislation.

A site-specific EMPr has been prepared for the management of all activities associated with the development of the proposed upgrades at Golden Harvest Park in order to confirm the likely environmental issues that may arise from the activities, the likely harm that these activities may pose on the surrounding environment and how these activities will be managed as to minimise any harm to the environment.

1.1 Introduction

An EMPr is a plan or programme that sets out guidelines that describe how activities that have or could have an adverse impact on the environment, will be mitigated, controlled, and monitored and subsequently achieve a required operational and/or end state.

The purpose of the EMPr is to provide for preventative, corrective and best practice measures to ensure that activities are undertaken in an environmentally responsible manner and that such activities are sustainable in the long term. The primary objectives of the EMPr, include, but are not limited to the following:

- Describe actions that when implemented will achieve mitigation of environmental impacts, or result in approved management of activities thereby reducing the probability of impacts occurring;
- Define organisational and administrative arrangements for environmental management and monitoring, including defining the responsibilities of staff and co-ordination, liaison and reporting procedures;
- Ensuring that discussions are held with the site supervision staff, regarding pro-active environmental management, such that potential problems can be identified and mitigation measures adopted prior to any work being carried out;
- Define the procedures to be followed as to ensure environmental control, in the event of pollution occurring that may require actions.

1.2 Content of the Environmental Management Programme

The EMPr has been structured in accordance with the requirements as specified in Appendix 4 of the NEMA EIA Regulations.

Table 1: Requirements of an EMPr

No	Description	Reference
1	An EMPr must comply with Section 24N of the Act and include-	
a)	details of: (i) the EAP who compiled the EMPr; and (ii) the expertise of the EAP to prepare an EMPr, including a curriculum vitae;	Chapter 2 Annexure A
b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Chapter 3
c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Figure 3

No	Description	Reference
d)	a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including– (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Chapter 5 Table 5 Table 6
f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Chapter 5 Table 5 Table 6
g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Chapter 9
h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Chapter 9
i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Chapter 4
j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Table 5 Table 6
k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Chapter 9
l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Chapter 9
m)	an environmental awareness plan describing the manner in which— (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Chapter 8
n)	any specific information that may be required by the competent authority.	Not applicable

2 ENVIRONMENTAL ASSESSMENT PRACTIONER

Table 2 provides the details of the Environmental Assessment Practitioner (EAP) for the Golden Harvest Park upgrades project.

Table 2: Details of the Environmental Assessment Practitioner

Environmental Assessment Practitioner	Suzanne van Rooy
Company	Alta van Dyk Environmental Consultants cc
Qualifications	MPhil Environmental Management (University of Stellenbosch)
Professional Registrations	Pr.Sci.Nat (Reg nr.400378/11) Registered EAP (EAPASA Ref 2019/1079)
Postal Address	Postnet Suite # 745 Private Bag X 1007 Lyttelton 0140
Telephone number:	012 940 9457
Fax number:	086 634 3967
Email address	suzanne@avde.co.za

2.1 Expertise of the Environmental Assessment Practitioner

Suzanne is a senior environmental scientist and has 13 years' experience as an environmental assessment practitioner, having worked largely in South Africa's mining sector. She is a professionally registered environmental scientist with the South African Council of Natural Scientific Professionals (registration number 400378/11). Her field of expertise includes the compilation of environmental impact assessments and environmental management programmes, environmental auditing and stakeholder engagement.

Refer to Annexure A for the curriculum vitae of the EAP.

3 PROJECT DESCRIPTION

3.1 Project background

Johannesburg City Parks owns and manages the Golden Harvest Park in Johannesburg, Gauteng, which covers an area of approximately 55 ha. The Golden Harvest Park is an open space established for use by the public for recreational purposes. The Park was established in 1972 midst residential growth in the area and provides a green space within the urban development. Green spaces within urban development provides ecological, social and environmental benefits.

The Golden Harvest Park is located in Randburg, Gauteng Province and falls within the City of Johannesburg Metropolitan Municipality. The Park is situated on several portions of the farms Northwold Ext 8, Hunters Hill AH, Golden Harvest AH and Brushwood Haugh AH. Refer to Figure 1 for the locality map.

Johannesburg City Parks are planning several upgrades to the Park which required environmental related authorisations. The following upgrades are planned at the Golden Harvest Park:

- Construction of a sewer line;
- Building of ablutions (four);
- Upgrade of vehicle bridge;
- Upgrade of pedestrian bridge;
- Construction of two attenuation structures (weirs); and
- Play equipment and recreational park furniture.

The proposed project layout is shown in Figure 2.

The proposed upgrades at Golden Harvest Park are required in order to ensure that the park's river crossings are safe for local community members utilising the park and to provide adequate ablution facilities for community members when visiting the park.

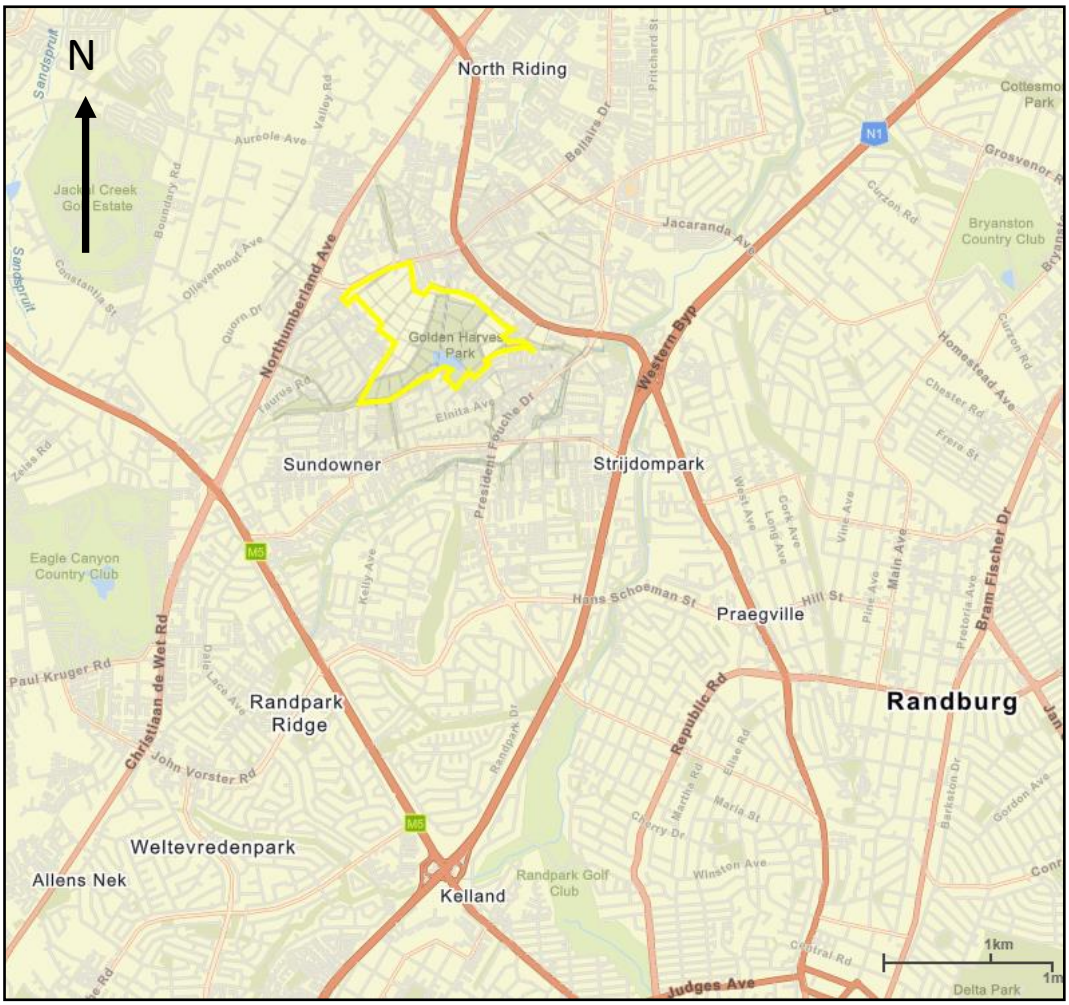

Figure 1: Golden Harvest Park Regional Locality map

LAYOUT PLAN
1:2000

SCALE ON REDUCED DRAWING

100mm SCALE ON ORIGINAL DRAWING

LEGEND

- NEW ABLUTION FACILITIES
- EXISTING ABLUTION FACILITIES
- PROPOSED SEWER 110mm DIA.

