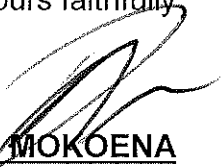


- Indicate if reflected light beams coming from the concentrated solar power system will interfere with aircraft operating pathways.
- Indicate if the solar farm would involve high temperature emissions in surroundings and what environmental risk this could pose.
- Indicate if the facility will produce electric and magnetic fields that will have an impact on the natural surroundings.
- Indicate what impact dust fallout will have on the Solar PV Power Facility.
- The developer should attempt to make use of alternative sources of energy in the development.
- Ensure that there is adequate capacity for the required services (electricity, water, sewage) and that these services are in place before development commence.
- In the case where dirt roads are used, a dust suppression plan should be included in the Environmental Management Plan.
- Water conservation must be actively promoted through water saving technologies.
- Cumulative environmental impacts over time should be taken into account in the report.
- The activities should be in line with the proposals as contained in the Integrated Development Plan, Spatial Development Framework and Environmental Management Framework of the Rand West City Local Municipality.
- In the event of actions that may result in significant environmental damage, an emergency response and contingency plan must be in place to limit the extent of environmental damage.

Trusting the above to be in order

Yours faithfully,

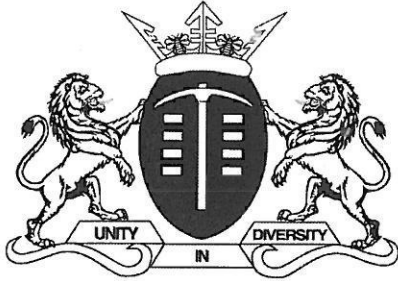


MD MOKOENA
MUNICIPAL MANAGER

Date: 27/01/17

APPENDIX F4

GDARD ACKNOWLEDGE RECEIPT OF THE APPLICATION FORM



agriculture and rural development

Department: Agriculture and Rural Development
GAUTENG PROVINCE

11 Diagonal Street, Diamond Building, Newtown, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 240-2500

Fax: (011) 240-2700

Website: <http://www.gdard.gpg.gov.za>

Reference:	002/17-18/E0062
Enquiries:	Malesela Sehona
Telephone:	(011) 240-3048
Email:	malesela.sehona2@gauteng.gov.za

Bokamoso Landscape Architects & Environmental Consultants

Email/Fax. Lizelle@bokamoso.net

Dear Sir / Madam

Application for Environmental Authorisation: The establishment of the Wheatlands Urban Solar Farm on the Remaining Extent of the Farm Wheatlands 260 IQ

The Department acknowledges having received the application form for environmental authorisation of the above-mentioned project on 13/06/2017.

The application has been assigned the reference number Gaut: 002/17-18/E0062. Kindly quote this reference number in any future correspondence in respect of the application.

Please circulate the draft report to any state department that administers a law relating to a matter affecting the environment to comment.

You are required to submit three (3) copies (**1 full colour hard copy and 2 CDs-PDF**) of the Draft Basic Assessment Report as well as proof of submission to state departments referred to above.

In order to determine whether a biodiversity assessment is required and, if so, which specialist studies are required, please send a shapefile (WGS84 datum; geographic co-ordinate system) of the application site to our biodiversity information service (GDACE_BiodiversityInfo@gauteng.gov.za), the e-mail clearly indicating the project

reference number. Where biodiversity assessment is required; please ensure that it is conducted consistent with the *GDACE Requirements for Biodiversity Assessments*. A copy of this document can be obtained by e-mailing GDACE_BiodiversityInfo@gauteng.gov.za

In terms of Regulation 45 of the EIA Regulations 2014, this application will lapse should you fail to meet any of the time-frames prescribed in terms of these regulations, unless an extension has been granted in terms of regulation 3(7).

Please draw the applicant's attention to the fact that the activity may not commence prior to an environmental authorisation being granted by the Department in terms of Section 24F of the National Environmental Management Act, Act No 107 of the 1998, as amended.

Yours faithfully



Boniswa Belot

Deputy Director: Strategic Administration Support

Date: 19/06/2017

CC: Solar Reserve SA (Pty) Ltd

Att: J Gerber

Email/Fax: n/a

APPENDIX F5

GDARD COMMENTS ON DRAFT BASIC ASSESSMENT REPORT

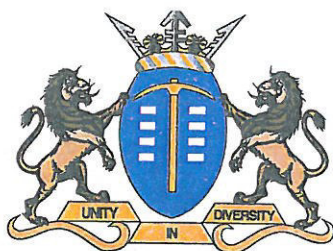


GAUTENG PROVINCE
 AGRICULTURE AND RURAL DEVELOPMENT
 REPUBLIC OF SOUTH AFRICA

FAX COVER

Receiver's Details		Sender's Details	
To:	Lizelle Gregory	From:	Aristotelis Kapsosideris
Company:	Bokamoso Landscape Architects & Environmental Consultants	Section:	Environmental Impact Management
Email:	Lizelle@bokamoso.net	Floor:	28 th Floor, Umnotho Building, 56 Eoff Street
Fax:	086 570 5659		
Tel no.	012 346 3810	Tel:	011 240 3398
Date:		Pages:	03 including fax cover
Re:	GAUT REFERENCE 002/17-18/E0062 COMMENTS ON DRAFT BASIC ASSESSMENT REPORT: THE PROPOSED WHEATLANDS URBAN SOLAR FARM ON THE REMAINING EXTENT OF THE FARM WHEATLANDS 260 IQ, RAND WEST LOCAL MUNICIPALITY		

CC	Rand West Local Municipality	Attn:	Isabel Olivier
		Tel:	011 411 0228
		Email:	isabel.olivier@randfontein.org.za