REVISION DETAILS

I	D	T	C	AB
INFORMATION	DESIGN	TENDER	CONSTRUCTION	AS-BUILT

REV No.	DATE	DESCRIPTION
I00	2021-08-25	FOR INFORMATION PURPOSES
-	-	-
-	-	-
-	-	-

CLIENT:

Joburg a world class African city

Johannesburg City Parks Greener. Connected. Yours.

Joburg ZOO

APPROVED:

PROJECT MANAGER

CITY ENGINEER

CONSULTANT:

CivEc
Civil Engineering Consultants
70 REGENCY DR, ROUTE 21 BUSINESS PARK, CENTURION, 0178
PHONE: (012) 346 1255

NMS FOR CivEc (PrENG 20170120)

DATE

PROJECT:

GOLDEN HARVEST
CONCEPTUAL DESIGN

TITLE:

KEY PLAN AND SCOPE OF WORKS

DESIGNED: F THOMPSON	SURVEYED:
DRAWN: F THOMPSON	CHECKED: H LINDE
CLIENT REFERENCE No.:	DATE: 2021-08-25
SCALE: AS SHOWN	FILE NAME: 1701L-C-GE-KEY-001
ORIGINAL PAPER SIZE: A1	SHEET: 01 of 01

DRAWING No.: 1701L-C-GE-KEY-001

REVISION I00

3.2 Project description

3.2.1 Construction of sewer line

The sewer pipes will be constructed as follows:

- The construction of a 380 m long 110 mm ø outfall sewer pipeline and will have a total of 5 manholes. The sewer will connect two existing manholes.
- The sewer pipeline will be a Class 75D uPVC pipe.
- The sewer connections will be solid uPVC wall Class 400, and have watertight seals at joints.
- The pipe will be back filled with in situ material and every 50 m will be provided with a 1.0 m section of 19.0 mm stone to allow subsurface water flow towards the wetland.
- A 4 m strip clearing will be done where construction activity will take place.
- At the construction stage, topsoil to a depth of 150 mm will be removed and stockpiled at the designated areas and reinstated after the pipeline is installed.
- Excavation of trenches will be done with a backhoe excavator and material will be stockpiled at designated areas where it does not impact the flow of the watercourse.
- Bedding and blanket material will be imported from commercial sources.
- Backfill material will be from trench excavations which has been temporarily stockpiled. Excess material (spoil) will be carted off site to suitable dumping sites.
- Special filling and blanket will be required in clayey area to absorb any movement due to clay conditions. In addition concrete anchor blocks will be provided at 10 m intervals to avoid any flotation of pipes.
- The work will be in accordance with City of Johannesburg Standards.
- Watertight manholes will be used in the floodline for the outfall sewer as well as all connections.

3.2.2 Upgrades of vehicle and pedestrian bridges

The components of the activities include for:

- Temporary deviation of water course;
- Preparation of embankment footprints and bedding for culvert construction and other hydraulic structures;
- Vehicle bridge: Construction of Precast Rectangular Portal Frame Culverts
- Pedestrian bridge: Construction of Precast Rectangular Portal Frame Culverts
- Imported filling;
- Embankment protection;
- Erosion control and protection;
- Rehabilitation and reinstatement to original state, and
- An existing temporary crossing will be utilised for transportation and traffic to cross the natural water course.

3.2.2.1 Temporary deviation of watercourse

The natural water course is a non- perennial water course with a fairly large flow volume, thus temporary deviation thereof will be required during construction to allow a workable construction area and prevent unnecessary environmental damage to the surrounding area. All work will be done during the dry season to facilitate water management.

The temporary deviation will entail:

- Construction of a structure diverting the flow to the eastern side of the water course using sandbags;
- The water will be diverted, to allow a workable area on the western side;

- No excavation will be done on the diverting channel but this will be formed using sandbags or other geo-fabric or material, and
- All temporary construction materials will be removed from site once construction is completed, the site backfilled, topsoiled and grassed including non-degradable fabric such as MatMacR or similar.

3.2.2.2 Preparation of footprints and bedding

According to geotechnical information available in-situ conditions are poor and it is not advisable to use in-situ conditions as is for construction purposes. Preparation therefor entails:

- Clearing and grubbing of topsoil and vegetation to a depth of 150 mm;
- Topsoil will be conserved for use during rehabilitation and on embankment slopes;
- Excavation of the footing by means of a backhoe excavator, and spoiling material to designated spoil site. Footing width plus 500mm for working space;
- Trench bottom will be compacted to 90% MDD before construction of rockfill layer;
- Rockfill layer of imported dump rock to be construction to a minimum thickness of 600mm in accordance with SABS 1200 D;
- Construction of bedding material compacted to 90% MDD, bedding and blanket material will be imported, and
- Final layer stability to be approved by engineer to ensure no displacement of material if loaded.

3.2.2.3 Construction of Rectangular Culverts

Both bridges will be constructed of rectangular culverts and will be done after deviation of the water course. It will entail the following:

- Construction and casting of a 300mm thick concrete invert slab, Class 30/19 MPa concrete, on a 50mm concrete blinding layer. Including all construction, saw cut and other jointing;
- Installation of Precast Rectangular Portal Frame Culverts
- Sealing of joints with bituminous product or similar approved;
- Culverts to be backfilled with soil cement mixture on sides and as indicated in detailed drawings;
- Layer works will continue for road building purposes;
- Culverts will be Class 75S, complying with the requirements of SABS 986:1994;
- Construction of inlet and outlet structures from reinforced concrete, with rip-rap boulder placement downstream. Including all construction, saw cut and other jointing;
- Construction done according to City of Johannesburg specifications and SABS 1200.

3.2.2.4 Embankment Protection

Side slopes to be constructed:

- At 1:2 to 1:3 side slopes;
- Topsoiled with material from site stockpile and/or commercial sources;
- Hydroseeded to environmental consultant specifications, and
- Additional erosion control will also be implemented as required in the form of non- degradable erosion protection on side slopes.

3.2.2.5 Erosion control and protection

Erosion protection will take place by ensuring adequate erosion control is added with the features, including but not limited to Gabions and Mac-Mat. The structures will be adjusted according to the flow velocity from the stormwater analysis report.

Downstream of the gabion structure the stream will daylight to natural water course. Additional erosion protection will be implemented by means of rip-rap which has proven very successful on similar projects.

3.2.2.6 Rehabilitation and Reinstatement

After completion of construction as specified above the site will be reinstated. All disturbed areas will be rehabilitated and construction material removed from site.

3.2.3 Construction of weirs

The components of the activities include for:

- Temporary deviation of water course;
- Preparation of embankment footprints and bedding for weirs and other hydraulic structures;
- Two weirs will be constructed upstream of the dam to attenuate water and help with erosion control.
- Imported filling;
- Embankment protection;
- Erosion control and protection;
- Rehabilitation and reinstatement to original state,

3.2.3.1 Temporary deviation of water course

The natural water course is a non - perennial water course with a fairly large flow volume, thus temporary deviation thereof will be required during construction to allow a workable construction area and prevent unnecessary environmental damage to the surrounding area. All work will be done during the dry season to facilitate water management.

Temporary deviation will entail:

- Construction of a structure diverting the flow to the northern side of the water course using sandbags;
- The water will be diverted, to allow a workable area on the southern side;
- No excavation will be done on the diverting channel but this will be formed using sandbags or other geo-fabric or material, and
- All temporary construction materials will be removed from site once construction is completed, the site backfilled, topsoiled and grassed including non-degradable fabric such as MatMacR or similar.

3.2.3.2 Preparation of footprints and bedding

Preparation therefor entails:

- Clearing and grubbing of topsoil and vegetation to a depth of 150mm, for a width of 20m wide, over a length of approximately 45m. The total affected area will be approximately 900m2;
- Topsoil will be conserved for use during rehabilitation and on embankment slopes;
- Excavation of the footing by means of a backhoe excavator, and spoiling material to designated spoil site.
- Construction of bedding material compacted to 90% MDD, bedding and blanket material will be imported, and
- Final layer stability to be approved by engineer to ensure no displacement of material if loaded.