GAUTENG PROVINCE

AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Reference: Gaut 002/17-18/E0062
Enquiries: Aristotelis Kapsosideris
Telephone: 011 240 3398
E-mail: Aristotelis.kapsosideris@gauteng.gov.za

**Bokamoso Landscape Architects &
Environmental Consultants**
P.O. Box 11375
Maroelana
0161

Tel No: 012 346 3810
Fax No: 086 570 5659
Email: Lizelle@bokamoso.net

Dear Madam

COMMENTS ON THE DRAFT BASIC ASSESSMENT REPORT: THE PROPOSED WHEATLANDS URBAN SOLAR FARM ON A PORTION OF THE REMAINDER OF THE FARM WHEATLANDS 260 IQ, RAND WEST LOCAL MUNICIPALITY

The Draft Basic Assessment Report (DBAR) regarding the abovementioned development received by the Department on 27 June 2017 has reference. There is currently an existing Environmental Authorisation for mixed use development on the proposed site.

The proposal entails construction and operation of a 15MW Urban Solar Photovoltaic power plant and associated infrastructure that will consist of PV panels that encase the solar cells on the above mentioned site that measures approximately 20 hectares with the activity footprint being 16 hectares. The panels will be mounted on metal frames with a height of approximately 600-1000mm above the ground, supported by rammed, concrete or screw pie foundation, and they will face north in order to capture the optimum amount of sunlight.

The site is designated as an Ecological Support Area and a Critical Biodiversity Area having an Orange Listed Plant habitat, a Bioclimatic zone, a pan, non-perennial river and primary vegetation according the Departmental GIS and C-Plan version 3.3.

The Department will like to comment as follows:

1. Alignment of the activity with applicable legislations and policies

The development has a direct bearing on the National Environmental Management Act (NEMA) (Act No. 107 of 1998) (as amended) at both national and provincial levels. The proposed development corresponds with the activity applied for under the Environmental Impact Assessment (EIA) Regulations, 2014, (GN R.983) Listing Notice 1, Activity 1, 11, 14, 27 and 56, Listing Notice 3, Activity 4, 12 and 18 published under the National Environmental Management Act (NEMA) (Act No. 107 of 1998) (as amended).

2. Guidelines GDARD requirements

In addition to what is listed in the DBAR that will be incorporated in the final BAR (FBAR), the Department would require the following documents in order to undertake a thorough review and reach a credible decision on whether to issue an Environmental Authorisation or not.

- a) The application form must be amended to reflect the correct parcel of land affected by this application and to differentiate it from the larger portion of land in which it is situated and has an existing Environmental Authorisation (Gaut 002/15-16/E0261). The correct name must be stipulated in the title of the proposed development.
- b) A detailed storm water management plan for the site (including storm water management measures to be implemented temporarily during the construction phase and permanent measures to be installed for the operational phase) must be developed by a suitably qualified engineer and approved by the Local Municipality.
- c) Where municipal bulk services are required and will not be provided by the local municipality, then details of alternative arrangements in respect of sewage and water provision must be given.
- d) Comments from the Rand West Local Municipality are required.
- e) Comments from Eskom regarding the electrical infrastructure upgrades must also be included.
- f) A fauna and flora assessment must also accompany the final BAR.

3. Alternatives

The report covered all relevant and feasible alternatives except the No-Go alternative which must be assessed and included in the FBAR.

4. Basic Assessment issues on the site

The Draft Basic Assessment Report lists information on environmental issues on the site that will require further investigation as has been mentioned in point 2 above.

5. Locality map and layout plans or facility illustrations

A layout plan is required indicating the position of all the various structures and facilities that will be erected for the proposed development. This must be overlain by a composite sensitivity map indicate buffer zones with a suitable legend and scale.

6. EMPr

A site (project) specific Environmental Management Programme (EMPr) is included in the DBAR and will be assessed in the FBAR. The EMPr must comply with the content requirements as stipulated in Appendix 4 of the Environmental Impact Assessment (EIA) Regulations, 2014.

7. Public participation process

The Public participation process must be done in accordance to the minimum requirements of EIA Regulations 2014. Stakeholders must also be consulted through delivery of draft basic assessment. Note that all comment from interested and affected parties must be incorporated on the Comments and Response report to be attached on the final report. Proof of legible newspaper advert must also be included on the final report.

Proof of correspondence with stakeholders must be included in the final BAR. Should you be unable to submit comments, proof of attempts that were made to obtain comments must be submitted to the Department.

If you have any queries regarding this letter, contact the official at the contact details provided above.

Yours faithfully



Mr. Dan Motaung
Acting Director: Impact Management

Date: 27/07/2017

APPENDIX G

ENVIRONMENTAL MANAGEMENT

PROGRAMME

ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED WHEATLANDS URBAN SOLAR FARM

ON A PART OF THE REMAINING EXTENT OF THE FARM WHEATLANDS 260 IQ,
RAND WEST DISTRICT MUNICIPALITY, GAUTENG



September 2017

Compiled by:

Bokamoso Landscape Architects and Environmental Consultants CC
Tel: (012) 346 3810
Fax: 086 570 5659
E-mail: reception@bokamoso.net
Website: www.bokamoso.net
PO BOX 11375
MAROELANA
0161



Compiled on behalf of:

SOLARRESERVE South Africa Management (Pty) Ltd
Tel: 011 582 6901
159 Rwonla Road
Sinosteel Plaza
Office 11C
Sandton