3.2.3.3 Construction of Weirs

The construction of weirs will entail the following:

- Construction and casting of a 1m high natural weir constructed of natural material compacted to 90% MDD.
- Construction done according to City of Johannesburg specifications and SABS 1200, and

3.2.3.4 Embankment Protection

Side slopes to be constructed:

- At 1:2 to 1:3 side slopes;
- Topsoiled with material from site stockpile and/or commercial sources;
- Hydroseeded to environmental consultant specifications, and
- Additional erosion control will also be implemented as required in the form of non- degradable erosion protection on side slopes.

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Erosion protection will take place by ensuring adequate erosion control is added with the features, including but not limited to Gabions and Mac-Mat. The structures will be adjusted according to the flow velocity from the stormwater analysis report.

Downstream of the gabion structure the stream will daylight to natural water course. Additional erosion protection will be implemented by means of rip-rap which has proven very successful on similar projects.

3.2.3.6 Rehabilitation and Reinstatement

After completion of construction as specified above the site will be reinstated. All disturbed areas will be rehabilitated and construction material removed from site.

3.3 Environmental related permits required

Triggered listed activities in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) 2014 Environmental Impact Assessment (EIA) Regulations (as amended in 2017) are shown in Table 3 below. Activities in Listing 1 and 3 are triggered by the proposed development, and therefore a Basic Assessment environmental authorisation process is followed.

Table 3: Listed activities triggered by the Golden Harvest Park upgrades project

Listed activity	Description of project activity that triggers listed activity
Activity 19 of Listing Notice 1 The infilling or depositing of any material of more than10m3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m^3 from a watercourse;	The upgrade of the vehicle bridge, the construction of the pedestrian bridge and the construction of the weirs trigger this activity.
Activity 14 of Listing Notice 3 The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; Gauteng: iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; x. Sites zoned for conservation use or public open space or equivalent zoning.	The construction of the following infrastructure triggers this activity: Pedestrian bridge: 248 m^2 Weir 1: 141 m^2 Weir 2: 123 m^2 Sections of the sewer line falls within the regulated 32m from a watercourse (delineated wetland). These proposed activities falls within a Critical Biodiversity Area (CBA) or Ecological Support Area (ESA) according to the Gauteng Conservation Plan. The construction of the ablution facilities does not trigger this activity, as all ablution facilities are located outside the 32m regulated zone around the delineated wetlands.
Activity 23 of Listing Notice 3 The expansion of- (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; Gauteng: iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; x. Sites zoned for conservation use or public open space or equivalent zoning.	The upgrade of the vehicle bridge (36m^2) will expand the current bridge by more than 10m^2. This activity is located within an Ecological Support Area (ESA) according to the Gauteng Conservation Plan.

In addition, a Water Use Licence Application will be submitted in terms of the National Water Act (Act No. 36 of 1998) (NWA) as the following Section 21 water uses are triggered as shown in Table 4.

Table 4: List of Section 21 water uses to be applied for

Section 21 Water Use	Activities which require the Water Use Licence
(c) – impeding or diverting the flow of water in a watercourse (i) – altering the bed, banks, course or characteristics of a watercourse	• Upgrade and construction of and vehicle and pedestrian bridges within a watercourse • Construction of weirs within a watercourse • Construction of sewer line and ablution facilities within 500m of a delineated wetland

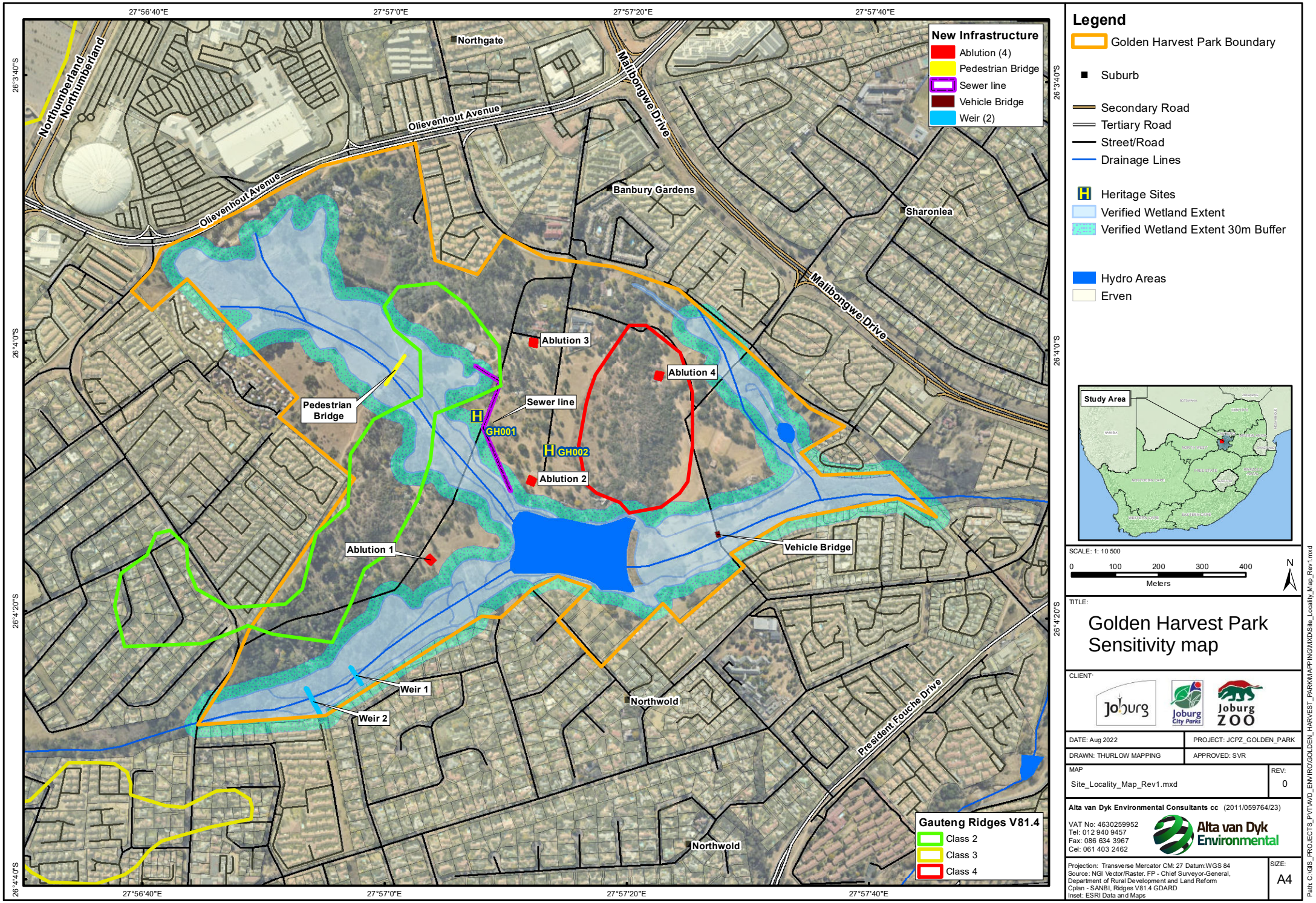
3.4 Sensitive areas

During the environmental authorisation process, specialist studies were undertaken including a wetland assessment and Heritage Impact Assessment. As part of these studies, sensitive features were identified that needs to be avoided as far as possible

The following sensitive areas were identified:

- Delineated wetlands and 30m buffer zone
- Ridges in terms of the GDARD Draft Ridges Policy
- Heritage sites.

These sensitive areas in relation to the proposed upgrades are shown in Figure 3.



Legend

- Golden Harvest Park Boundary
- Suburb
- Secondary Road
- Tertiary Road
- Street/Road
- Drainage Lines
- Heritage Sites
- Verified Wetland Extent
- Verified Wetland Extent 30m Buffer
- Hydro Areas
- Erven

SCALE: 1: 10 500

0 100 200 300 400

Meters

N

TITLE:

Golden Harvest Park Sensitivity map

CLIENT:

Joburg | Joburg City Parks | Joburg ZOO

DATE: Aug 2022	PROJECT: JCPZ_GOLDEN_PARK
DRAWN: THURLOW MAPPING	APPROVED: SVR
MAP: Site_Locality_Map_Rev1.mxd	REV: 0

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Alta van Dyk Environmental

Projection: Transverse Mercator CM: 27 Datum:WGS 84
Source: NGI Vector/Raster. FP - Chief Surveyor-General, Department of Rural Development and Land Reform
Cplan - SANBI, Ridges V81.4 GDARD
Inset: ESRI Data and Maps

SIZE: A4

Path: C:\GIS_PROJECTS_PVT\AVD_ENVIRO\GOLDEN_HARVEST_PARK\MAPPING\MXD\Site_Locality_Map_Rev1.mxd

4 ROLES AND RESPONSIBILITIES

The roles and responsibilities indicate which team member(s) are responsible for implementation of the identified mitigation measures, management plan and monitoring. The following parties will have roles and responsibilities in the implementation of this EMPr.