SOLARRESERVE®

Compliance with Appendix 4 of 2014 NEMA EIA Regulations, as amended

Section	Requirement	Location addressed in EMPr
1 (1)	An EMPr must comply with section 24N of the Act and include—	
(a)	details of—	Refer Report details, page 3
(i)	the EAP who prepared the EMPr; and	
(ii)	the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Refer to Section 1.2
(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;	Refer to Section 1.4 and Figure 3
(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—	Refer to Section 1.3 and 4
(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;	
(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 —	Refer to Section 4
(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;	
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Refer Section 3 and 4
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Refer to Section 4
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Refer to Section 3 and 4
(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Refer to Section 3 and 4
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Refer to Section 4
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Refer to Section 5
(m)	an environmental awareness plan describing the manner in which—	Refer to Appendix A
(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	
(n)	any specific information that may be required by the competent authority.	NA
(2)	Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	NA

Report details

Status	Rev 0
Report Title	Environmental Management Programme for the proposed Wheatlands Urban Solar Farm
Date Submitted	September 2017
Project Consultant	Bokamoso Landscape Architects and Environmental Consultants CC
Prepared by	Adèle Drake, BA. (University of Pretoria) , NQF Level 7 Air Quality Management (University of Johannesburg) Adèle has 15 years' experience in the field of environmental management within the following industries; mining, forestry, renewables and consulting.
Reviewed by	Lizelle Gregory, (BLArch) Lizelle has 25 years' experience in the field of environmental management and is a member of the South African Council of the Landscape Architects Profession (SACLAP Professional Practice Number: 97078
Declaration	I, Adèle Drake, as authorised representative of Bokamoso Landscape Architects and Environmental Consultants CC hereby confirm my independence in terms of Section 13.(1)(a) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) 2014 EIA Regulations as amended.
Copyright Warning	Unless otherwise noted, the copyright in all text and other content (including the manner of presentation) is the exclusive property of Bokamoso Landscape Architects and Environmental Consultants CC.

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1 Project description

1.1 Background

SOLARRESERVE South Africa Management (Pty) Ltd appointed **Bokamoso Landscape Architects and Environmental Consultants CC** to conduct an Environmental Impact Assessment process in terms of the National Environmental Management Act, Act 107 of 1998 for the proposed development, construction and operation of a 9.3MW Urban Photovoltaic (PV) Solar Power Plant and associated infrastructure on less than 20 ha of “leased land”, situated on Part of the Remainder of the Farm Wheatlands 260 IQ, Randfontein Local Municipality, Rand West District Municipality, Gauteng Province.

The total surface area to be impacted by the proposed development including external electrical infrastructure, is approximately **221,000m²**, with a solar PV module coverage of **61,000m²**. The study area falls within the area of jurisdiction of the Rand West City Local Municipality, Gauteng Province.

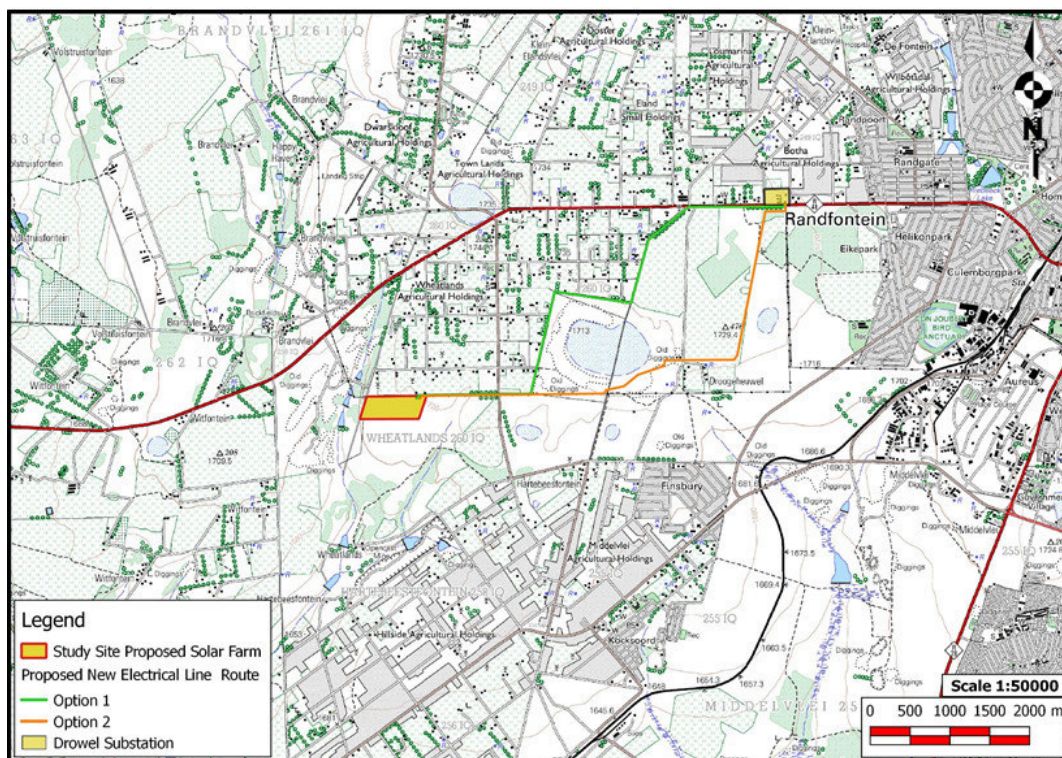


Figure 1: Locality map

The proposed development site is zoned "Undetermined" in terms of the Peri-Urban Areas Town Planning Scheme, 1975 and was historically used for crop cultivation. An Eskom servitude and electrical route alignment servitude transects the northern boundary of the proposed development site from east to west. The servitude for the planned PWV1 runs along the western boundary of the site. A Special Consent Application was submitted to the Rand West City Local Municipality in terms of Section 35 of the Rand West Local Municipality Spatial Planning and Land Use Management By-laws, 2017.