- Applicant (Johannesburg City Parks and Zoo);
- Contractor;
- Environmental Manager; and
- Environmental Control Officer (ECO).

The roles and responsibilities of each party is described in the sections below.

4.1 Applicant

Johannesburg City Parks and Zoo is the applicant and will therefore be the entity monitoring the implementation of the EMPr and compliance with the authorisation. The following roles and responsibilities are assigned to the applicant:

- Ensure compliance with the conditions in the EMPr and environmental authorisation during all phases of the project;
- Ensure that contractors and operators undertake to adhere to all the provisions of the EMPr;
- Ensure that environmental monitoring takes place;
- Ensure that independent environmental audits are undertaken;
- Ensure that all monitoring and audit reports are submitted to the competent authority.

4.2 Contractor

During the construction phase, the construction contractor will:

- Be responsible to have the EMPr available on site at all times;
- Appoint an ECO for the construction phase;
- Ensure that all mitigation measures for which they are responsible, are implemented as described in this EMPr; and
- Ensure that all problems identified during environmental inspections, are addressed and rectified as soon as reasonably possible.

4.3 Environmental Manager

The responsibilities of the environmental manager are as follows (during all phases of the project)

- Implement environmental policies, procedures, and management plans
- Review and analysis of monitoring results and preparation of reports to management and stakeholders
- Planning of and carrying out environmental training programs for employees and contractors
- Obtaining and maintaining all necessary environmental permits in liaison with the legal manager
- Management of the environmental related components of the grievance mechanism

- Support the ECO in his/her roles and responsibilities.

4.4 Environmental Control Officer

The responsibilities of the ECO during all phases of the project are as follows:

- Inspections/audits of environmental protection requirements by employees and sub-contractors;
- Sampling and data capture in accordance with the environmental monitoring program and analysis of results; and
- Assistance with the preparation of environmental monitoring reporting and permit applications.

5 MITIGATION AND/OR MANAGEMENT MEASURES

5.1 Pre-construction management measures

A variety of potential impacts are associated with the construction activities for this project. These impacts can be categorised as general construction related impacts as well as construction impacts specifically related to this site. General best practice rules to construction should be followed at all times. In addition to this the specific mitigation measures and recommendations as highlighted by the Basic Assessment Report (BAR) and various specialists for this specific site is highlighted below.

Mitigation measures to be implemented during the construction and operational phases are presented in Table 5 and Table 6 respectively. As the proposed upgrades will be permanent, no mitigation for the closure phase have been included.

Table 5: Mitigation measures to be implemented during the construction phase of the Golden Harvest Park upgrades project

Component	Management Outcomes	Possible activity that may cause an impact	Potential Environmental Impact	Management Measure	Responsible Person	Frequency and/or time period
Soils	Conservation of soils a resource	Trench excavation and installation of sewer line Construction of weirs Upgrade of pedestrian and vehicle bridges	Loss of soils to compaction and erosion	• All construction contractors must obtain access by use of the existing roads that can be found in and around Golden Harvest Park.	Construction Contractor	Throughout construction phase
				• A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas.	Construction Contractor	Once off
				• The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.	Construction Contractor	Throughout construction phase
				• No servicing of equipment on site during construction unless necessary. Servicing of equipment must take place off site or in the depot area of Golden Harvest Park.	Construction Contractor	Throughout construction phase
				• All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers.	Construction Contractor	As required
				• Compacted areas are to be ripped to loosen the soil structure where necessary.	Construction Contractor	As required
				• Erosion mitigation strategies and proper stormwater management must be considered to limit erosion within the development footprint area.	Construction Contractor/Environmental Manager	Throughout construction phase
				• Implement appropriate stormwater management measures, including the temporary diversion of upstream run-off from the construction and laydown areas.	Construction Contractor	Throughout construction phase
				• A rehabilitation strategy focussed on revegetation must be initiated after the construction phase.	Construction Contractor/ Environmental Manager	During rehabilitation of area after construction
Vegetation	Limit the disturbance and destruction of vegetation, fauna and habitat	Site clearing and preparation	Spread and/or establishment of alien and/or invasive species	• Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species.	Construction Contractor	Throughout construction phase
				• Compilation of and implementation of an alien vegetation management plan.	Construction Contractor/Environmental Manager	Throughout construction phase
				• A pest control plan must be put in place and implemented; it is imperative that poisons not be used.	Construction Contractor/Environmental Manager	Throughout construction phase
			Loss of flora	• Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species.	Construction Contractor	Throughout construction phase
				• All development areas to be rehabilitated immediately after construction and ensure that vegetation regrowth take place.	Construction Contractor	During rehabilitation of area after construction
				• Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.	Construction Contractor	As required
Fauna	Protection of faunal species	Site clearing and preparation	Impact on faunal species	• A qualified environmental control officer must be on site when construction begins. The area must be walked through by a the ECO/biologist prior to construction to ensure no faunal species remain in the habitat and get killed. Should animals not move out of the area on their own relevant specialists must be contacted to advise on how the species can be relocated.	Construction Contractor/Environmental Manager	Once off – prior to commencement of construction phase
				• Waste management must be a priority and all waste must be collected and stored adequately. No waste may disposed of or buried on site.	Construction Contractor	Throughout construction phase
				• It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site.	Construction Contractor	Weekly
Surface water and wetlands	Minimise the potential for surface water and wetland	Site clearing and preparation	Direct loss, disturbance and degradation of wetlands	• Restrict all construction related activities to within the proposed pipeline servitude.	Construction Contractor	Throughout construction phase
				• Adhere to the prescribed wetland buffers for secondary activities. Restrict all secondary activities (e.g. laydown yards, storage areas, cement mixing	Construction Contractor	Throughout construction phase

Component	Management Outcomes	Possible activity that may cause an impact	Potential Environmental Impact	Management Measure	Responsible Person	Frequency and/or time period
	Conserve delineated wetlands Conservation of water			and equipment to outside of wetlands and their prescribed buffers.		
				• Indicate delineated wetlands on site layout plans. Load wetland spatial data onto a GPS and use it to mark out the positions where the pipeline will enter and exits the prescribed buffer on the boundary of a wetland. Try to reduce the disturbance footprint and the unnecessary clearing of vegetation on either side of the trench as far as possible.	Construction Contractor/Environmental Manager	Throughout construction phase
				• Demarcate the 10 m construction corridor as well as the prescribed buffer on the ground (e.g. pained wooden poles).	Construction Contractor	Prior to construction commencement
				• Construct as far as possible during winter when flow volumes are lowest, prioritise this for crossing sites. This will reduce impacts to wetlands due to soil poaching and vegetation trampling under peak saturation levels. Additionally, the risk of vehicles getting stuck and further degrading the vegetation integrity is lowest during this time.	Construction Contractor	Throughout construction phase
			Increased bare surfaces, runoff and potential for erosion and resulting sedimentation of the wetlands	• Keep the trench excavation neat and tidy. Only stockpile on one side of the trench (the same side as the excavator tracks). Separate topsoil and sub-soil, and backfill in same order.	Construction Contractor	Throughout construction phase
				• Ensure soil stockpiles and concrete / building sand are sufficiently safeguarded against rain wash.	Construction Contractor	Throughout construction phase
				• Mixing of concrete must under no circumstances take place in any wetland or the prescribed buffers. Scrape the area where mixing and storage of sand and concrete occurred to clean once finished.	Construction Contractor	Throughout construction phase
				• Do not situate any of the construction material laydown areas within any wetland or prescribed buffer.	Construction Contractor	Throughout construction phase
				• No machinery should be allowed to be parked in any wetlands.	Construction Contractor	Throughout construction phase
				• Ensure topsoil is spread back over trench area. Flatten and lightly till (no deeper than 30 cm) excavated / cleared areas to encourage vegetation establishment as soon as possible.	Construction Contractor	During rehabilitation of area after construction
			Degradation of wetland vegetation and the introduction and spread of alien and invasive vegetation	• Promptly remove all alien and invasive plant species that may emerge during construction (i.e. weedy annuals and other alien forbs) must be removed.	Construction Contractor	Weekly
				• The use of herbicides is not recommended in or near wetlands (opt for mechanical removal).	Construction Contractor	During rehabilitation of area after construction
				• Appropriately stockpile topsoil cleared from the project area. This can be used for rehabilitation of the servitude.	Construction Contractor	Once off
				• Clearly demarcate construction footprint, and limit all activities to within this area.	Construction Contractor	Prior to construction commencement, to be maintained throughout construction phase
				• Minimize unnecessary clearing of vegetation. Landscape and re-vegetate all denuded areas as soon as possible	Construction Contractor	Throughout construction phase
		Trench excavation and installation of sewer line Construction of weirs Upgrade of pedestrian and vehicle bridges	Increased sediment loads to downstream reaches	• See mitigation for increased bare surfaces, runoff and potential for erosion.	Construction Contractor	Throughout construction phase
				• At all crossings install sandbags on downstream side of the footprint to trap sediment until the site has been constructed and vegetation has re-established.	Construction Contractor	Throughout construction phase and subsequent rehabilitation
			Contamination of wetlands with hydrocarbons due to machinery leaks and eutrophication of wetland systems with human sewerage and other waste.	• Make sure all excess consumables and building materials / rubble is removed from site and deposited at an appropriate waste facility.	Construction Contractor	Weekly
				• Appropriately contain any generator diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) or construction materials on site (e.g. concrete) in such a way as to prevent them leaking and entering the wetland areas.	Construction Contractor	Throughout construction phase
				• Regularly maintain stormwater infrastructure, pipes, pumps and machinery to minimise the	Construction Contractor	Weekly