SOLARRESERVE South Africa Management (Pty) Ltd entered into a long term lease agreement with Ariobex Proprietary Limited for a Portion of the Remainder of the farm Wheatlands 260 IQ, who in turn entered into a Sale Agreement with Inland Produce & Marketing Company Pty Ltd for the Remainder of the farm Wheatlands 260 IQ.

1.2 Description of aspects of the (activity) listed activities associated with the proposed Urban Solar Farm

The proposed project entails the construction and operation of a 9.3MW Urban Photovoltaic (PV) Solar Power Plant and associated infrastructure including an 11kV powerline connecting to Drowell substation and extension of Road 6 in order to provide site access. Aspects associated with the listed activities triggered are listed below:

- The development of a battery bank for the storage of vanadium sulphide/chloride electrolyte exceeding 80m³;
- Establishment of a municipal substation and Independent Power Producer (IPP) substation, and construction camp site comprising of prefabricated offices, ablution facilities and parking, necessitating the clearance of more than 1ha of indigenous vegetation;
- Development of a gravel access road from the existing Road 6 to the proposed development site in order to provide site access, as well as internal roads approximately 2 kilometres in length, transecting areas

identified as Critical Biodiversity Area (CBA) and high potential agricultural land.

1.3 Impacts on and risks identified to the receiving environment (proposed development site) and management actions

Geology:

- An *Engineering Geological Investigation Report of a Part of Remainder Wheatlands 260-IQ Mogale City* compiled by Africa Exposed Consulting Engineering Geologists for the approved Mixed Use Development in close proximity to the proposed Urban Solar Farm concluded that part of the Remainder Wheatlands 260-IQ is underlain by quartzite.
- No groundwater seepage was detected in the test pits; however fluctuation of the perched water table can be expected.
- Randfontein falls within an active seismic area associated with stress release as a result of intense mining.

Hydrology & Wetlands:

- A channelled valley bottom wetland occurs approximately 200m to the west of the proposed development site and the proposed 11kV powerline Option 1 passes within 500m of two pans. According to the wetland specialist the Present Ecological State (PES) of the wetland is C = Moderately Modified, and the PES of the two pans is B = largely natural with few modifications. Despite the aforementioned classification, the Risk Assessment conducted in terms of the National Water Act (NWA) (Act no 36 of 1998) Regulations pertaining to Section 21 (c) and (i) water use, concluded that the risk posed by the proposed Urban Solar Farm to the wetland and pans is regarded as low, therefore a General Authorisation is triggered in terms of the NWA.

Fauna and flora:

- The study area is located in the Soweto Highveld Grassland, which is regarded as Vulnerable (Mucina and Rutherford, 2006). The study site has suitable habitat for one Red List species and two Orange List flora species, of which one Orange List species was recorded during the survey. More than half of the study site has been transformed to agricultural land and is invaded by alien vegetation. The Grassland vegetation unit covers about a third of the study site which supports one Orange List species *Boophae Distichia* and potentially provides habitat to Red Listed fauna species. The Grassland vegetation unit was thus classified as having a moderate sensitivity while the rest of the site is considered to have a low sensitivity.
- Search and rescue of protected flora and fauna species occurring within the Grassland vegetation unit must to be carried out by an Ecologist prior to construction commencing.
- A detailed Avifaunal Study is required of the proposed development site and powerline route Option 1, prior to construction commencing, to establish the presence of GDARD Red Listed bird species.

Agricultural:

- An *Agricultural Potential Survey* established the agricultural potential of the property to be low due to shallow soils.
- The risk of losing high agricultural potential soil is thus low.

Cultural /Historical:

- A *Phase 1 Heritage Impact Assessment* concluded that there are no sites of historical or archaeological significance visible on site and therefore the risk posed by the proposed development is regarded as low.

- If archaeological finds are unearthed during construction, all construction activities must be halted and an archaeologist requested to investigate the finds.

Air Pollution (dust and noise):

- During the construction phase of the proposed development, the clearing of land for the construction of infrastructure as well as vehicles travelling on gravel roads could result in dust nuisance. Construction activities could result in noise nuisance to adjacent land owners.
- Dust suppressant will be applied to Road 6 provided access to the site and internal gravel roads will be wet regularly using water carts.
- Construction should be limited to hours of daylight to prevent complaints from neighbours. If construction activities are required to continue after hours, then special written permission has to be obtained from the local authority and adjacent land owners to be provided with 48 hour notice.

Traffic:

- Access to the proposed urban solar farm shall be obtained from Road 6 (D2309) connecting to the R41 to the north.
- Servitude to be registered for the extension of Road 6 across the Remainder of the farm Wheatlands 260 IQ.
- A Wayleave to be obtained from Eskom for the Road 6 extension to pass underneath the electrical servitude.
- The risk of negatively impacting local traffic is low, considering the proposed development site borders agricultural holdings.

Erosion and loss of topsoil:

- Topsoil must be removed from the camp site area and along the proposed Road 6 extension route, prior to site establishment or construction commencing, and must be stockpiled in designated

areas and be protected from washing away during high rainfall events or being damaged by heavy mobile plant, for the purpose of rehabilitation.

- Topsoil must be returned to specific areas where it was removed from upon completion of construction activities for the purpose of rehabilitation.
- The risk of losing valuable topsoil is low due to limited areas to be cleared and mitigation measures proposed.

Waste:

- Waste should be temporarily stored in enclosed containers in a designated area within the camp site, away from natural and artificial drainage lines.
- Waste to be disposed of by the appointed contractor at the Randfontein landfill site at regular intervals.
- The risk of polluting the surrounding environment is regarded as low considering the mitigation measures proposed.

Service provision:

- The proposed urban solar farm shall result in upgrading of electrical infrastructure and capacity by supplying 9.3MW of power to the Rand West City Local Municipality.
- Authorisation required from local authority for connection point and upgrading of electrical infrastructure.
- Wayleaves must be obtained and servitudes registered associated with the 11kV powerline.
- Approval to be obtained for the consumption of water from the Finsbury Reservoir during construction and operational phases of the proposed project.

- Due to this project addressing the need for renewable energy it is regarded as having a positive impact on the surrounding environment and local area.

1.4 Environmental sensitivities

The most significant environmental sensitivities associated with the proposed urban solar farm and associated infrastructure are listed below and presented in

Figure 3:

- The Grassland vegetation unit covering a third of the site has moderate sensitivity due to providing potential habitat for Red Listed fauna species;
- The Grassland vegetation unit has moderate sensitivity due to presence of Orange Listed species *Boophane Distichia*; and
- The valley bottom wetland to the west of the development site and two pans occurring within 500m from the proposed powerline route, have a low environmental sensitivity.

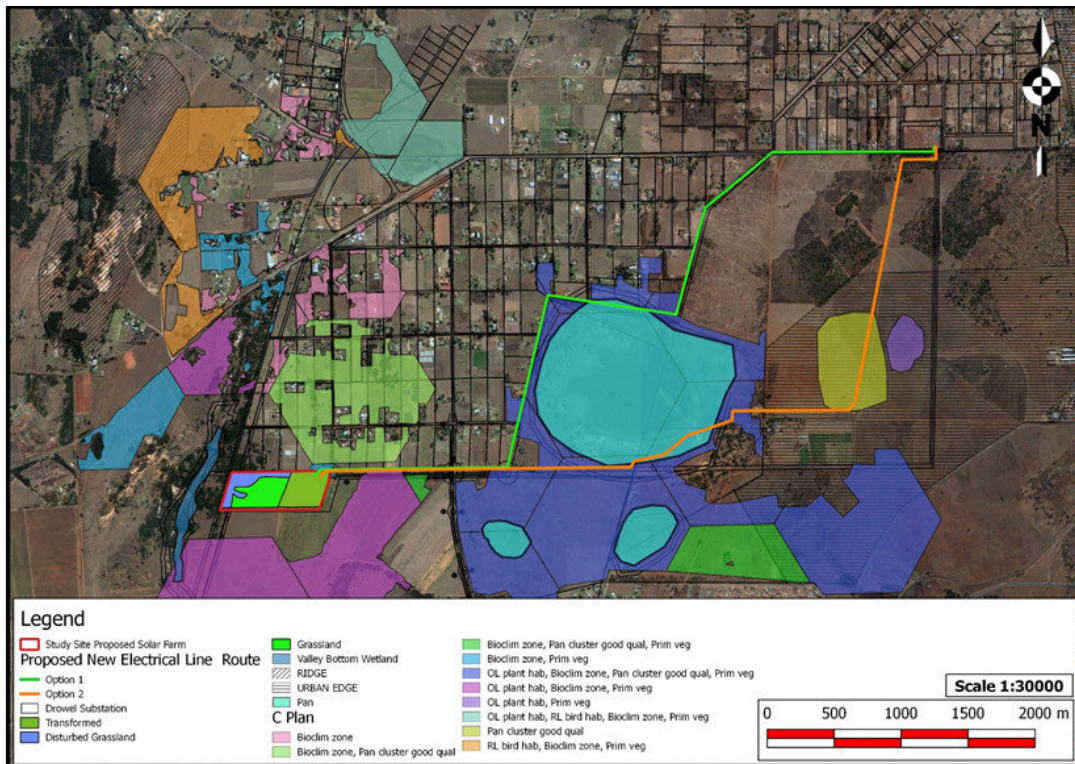


Figure 3: Environmental sensitivities map

2 Environmental Management Programme (EMPr) objectives

The objective of this programme is to comply with Section 24N of NEMA as well as Appendix 4 of the NEMA 2014 EIA Regulations as amended.

In accordance with Section 24N(2) of the National Environmental Management Act, Act 107 of 1998, this EMPr contains management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified for the following phases of the proposed project:

- Planning and design phase;
- Pre-construction phase;
- Construction phase;
- Rehabilitation phase; and
- Operational phase.

3 Roles and responsibility in terms of monitoring and implementation

In order for the EMPr to be successfully implemented all role players involved from planning through to operation, must have a clear understanding of their roles and responsibilities in terms of monitoring and implementing the impacts management actions tabulated in **Section 4**.

3.1 Roles and responsibilities

Holder of Environmental Authorisation (EA)

The holder of the EA is ultimately accountable for ensuring compliance with the EMPr and conditions contained in the Environmental Authorisation. The holder of the EA must appoint an independent Environmental Control Officer (ECO), for the duration of the pre-construction and construction phases, to ensure

compliance with the requirements of this EMPr. The holder must ensure that the ECO is integrated as part of the project team. The responsibility of compliance will be carried across to the individual property owners/lessees upon completion of construction. A copy of this document must be supplied to all contractors and subcontractors appointed, as well as to the operator of the urban solar farm.

Project Manager

The project manager appointed by the holder of the EA is responsible to ensure compliance with this EMPr through delegation of the EMPr to the contractors and monitoring of performance as per the Environmental Control Officer's monthly reports.

Environmental Control Officer (ECO)

An independent Environmental Control Officer (ECO) shall be appointed by the holder of the EA, for the duration of all phases of the proposed project, to ensure compliance with the requirements of this EMPr.