Component	Management Outcomes	Possible activity that may cause an impact	Potential Environmental Impact	Management Measure	Responsible Person	Frequency and/or time period
				potential for leaks. Check for oil leaks, keep a tidy operation, install bins and promptly clean up any spills or litter.		
				• Provide appropriate sanitation facilities during construction and service them regularly.	Construction Contractor	Weekly
				• Sanitation facilities to be placed outside of delineated wetlands and associated buffer zones.	Construction Contractor	Throughout construction phase
		Backfilling of trench	Disruption of wetland soil profile and alteration of hydrological regime	• Ensure that topsoil is appropriately stored and re-applied during trench backfilling.	Construction Contractor	Weekly
				• Make sure that the soil is backfilled and compacted to accepted geotechnical standards to avoid conduit formation along the trench.	Construction Contractor	During rehabilitation of area after construction
Heritage	Protect and preserve heritage findings	Site clearing and preparation Trench excavation and installation of infrastructure	Disturbance or destruction of identified structure and stone cairn.	• All existing structures in the park should be indicated on development plans and avoided during construction;	Construction Contractor/Environmental Manager	Throughout construction phase
				• The grave marker must be indicated on development maps, demarcated with danger tape, and avoided during construction. Any excavation in this area must be monitored by the ECO.	Construction Contractor/Environmental Manager	Throughout construction phase
				• Implementation of a chance find procedure should an artefact or grave be uncovered during construction. (Section 6.1 of this EMPr).	Construction Contractor	As required
Noise	Minimis the generation of noise	Site clearing and preparation Trench excavation and installation of sewer line Construction of weirs Upgrade of pedestrian and vehicle bridges	General rise in ambient noise levels	• Ensure high level of equipment maintenance, especially intake and exhaust mufflers.	Construction Contractor	Monthly
				• Replace pure tone (beeping) with broadband (hissing) reversing alarms, if possible.	Construction Contractor	Throughout construction phase
				• Construction activities to take place only during daylight hours.	Construction Contractor	Daily
Air Quality	Minimise atmospheric emissions and dust generation	Site clearing and preparation Trench excavation and installation of sewer line Construction of weirs Upgrade of pedestrian and vehicle bridges	Increased dust fallout	• Apply dust suppressants to gravel roads used.	Construction Contractor	Daily
				• Set speed limits to 40 km/h to minimise the creation of fugitive dust within the project boundary.	Construction Contractor	Daily
				• Dust-reducing mitigation measures must be put in place and must be strictly adhered to, during the construction phase. This includes wetting of exposed soft soil surfaces and not conducting activities on windy days which will increase the likelihood of dust being generated.	Construction Contractor/Environmental Manager	Daily
Traffic	Minimise impact on existing traffic flow in area	Construction activities	Vehicle traffic congestion	• Ensure that proper road signage is used.	Construction Contractor	Throughout construction phase
				• Limit access to the construction site to construction vehicles only.	Construction Contractor	Throughout construction phase
Social	Maximise employment opportunities and social benefits	Site clearing and preparation Trench excavation and installation of sewer line Construction of weirs Upgrade of pedestrian and vehicle bridges	Benefits resulting from employment and income opportunities created by the construction of the pipelines	• Develop a clear and concise employment policy prioritising local employment.	Construction Contractor/Environmental Manager	Prior to construction commencement
				• Employ local works if qualified applicants with the appropriate skills are available.	Construction Contractor	Throughout construction phase
				• Purchase goods and services at a local level if available.	Construction Contractor	Throughout construction phase

Table 6: Mitigation measures to be implemented during the operational phase of the Golden Harvest Park upgrades project

Component	Management Outcomes	Possible activity that may cause an impact	Potential Environmental Impact	Management Measure	Responsible Person	Frequency and/or time period
Soils	Conservation of soils a resource	Operation of sewer line	Soil contamination due to leaks	• Conduct regular inspections of manholes along both the pipeline routes and fix leaks timeously. Engineers should advise on the frequency of pressure tests to detect leaks.	Operator	Monthly
				• Monitor water quality.	Operator/Environmental Manager	Monthly
				• Install leak detection devices.	Operator	Once off
Surface water and wetlands	Minimise the potential for surface water and wetland Conserve delineated wetlands Conservation of water	Operation of sewer line	Increased water and sewerage inputs to downstream wetlands	• Conduct regular inspections of manholes along both the pipeline routes and fix leaks timeously. Engineers should advise on the frequency of pressure tests to detect leaks.	Operator	Monthly
				• Monitor water quality in wetlands.	Operator/Environmental Manager	Monthly
				• Install leak detection devices.	Operator	Once off
Social	Maximise employment opportunities and social benefits	Operation of sewer line	Upgraded recreational area for residents of Randburg and beyond	• Ensure maintenance of vehicle and pedestrian bridge to ensure that the structures are safe for use by the public.	Operator	Monthly

6 MANAGEMENT PLANS

6.1 Heritage chance find procedure

The possibility of the occurrence of subsurface archaeological finds cannot be excluded. Therefore, if during construction any possible finds such s stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMPr. A short summary of chance find procedures is discussed below.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the South African Heritage Resources Agency (SAHRA).

6.2 Waste Management Plan

The following waste management measures will be implemented:

- The contractors must provide and maintain a method statement for "solid waste management". The method statement must provide information on proposed licensed facility to be utilised and details of proposed record keeping for auditing purposes. Waste management must be a priority and all waste must be collected and stored effectively.
- Bins must be clearly marked for ease of management.
- Sufficient closed containers must be strategically located around the construction site to handle the amount of litter, wastes, rubbish, debris, and builder's wastes generated on the site.
- Monitoring of litter, spills, fuels, chemicals and human waste in and around the project area.
- A minimum of one toilet must be provided per 10 persons during construction. Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.
- The Contractor/Operator should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.
- Where a registered disposal facility is not available close to the project area, the Contractor/Operator shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned or buried on site without the necessary approvals.
- General waste generated shall be removed on a frequent basis to prevent the development of a breeding habitat for nuisance pests such as flies and attracting rodents.
-

7 ENVIRONMENTAL MONITORING

A monitoring programme will be implemented for the duration of the construction of the upgrades at Golden Harvest Park. This programme will include (but is not limited to):

- Establishing a baseline through the taking of photographs of identified environmental aspects and potential impact on the park area;
- Monitoring of the spread of alien invasive species around the site;
- Monitoring of stormwater management structures and the effectiveness thereof; and
- Ensuring that re-vegetation is taking place at rehabilitated construction areas.

8 ENVIRONMENTAL AWARENESS PLAN

Environmental awareness is an essential part of the implementation of the EMPr during the construction and operational phases of the project. The purpose of environmental awareness is to make contractors and employees mindful of the environmental sensitivities around the site, the potential environmental impacts as well as the mitigation measures that need to be implemented.