- The Environmental Control Officer shall ensure that the contractor is aware of all the specifications pertaining to the project;
- Any damage to the environment must be repaired as soon as possible after consultation between the Environmental Control Officer, Project Engineer and Contractor;
- The Environmental Control Officer shall ensure that the project staff and/or contractor(s) adhere to all measures stipulated in the EMPr;
- The Environmental Control Officer shall be responsible for monitoring the EMPr throughout the project phases by means of site visits and meetings. This should be documented as part of the site meeting minutes;
- The Environmental Control Officer shall be responsible for the environmental awareness training program;

- The Environmental Control Officer shall ensure that all clean up and rehabilitation or any remedial action required, are completed prior to transfer of properties;
- A post construction environmental audit is to be conducted to ensure that all conditions in the EMPr have been adhered to.

Contractor (C):

The contractors shall be responsible for ensuring that all activities on site are undertaken in accordance with the environmental measures stipulated in this EMPr and that sub-contractor(s) and labourers are duly informed of their roles and responsibilities in this regard.

The contractor will be required, where specified to provide Method Statements setting out in detail how the management actions contained in the EMPr will be implemented.

The contractors will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the environmental legislation, regulations, the EA issued, and this EMPr.

Environmental Site Officer (ESO):

The ESO is appointed by the contractor to monitor, review, and verify compliance with the EMPr by the contractor. The ESO is not an independent appointment but must be a member of the contractor's management team. The ESO must ensure that he/she is involved at all phases of the construction from site clearance to rehabilitation.

Competent Authority:

The competent authority is the relevant environmental department that issued the Environmental Authorisation. The authorities are responsible for ensuring that monitoring is carried out in accordance with the EA and EMPr and other authorisations issued, by means of reviewing audit reports submitted by the ECO and conducting regular site visits.

Other Authorities:

Other authorities associated with this project include the Rand West City Local Municipality, the National Energy Regulator of South Africa (NERSA), the Gauteng Department of Roads and Transport (GDRT) and the Department of Water and Sanitation (DWS).

Parastatals

Parastatals associated with this project include Eskom.

Environmental Assessment Practitioner (EAP):

According to section 1 of NEMA the definition of an environmental assessment practitioner is "the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans, or any other appropriate environmental instruments through regulations".

The EAP must comply with general requirements listed under Section 13(1) of the EIA Regulations, 2014 as amended.

3.2 Reporting Procedures

3.2.1 Reporting of EMPr non-compliance

The ECO should immediately report any breach of the EMPr to the Project Manager in writing. The Project Manager should then be responsible for rectifying the problem on-site after discussion with the contractor. Should this require additional cost, then the EA holder should be notified immediately before any additional steps are taken. The Environmental Control Officer shall report to the EA holder regarding EMPr compliance during monthly site meetings.

3.2.2 Reporting of environmental pollution incidents

All environmental pollution incidents occurring on site must be reported by the ESO to the Environmental Control Officer immediately, in order for the ECO to inform the competent authority, as stipulated in the EA.

*“**pollution**” means any change in the environment caused by*

- (i) substances;*
- (ii) radioactive or other waves; or*
- (iii) noise, odours, dust or heat.*

emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

3.3 Site Instruction Book

The site instruction book will be used for the recording of general site instructions as they relate to the activities on site. Stop work orders will be issued with the

purpose of immediately halting any contractor activities that may pose environmental risk.

3.4 ESO (Environmental Site Officer) Diary Entries

The appointed ESO should keep diary in book form. Each of entries must be available in duplicate, with copies for the Engineer and ESO. These books should be available to the authorities for inspection upon request. All environmental incidents are to be recorded in the ESO diary.

3.5 Methods Statements

The contractor will be required to compile Methods Statements for specific sensitive tasks on request of authorities or ESO. All method statements compiled are subject to measures contained within this EMPr. For each instance wherein it is requested that the contractor submit a method statement to the satisfaction of ESO, the format should clearly indicate the following:

- Why – reason for method statement required;
- What - a brief description of the actions required as part of the task to be undertaken;
- How - a detailed description of the process of actions, methods and materials to be used;
- Where - a description / sketch map of the locality of task; and
- When - the sequencing of actions associated with the task with commencement dates and estimated completion date.

The contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the ESO.

3.6 Record Keeping

All records related to the implementation of this EMPr e.g. site instruction book, ESO diary, methods statements etc. must be kept in a central location at the site office where it is safe and can be retrieved easily. These records should be kept for the duration of construction and operation of the solar facility for scrutiny by any relevant authority.

3.7 Programmes and Plans

Over and above the Method Statements required under Section 3.5 of this EMPr, to be complied as part of the impacts and mitigation measures listed in the table under Section 4, an **Environmental Awareness Plan** appended as Appendix A to this EMPr must be implemented.

A **Waste Management Programme** which is site specific and covers all phases of the urban solar farm, types of waste to be generated, storage methods, storage locations, disposal methods, disposal locations, responsibilities in terms of storage, disposal and removal, frequency of removal and record keeping, must be compiled and implemented.

An **Alien Vegetation Management Programme** applicable to all phases of the urban solar farm stipulating alien vegetation to be removed, methods of removal, disposal locations, responsibilities, frequency of removal etc. must be compiled and implemented.

4 Impact identification, management, mitigation and responsibility per project phase

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
Hydrology	Increased storm water run-off volumes and velocity due to solar farm coverage	No scouring or erosion resulting in siltation wetland as a result of increased run-off	The surface area to be developed will cover approximately 221,000m ² with solar panels covering approximately 61,000 m ² of the 20ha development site. A Stormwater Management Report containing mitigation measures must be compiled.	Stormwater Management Report compiled to protect adjacent wetland	EA holder/EAP	Once-off
Water consumption	Non-availability of water	Secure source of water supply for construction and operational phase	Enter into agreement with local authority for supply of water from Finsbury Reservoir and metering of consumption.	Verify agreement in place	EA holder/EAP	Once-off
Wetland and pans	Wetland and pan integrity and Present Ecological State (PES)	Protect wetland and pans from degradation as a result of solar farm construction and operation	The risk assessment conducted as part of the Wetland Report established the risk posed by the proposed solar farm to the wetland and pans to be low and thus only a General Authorisation (GA) is triggered in terms of the National Water Act, 1998 Regulations. The EA holder must apply for GA from DWS.	Application for GA submitted to DWS	EA holder/EAP	Once-off
Fauna and Flora	Protected Orange Listed flora species occur on site and potential for presence of Red Listed fauna species exist	Preserve protected flora and fauna	Conduct ecological assessment due to occurring within Ecological Support Area and proposed Road 6 extension and 11kV powerline transecting CBAs.	Ecological Assessments conducted	EA holder/EAP	Once-off
		To prevent the destruction of protected fauna and flora discovered during construction	The flora survey conducted established Orange Listed flora species <i>Boophane Distichia</i> occur within the proposed development footprint. A fauna habitat assessment conducted conclude that the Grassland vegetation unit provides suitable habitat for some Red Listed fauna species. EA holder to apply for a Biodiversity permit from GDARD for purpose of conducting search and rescue of protected flora and potential Red Listed fauna species occurring on site.	Biodiversity permit application submitted to GDARD	EA holder/EAP	Once-off
		Protect sensitive areas	If applicable, sensitive areas are to be fenced off in assistance with the ECO, prior to construction commencing and will serve as a 'NO-GO' areas.	Sensitive areas and indigenous flora protected	Project Manager/ ESO	Once-off
		To prevent and reduce the negative impact on minor fauna species residing	No fauna species may be disturbed, trapped, hunted, or killed during the construction phase. Conservation orientated clauses should be built into contracts for construction personnel, complete with penalty clauses	Conservation orientated clause occurs in contracts with contractors.	Project Manager	Once-off

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
		on the site	for non-compliance.			
		To prevent invasion and spread of the area with alien invaders	An alien vegetation management programme must be compiled to ensure removal of alien vegetation throughout all phases of the proposed development.	Confirm alien vegetation management programme compiled	EA holder/ Project Manager	Once-off
Geology and Soils	Loss of topsoil through erosion and siltation of wetland	To prevent the loss of soil and siltation of the wetland	A Stormwater Management Report containing mitigation measures to prevent the loss of topsoil must be compiled.	Confirm Stormwater Management Report compiled to prevent erosion and siltation	EA holder/EAP	Once-off
Ecological integrity	Ecological damage	Avoid erosion and disturbance to indigenous vegetation and flora outside the development footprint	Only designated access point and routes as denoted on the EA approved layout shall be used to access the solar farm site construction vehicles and designated areas for storage of equipment. Clearly mark the site access point and routes on site to be used by construction vehicles. Provide an access map to all contractors whom in turn must provide copies to the construction workers. Instruct all drivers to use access point and determined route.	Contractors issued with approved site layout plan. Access to site, parking area on site, and internal roads must be clearly marked (pegged) prior to construction commencing.	EA holder/ Project Manager	Once-off
			Considering the solar panels will be constructed above ground with a limited footprint for plinths, as much of the natural vegetation should be retained as possible. In case of disturbance, grass endemic to the site shall be replanted.	Limited stripping of topsoil	Project Manager/ Contractor	Once-off
Aesthetics	Pollution of the development site and surrounding area with solid waste due to poor waste management	Strict control over the management and disposal of waste generated on site	Compile a Waste Management Programme addressing all phases of the solar farm with the purpose of managing all waste generated on site.	Waste Management Programme compiled	EA holder/EAP	Once-off
	Hazardous substance spillage	Safe containment of hazardous substances (vanadium sulphide/	The proposed Urban Solar Farm Substation and transformers must be located at point furthest away from the wetland i.e. to the east as per the EA	Hazardous substance storage and bunding	EA holder/ Project Manager	Once-off

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
		chloride electrolyte) to be stored on site	approved layout. The bunding and storage facility of the transformers and hazardous substance containers must comply with Occupation Health and Safety (OHS) Act 1993 and associated Regulations i.e. bunding 110% of actual volume stored, in order to prevent contamination of the wetland in case of spillage or an emergency incident.	complies with Regulations published under the OHS Act.		
	Pollution of the development site and surrounding area with solid waste due to poor waste management	Prevent solid waste from becoming airborne	It is foreseen that the proposed Urban Solar Farm shall generate huge volumes of plastic and polystyrene waste during the construction phase of the project. Enclosed containers must be provided at the site camp for the storage of the aforementioned. The onsite waste management system must make provision for separation of waste for possible recycling or reuse.	Waste containers and waste management budgeted for	Project Manager/ Contractor	Once-off
Social	Nuisance noise generated by construction activities	To minimise the nuisance noise impact associated with the proposed construction activities	Construction activities may only take place during " normal working hours " which are from "sunrise to sunset", Monday through to Saturday, unless the local authority grants written consent for work to continue after hours. Non-working hours and days must be stipulated in project documentation such as contracts to ensure compliance to this EMPr mitigation measure i.e. Sundays, public holidays are non-working days as well as no work allowed after hours unless written consent granted by the local authority and surrounding land owners (farmers) supplied with 48 hour notification.	Contractors working hours must be stipulated in contract agreements. Written consent obtained from local authority for work after dark or on public holidays and Sundays.	EA holder/ Project Manager	Once-off