8.1 Environmental awareness training

Environmental awareness training must be implemented during the construction phase of the proposed Golden Harvest Park upgrades project. The ECO will be responsible for compiling the material required for the training, and should include, as a minimum, the following:

- Environmental legal requirements and obligations;
- Environmental sensitive areas;
- Details regarding plant Species of Conservation Concern, and the procedures to be followed should these be encountered;
- Heritage features and the associated chance find procedure should any archaeological finds be made;
- Details of the waste management procedures
- Emergency procedures;
- Relevant mitigation measures to be carried out as listed in the EMPr

All personnel, contractors to undergo environmental awareness training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of protected species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr.

8.2 Basic Rules of Conduct

The following list represents the basic Do's and Don'ts towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks. These are not exhaustive and serve as a quick reference aid. NOTE: ALL new site personnel must attend an environmental awareness/induction presentation. Please inform your foreman or manager if you have not attended such a presentation or contact the ECO.

DO:

- Clear your work areas of litter and building rubble at the end of each day – use the waste bins provided and prevent litter from being blown away by wind.
- Report all fuel or oil spills immediately and stop the spill from continuing.
- Dispose of cigarettes and matches carefully, so to prevent veld fires (arson and littering is an offence).
- Confine work and storage of equipment to within the immediate work area.
- Use all safety equipment and comply with all safety procedures.
- Ensure a working fire extinguisher is immediately at hand if any "HOT WORK" is undertaken e.g. welding, grinding, gas cutting etc.
- Prevent excessive dust and noise.

DO NOT:

- Do not litter - report dirty or full facilities, i.e. full dustbins and dirty or blocked chemical toilets.
- Do not make any fires.
- Do not enter any fenced off or demarcated areas.
- Do not allow waste, litter, oils or foreign materials into any storm water channels or drains or watercourses.
- Do not litter or leave food lying around.

9 COMPLIANCE WITH THE EMPR

The implementation of the management measures specified in Table 5 and Table 6 will be monitored as detailed in the following sections.

9.1 Site inspections

During the construction phase, the construction contractor must appoint a suitable qualified ECO to undertake visual site inspections supported by photographic evidence. The frequency of these visual site inspections must be weekly. The weekly visual inspection findings must be collated into a monthly compliance report to report on the compliance of the construction phase mitigation measures. The monthly site inspection reports should cover the following:

- routine observations of behaviours and practices;
- noting of unusual events, incidents and accidents (natural and human triggered);
- brief statement whether or not conditions of the EMPr are being met; and where it is reportable to authorities;
- possible reasons why conditions are not being met; and
- corrective action plans.

The report should be submitted to the environmental manager and construction contractor. Copies of the inspection reports should be kept on site.

It is recommended that photographs are taken of the site prior to, during and immediately after construction as a visual reference. These photographs should be stored with other records related to this EMP. If captured in digital format, hard copies, in colour, must be kept with all other records relevant to the implementation of this EMP. Photographic reference of wetlands and relocation related aspects should be included.

9.2 EMP Performance Assessment

During the construction phase and subsequent rehabilitation phase, monthly EMPr Performance Assessments as per the NEMA EIA Regulations must be undertaken by the independent Environmental Control Officer (ECO). These reports will be approved/signed-off by both the applicant and Construction Contractor. These reports must be summited to the competent authority on a monthly basis.

Once rehabilitation is completed, a close-out EMP Performance Assessment will be undertaken to confirm that all required rehabilitation activities have been met prior to the contractor leaving site.

9.3 Incident Reporting

An environmental incident is an unwanted event that has an actual or potential (near-hit) negative impact on the environment, affecting the quality of air, land or water, fauna or flora, and / or causing stakeholder concern. A causal link must be able to be made between an operational activity and the event. Environmental Incidents is monitored to establish the following:

- Which repeat incidents occur;
- Has the incident been investigated and the root cause been identified;
- Effectiveness of implementation of preventative and corrective actions; and
- To monitor trends to check the effectiveness of the mitigation measures.

Table 7: Incident register

Name of person reporting the incident	Information on the incident	Date of incident identified	Actions taken as to address the incident	Date of rectification	Signature

9.4 Emergency Procedures

The purpose of this procedure is to:

- document the mechanism by which potential emergency situations and accidents will be identified during the construction phase that can have an impact on the environment; and
- Provide guidelines on the response to actual emergency situations and accidents to prevent or mitigate associated environmental impacts that may occur.

An environmental emergency situation or accident is an unexpected, sudden occurrence with the potential to endanger people or seriously damage the environment, either immediately or with a delayed effect.

Potential emergencies shall be identified and response plans shall be developed for all identified emergencies. These include the following:

- how potential emergency situations and accidents will be identified;
- a guideline for developing emergency preparedness and response procedures, for use by sections on the mine to address section-specific emergencies, stating how to respond to potential emergencies that might have an impact on the environment;
- the process to be followed in the case where an emergency situation or accident occurs;
- when potential emergency situations or accidents and their associated procedures will be reviewed; and
- The frequency at which the procedures shall be tested.

10 ANNEXURE A: EAP CV

Name:	Suzanne	Surname	Van Rooy

CURRICULUM VITAE

Personal Information:	Surname	**Van Rooy**
	First names	**Suzanne**
	Date of birth	1982-05-06
	Gender	Female
	Nationality	RSA
Contact Details:	Telephone number (land line)	012 940 9457
	Cell Number	078 196 6002
	Email Address	suzanne@avde.co.za
Signature:		

Expertise:

Date ***August 2020 to present***	Area of expertise	Project management, environmental authorisations, stakeholder engagement, environmental compliance and performance assessments, environmental feasibility, water use licensing
	Employers Name	Alta van Dyk Environmental Consultants cc
	Employer's locality and contact details	4 Garcia Peak Midlands Estate Centurion 1692 012 940 9457
	Main Activities and Responsibilities	Environmental Assessment Practitioner (EAP) Project Manager Project Planning Project Financing
Date ***1 September 2009 – 31 July 2020***	Area of expertise	Environmental authorisations, stakeholder engagement, environmental compliance and performance assessments, environmental feasibility, water use licensing
	Employers Name	SRK Consulting (South Africa) (Pty) Ltd
	Employer's locality and contact details	265 Oxford Road Illovo 2196 011 441 1111
	Main Activities and Responsibilities	Environmental Assessment Practitioner (EAP) Project Manager Project Planning Project Financing
Date ***7 May 2007 31 August 2009***	Area of expertise	Environmental authorisations, stakeholder engagement, environmental compliance and performance assessments, closure costing, bio-monitoring
	Employers Name	GCS (Pty) Ltd
	Employer's locality and contact details	63 Wessel Road Rivonia 2191 011 803 5726

Name:	Suzanne	Surname	Van Rooy

	Main Activities and Responsibilities	Environmental Assessment Practitioner (EAP) Project Manager Project Planning Project Financing

Years of professional experience

Years of experience as substantiated in the individual CV.

14 Years	Water and Environmental Fields

Qualifications:

Qualification Awarded	**MPhil Environmental Management**
Name of Institution	Stellenbosch University
Date awarded	2013
Qualification Awarded	**Post Graduate Certificate in Education**
Name of Institution	University of Johannesburg
Date awarded	2007
Qualification Awarded	**B.Sc Honours Aquatic Health**
Name of Institution	University of Johannesburg
Date awarded	2005
Qualification Awarded	**B.Sc Natural and Environmental Sciences (Geography and Zoology)**
Name of Institution	University of Johannesburg
Date awarded	2004

Membership of Professional Bodies:

Professional body	**South African Council for Natural Scientific Professions (SACNASP)**
Details of membership	400378/11 Registered as a Professional Natural Scientist
Dates	31 August 2011 to present
Professional body	**Environmental Assessment Practitioners Association of South Africa**
Details of membership	2019/1079 Registered as an Environmental Assessment Practitioner
Dates	February 2022 to present

Language skills: one (1) for low to five (5) for high).

Language	Reading	Speaking	Writing
English	5	5	5
Afrikaans (Mother Tongue)	5	5	5

Computing skills - (1) for low to five (5) for high).

Word	Excel	Power Point	Microsoft Projects
5	5	4	3

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Environmental Authorisations		
	Client	**Sibanye-Stillwater**
	Project	K4 Shaft Parking Area
	Responsibility	Environmental Scientist, project manager, Basic Assessment environmental authorisation process, including coordination of specialists and public participation
	Year	2022
	Client	**Glencore South Africa**
	Project	UG1 Opencast project
	Responsibility	Environmental Scientist, project manager, Scoping and Environmental Impact Reporting environmental authorisation process, including coordination of specialists and public participation
	Year	2022
	Client	**De Beers Consolidated Mines**
	Project	Venetia Limpopo Nature Reserve weather tower
	Responsibility	Environmental Scientist, project manager, Environmental authorisation, including coordination of specialists studies
	Year	2021
	Client	**Lebalelo Water User Association**
	Project	SE2 pipeline and associated infrastructure
	Responsibility	Environmental Scientist, project manager, Basic Assessment environmental authorisation process, including coordination of specialists and public participation
	Year	2021
	Client	**Lebalelo Water User Association**
	Project	Clapham Dam upgrades and associated infrastructure
	Responsibility	Environmental Scientist, project manager, Basic Assessment environmental authorisation process, including coordination of specialists and public participation
	Year	2021
	Client	**City of Ekurhuleni**
	Project	Delmore Park Ext 8 Bulk Services
	Responsibility	Environmental Scientist, project manager, Basic Assessment environmental authorisation process, including coordination of specialists and public participation
	Year	2020 – 2021
	Client	**De Beers Consolidated Mines**
	Project	Venetia Limpopo Nature Reserve Lodge

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Environmental Authorisations		
	Responsibility	Environmental Scientist, project manager, Basic Assessment environmental authorisation process, including coordination of specialists and public participation
	Year	2020 - 2021
	Client	**Anglo Operations (Pty) Ltd**
	Project	Permitting and Environmental feasibility reporting for the Elders Colliery Project (underground coal mine)
	Responsibility	Environmental Scientist, project manager, compilation of the permitting and environmental chapters in support of the feasibility report
	Year	2020
	Client	**Kudumane Manganese Resources**
	Project	Environmental permitting gap analysis for Kudumane's proposed river diversion
	Responsibility	Project management, environmental and water authorisation gap analysis
	Year	2020
	Client	**AngloGold Ashanti**
	Project	Environmental authorisation for Siguiri Mine's Block 2 project
	Responsibility	Environmental Scientist, project management, specialist coordination compilation of the Environmental and Social Impact Assessment Report
	Year	2019 - 2020
	Client	**GAUFF Engineering**
	Project	Development of an Environmental and Social Action Plan for the proposed Bukasa Port's environmental authorisation
	Responsibility	Project coordinator, assistance in compilation of the Environmental and Social Action Plan
	Year	2019
	Client	**Anglo Operations (Pty) Ltd**
	Project	Permitting and Environmental feasibility reporting for the Elders Colliery Project (underground coal mine)
	Responsibility	Environmental Scientist, project management, compilation of the permitting and environmental chapters in support of the feasibility report
	Year	2019
	Client	**Anglo American Coal**
	Project	Environmental feasibility reporting for the SACE Lifex Complex that entails the open cast mining of previously underground coal mines

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Environmental Authorisations		
	Responsibility	Environmental Scientist, compilation of the permitting and environmental chapters in support of the feasibility report
	Year	2019
	Client	**Anglo Operations (Pty) Ltd**
	Project	Environmental authorisation process for the Khwezela Colliery borrow pits project, two borrow pits were required to provide material for construction for reclamation of the Landau 3 Mineral Residue Deposit (MRD)
	Responsibility	Environmental scientist, specialist coordination, compilation of Basic Assessment Reports, project management, public participation
	Year	2018
	Client	**AngloGold Ashanti**
	Project	Specialist environmental and social baseline assessment for Siguiri Gold Mine Block 2, a proposed open cast mine project
	Responsibility	Project management, specialist coordination, compilation of baseline report
	Year	2018
	Client	**Harmony Gold Mining Company**
	Project	Harmony acquiring several assets from AngloGold Ashanti's Vaal River Operations, requiring the compilation of an EMP for the acquired assets
	Responsibility	Environmental Scientist, compilation of EMP
	Year	2017
	Client	**DRA Global**
	Project	Environmental authorisation gap analysis for Sasol's proposed destoning plant
	Responsibility	Environmental scientist, permitting gap analysis
	Year	2017
	Client	**Anglo Operations (Pty) Ltd**
	Project	Environmental authorisation process for the reclamation of the Landau 3 Mineral Residue Deposit (MRD) to facilitate Eskom's powerline relocation
	Responsibility	Environmental scientist, specialist coordination, compilation of Scoping Report, compilation of EIA/EMP report, project management, public participation
	Year	2017
	Client	**Air Liquide**
	Project	Investigation regarding the feasibility of a phytoremediation plant for Air Liquide's excess water at their plant in eMalahleni
	Responsibility	Environmental scientist, project management

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Environmental Authorisations		
	Year	2017
	Client	**DRA Global**
	Project	Feasibility study for Anglo American Platinum's Amandelbult Mine's proposed Merensky chrome recovery plant
	Responsibility	Environmental scientist, report compilation, compilation of the permitting and environmental chapters in support of the feasibility report
	Year	2017
	Client	**Modikwa Platinum Mine**
	Project	Basic assessment process for the upgrade of the Matimatjatji gravel road to tar road at Modikwa Platinum Mine
	Responsibility	Environmental Scientist, compilation of Basic Assessment Report and associated Environmental Management Programme
	Year	2017
	Client	**Southern African Power Pool (SAPP)**
	Project	Environmental and Social Management Framework (ESMF) for SAPP
	Responsibility	Environmental Scientist, development of a generic terms of reference for several specialists for various power producing entities
	Year	2016
	Client	**Anglo Operations (Pty) Ltd**
	Project	Environmental authorisation process for an open cast coal mine (Navigation Pit) and dragline walkway
	Responsibility	Environmental Scientist, compilation of Stakeholder Engagement Plan (SEP) and Government and Social Affairs (GSA) report
	Year	2016
	Client	**Anglo Operations (Pty) Ltd**
	Project	Environmental authorisation process for the Setlabotsha proposed underground coal mine
	Responsibility	Environmental Scientist, specialist coordination, compilation of Scoping Report, compilation of EIA/EMP report, project management, public participation
	Year	2016
	Client	**Anglo Operations (Pty) Ltd**
	Project	Environmental authorisation process for the Elders Colliery underground coal mine and overland conveyor
	Responsibility	Environmental Scientist, specialist coordination, compilation of Scoping Report, compilation of EIA/EMP report, project management, public participation

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Environmental Authorisations		
	Year	2015 - 2016
	Client	**Falcon Oil and Gas**
	Project	Environmental authorisation process for a petroleum exploration right to undertake a seismic survey
	Responsibility	Environmental Scientist, public participation
	Year	2015
	Client	**Anglo American Platinum**
	Project	Environmental authorisation process for the Der Brochen EMP consolidation and amendment to include an open cast mining and tailings storage facility
	Responsibility	Environmental Scientist, project manager, specialist coordination, compilation of Scoping Report, compilation of EIA/EMP report, public participation
	Year	2014 - 2015
	Client	**Anglo American Platinum**
	Project	Environmental authorisation process for the raising of the existing Helena tailings storage facility
	Responsibility	Environmental Scientist, project manager, compilation of Scoping Report, EIA/EMP report, public participation, specialist coordination
	Year	2014
	Client	**Anglo American Coal**
	Project	Environmental authorisation process for the construction of a powerline at Kriel Colliery's Block F
	Responsibility	Environmental Scientist, compilation of a Basic Assessment Report
	Year	2013
	Client	**Anglo Operations (Pty) Ltd**
	Project	Environmental authorisation process for the Elders Colliery underground coal mine and associated mini open-pit
	Responsibility	Environmental Scientist, specialist coordination, compilation of Scoping Report, compilation of EIA/EMP report, public participation, project management
	Year	2012 - 2013
	Client	**Platinum Mile Resources**
	Project	Investigation for a tailings pipeline route for Platinum Mile Resources
	Responsibility	Environmental Scientist, project coordinator, field work, report compilation
	Year	2012
	Client	**Nkomati Mine**

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Environmental Authorisations		
	Project	Environmental authorisation process for a sewage treatment plant at Nkomati Mine
	Responsibility	Environmental Scientist, application for basic assessment, public participation, compilation of a Basic Assessment Report
	Year	2011
	Client	**Aquarius Platinum**
	Project	Environmental authorisation process to extend underground mining at the existing K5 Shaft
	Responsibility	Environmental Scientist, compilation of Scoping Report, compilation of EIA/EMP report
	Year	2010
	Client	**Aquarius Platinum**
	Project	Environmental authorisation process for the rehabilitation of the Marikana open pit by depositing tailings material in pit
	Responsibility	Environmental scientist, specialist coordination, public participation
	Year	2010
	Client	**Anglo American Platinum**
	Project	Environmental authorisation process for the K6 shaft to undertake underground platinum mining
	Responsibility	Environmental Scientist, project management, site audits, environmental training, environmental management progress reports
	Year	2010
	Client	**Coca Cola**
	Project	Source vulnerability assessment of freshwater for Coca Cola's factory in Bloemfontein
	Responsibility	Environmental Scientist, research, report compilation
	Year	2009
	Client	**Simmer and Jack**
	Project	Environmental authorisation process for an underground gold mine (historical Rietfontein Mine)
	Responsibility	Environmental Scientist, project management, mining right application, compilation of Scoping Report, compilation of EIA/EMP report, specialist coordination, public participation
	Year	2009
	Client	**Simmer and Jack**
	Project	Environmental authorisation process to open cast mining of surface deposits and heap leaching of mined ore (PTDs)
	Responsibility	Environmental Scientist, project management, mining right application, compilation of Scoping

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Environmental Authorisations		
		Report, specialist coordination, public participation
	Year	2009
	Client	**Simmer and Jack**
	Project	Environmental authorisation process for open cast mining of surface deposits and heap leaching of mined ore
	Responsibility	Environmental Scientist, project management, mining right application, compilation of Scoping Report, compilation of EIA/EMP report, specialist coordination, public participation
	Year	2009
	Client	**Simmer and Jack**
	Project	Environmental authorisation process for the underground mining of the historical Beta Mine
	Responsibility	Environmental Scientist, project management, mining right application, compilation of Scoping Report, compilation of EIA/EMP report, specialist coordination, public participation
	Year	2008 - 2009
	Client	**Simmer and Jack**
	Project	Environmental authorisation process for open cast mining of surface deposits and heap leaching of mined ore
	Responsibility	Environmental Scientist, project management, mining right application, compilation of Scoping Report, compilation of EIA/EMP report, specialist coordination, public participation
	Year	2008
	Client	**Simmer and Jack**
	Project	Environmental authorisation process for the heap leaching of an historical tailings dam (Glynn's Lydenburg)
	Responsibility	Environmental Scientist, project management, mining right application, compilation of Scoping Report, compilation of EIA/EMP report, specialist coordination, public participation
	Year	2008
	Client	**Simmer and Jack**
	Project	Environmental authorisation process for the rehabilitation of a historical tailings dams (Elandsdrift) by means of heap leaching
	Responsibility	Environmental Scientist, project management, compilation of EIA/EMP report, specialist coordination, public participation
	Year	2007

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Environmental Management Programme and Water Use Licence Audits		
	Client	**Sibanye-Stillwater**
	Project	Baobab Operations Water Use Licence Audit
	Responsibility	Lead auditor, reporting
	Year	2021
	Client	**Sibanye-Stillwater**
	Project	Pandora Mine Water Use Licence Audit
	Responsibility	Lead auditor, reporting
	Year	2021
	Client	**Sibanye-Stillwater**
	Project	Dwaalkop Mine Water Use Licence Audit
	Responsibility	Lead auditor, reporting
	Year	2021
	Client	**Sibanye-Stillwater**
	Project	Doornvlei Mine Water Use Licence Audit
	Responsibility	Lead auditor, reporting
	Year	2021
	Client	**Anglo American Platinum**
	Project	Amandelbult Water Use Licence Audit
	Responsibility	Lead auditor, reporting
	Year	2021
	Client	**Anglo American Platinum**
	Project	Der Brochen EMP Performance Assessment
	Responsibility	Environmental Scientist, lead auditor, reporting, project management
	Year	2016
	Client	**Eskom**
	Project	Lethabo Power Station Water Use Licence Audit
	Responsibility	Environmental Scientist, auditor, reporting
	Year	2012
	Client	**Sasol Nitro**
	Project	Sasol Nitro Phalaborwa Water Use Licence Audit
	Responsibility	Environmental Scientist, auditor, reporting
	Year	2011
	Client	**Aquarius Platinum**
	Project	Kroondal and Marikana Mines EMP Performance Assessment
	Responsibility	Environmental Scientist, auditor, reporting
	Year	2011
	Client	**Aquarius Platinum**
	Project	K6 Shaft EMP Performance Assessment
	Responsibility	Environmental Scientist, auditor, reporting
	Year	2010, 2012

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Environmental Management Programme and Water Use Licence Audits		
	Client	**Impala Platinum**
	Project	Marula Platinum Annual EMP Audit
	Responsibility	Environmental Scientist, auditor, reporting
	Year	2010
	Client	**Anglo American Platinum**
	Project	Polokwane Metallurgical Complex Water Use Licence compliance audit
	Responsibility	Environmental Scientist, auditor, reporting
	Year	2010
	Client	**Aquarius Platinum**
	Project	Kroondal Mine EMP Performance Assessment
	Responsibility	Environmental Scientist, auditor, reporting
	Year	2009

Recent Project Experience: Water Use Licences		
	Client	**Anglo American Platinum**
	Project	Mokopane Waste Water Treatment Plant
	Responsibility	Environmental Scientist, project manager, water use licence application
	Year	2022
	Client	**Glencore South Africa**
	Project	UG1 Opencast project
	Responsibility	Environmental Scientist, project manager, water use licence application
	Year	2022
	Client	**Sibanye-Stillwater**
	Project	K4 Shaft Parking Area
	Responsibility	Environmental Scientist, project manager, water use licence application
	Year	2022
	Client	**Sibanye-Stillwater**
	Project	Kwezi Shaft
	Responsibility	Environmental Scientist, project manager, water use licence application
	Year	2021 - 2022
	Client	**City of Ekurhuleni**
	Project	Delmore Park Ext 8 Bulk Services
	Responsibility	Environmental Scientist, project manager, water use licence application process
	Year	2021 - 2022
	Client	**Lebalelo Water User Association**
	Project	Water use licence amendment
	Responsibility	Environmental Scientist, project manager, water use licence application

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Water Use Licences		
	Year	2021
	Client	**Anglo American Platinum**
	Project	Northam Waste Water Treatment Plant
	Responsibility	Environmental Scientist, project management, Water use licence amendment process
	Year	2021
	Client	**Lebalelo Water User Association**
	Project	Low-level bridge construction
	Responsibility	Environmental Scientist, project manager, water use licence application process
	Year	2021
	Client	**Lebalelo Water User Association**
	Project	SE2 pipeline and associated infrastructure
	Responsibility	Environmental Scientist, project manager, water use licence application process
	Year	2021
	Client	**Lebalelo Water User Association**
	Project	Clapham Dam upgrades and associated infrastructure
	Responsibility	Environmental Scientist, project manager, water use licence application process
	Year	2021
	Client	**De Beers Consolidated Mines**
	Project	Venetia Limpopo Nature Reserve Lodge
	Responsibility	Environmental Scientist, project manager, Water Use Licence Application
	Year	2020 - 2021
	Client	**Isanti Glass**
	Project	Water Use Licence Application for a natural gas pipeline
	Responsibility	Environmental Scientist, project manager, water use licence application process
	Year	2020
	Client	**Anglo Operations (Pty) Ltd**
	Project	Elders Colliery: Drilling of boreholes within wetland
	Responsibility	Environmental Scientist, project manager, water use licence application process
	Year	2019
	Client	**Anglo American Coal**
	Project	General Authorisation for South African Coal Estates (SACE) Lifex Complex
	Responsibility	Compilation of general authorisation report for the drilling of geochemical, geological and geotechnical boreholes
	Year	2019

Name:	Suzanne	Surname	Van Rooy

Recent Project Experience: Water Use Licences		
	Client	**Optimum Coal**
	Project	Updating of the existing Optimum Colliery's Integrated Water and Waste Management Plan
	Responsibility	Environmental Scientist, compilation of an Integrated Water and Waste Management Plan
	Year	2013
	Client	**Imperial Properties**
	Project	Preparation of a Water Use Licence Application for Imperial Properties' Kia Motor Vehicle Dealership
	Responsibility	Environmental Scientist, Compilation of Water Use Licence Application, specialist coordination
	Year	2011