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
Fauna and Flora	Loss of protected Vegetation	To minimize damage to/loss of protected species	Biodiversity permit conditions to be implemented in terms of conducting search and rescue of protected flora and potential Red Listed fauna species occurring on site.	Compliance to Biodiversity permit conditions	Contractor/ ESO/ ECO	Continuous
			Construction site to be established under supervision of ECO/ESO.	Visual inspections of impact on vegetation	Contractor/ ESO/ECO	Continuous
		To prevent invasion and spread of alien invaders	An alien vegetation management programme must be implemented to ensure removal of alien vegetation throughout all phases of the proposed development.	Alien vegetation management programme implemented	Contractor/ ESO/ECO	Continuous
Geology and Soils	Loss of topsoil through erosion and siltation of wetland	To prevent the loss of soil and siltation of the wetland	Suitable locations should be selected on site to place the topsoil as well as spoil stockpiles as to avoid release of materials. All stockpiles must be appropriately positioned and managed in line with good engineering principles.	Visual inspections to confirm stockpile areas are marked out at suitable locations.	Contractor/ ECO	Before construction activities commence
Geology and soils	Loss of topsoil and damage to seedbank	Strip topsoil to depth of 150mm for purpose of rehabilitation	Considering the solar panels will be constructed above ground with a limited footprint for plinths, as much of the natural vegetation should be retained as possible. If topsoil is removed during construction, it should be returned upon completion of construction as part of site rehabilitation due to containing the seedbank of the sites endemic vegetation. Areas where construction is to take place is to be stripped of topsoil to a depth of at least 150mm (shallow soils according to Agricultural Potential Survey).	Visual inspections to confirm vegetation only removed from designated areas. Topsoil stripped to 150mm depth and stockpiled in secure location for purpose of rehabilitation.	Contractor/ ESO/ECO	Continuous
		Prevent the loss of topsoil	Stockpiling of topsoil will only be done in designated areas where it will not interfere with the natural drainage paths of the environment and must not be higher than 1, 5 m. In order to minimise erosion of topsoil and siltation and disturbance to existing vegetation, it is recommended that stockpiling be done in already disturbed/exposed areas i.e. in close proximity to the camp site. Remove vegetation only in areas designated.	Visual inspections to confirm no loss of topsoil. Excavated materials correctly stockpiled < 1.5m high. No visible signs of erosion of topsoil.	Contractor/ ESO/ECO	Continuous

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
	Soil erosion due to increased run-off	To prevent erosion, siltation & water pollution	Implement Stormwater Management Report recommendations	Audit conformance to Stormwater Management Report recommendations	Contractor/ ESO/ECO	Monthly
	Compaction of soil and destruction of seed bank	To prevent the compaction of soil and destruction of seed bank	Construction vehicles should only use the designated routes as designated in the EA approved site layout. Topsoil stripped should be stockpiled in areas where this material will not be damaged, removed, or compacted. This stockpiled material should be used for the rehabilitation of the site. All compacted areas should be ripped prior to them being rehabilitated by the contractor.	Visual inspection to ensure no evidence of driving over stockpiled topsoil.	Contractor/ ESO/ECO	Weekly
	Contamination of soil	Prevent contamination of soil	There should not be any unnecessary vehicle maintenance on site and if a vehicle needs to be serviced it should be sent to a registered/certified vehicle garage. Each vehicle should be equipped with a drip tray which must be used when not in operation. Should the soil be contaminated by the leaking of fuel the following should apply: The contaminated soil should be removed to a depth of 200 mm and disposed of as hazardous waste. Thereafter the area should be treated with an organic solvent.	Visual inspection to confirm that no vehicle maintenance occurs on site and no signs of soil pollution	Contractor/ ESO/ECO	Weekly
Hydrology	Pollution of ground and surface water	Prevent the pollution of the ground- and surface water	Implement conditions associated with GA issued	Audit compliance with GA issued	Contractor/ ESO/ECO	Monthly
			Chemical toilets may not be placed within the aquatic buffer zone or within 100m from a watercourse. Removal of sewage must be address in accordance with site specific Waste Management Programme compiled.	Audit compliance with site specific Waste Management Programme	Contractor/ ESO/ECO	Monthly
		Prevent pollution of ground and surface water by hydrocarbons from mobile plant	Drip trays should be provided for all mobile plant on site for the construction period, while parked; All mobile plant should be equipped with a hydrocarbon spill kit to facilitate cleaning up any spills as a result of a breakdown;	Visual inspections to ensure no signs of hydrocarbon spillages on site.	Contractor/ ESO/ECO	Weekly

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
			An impermeable plastic sheet must be placed underneath the mobile plant to be worked on to prevent ingress of hydrocarbons into soil or water. Any spillages on the impermeable sheet must be cleaned with a hydrocarbon spill kit prior to removing the sheet. No leaking vehicle shall be allowed on site. The mechanic/the mechanic of the appointed contractor must supply the environmental officer with a letter of confirmation that the vehicles and equipment are leak proof.	Audit compliance with site specific Waste Management Programme		Monthly
Aesthetics	Hazardous substance spillage	Prevent spillage of large quantities of hazardous substances to be stored on site	Battery storage facility for vanadium sulphide / chloride electrolyte must be inspected to ensure compliance with the OHS Act Regulations related to Hazardous Substance storage.	Visual inspections of hazardous substance storage area	Contractor/ ESO/ECO	Weekly
		To minimize pollution of surface and groundwater resources due to spilling of hazardous substances	Hydrocarbons and chemicals must be confined to specific secured areas within the site camp. These areas must be banded with adequate containment (at least 1.5 times the volume of the substance stored) for potential spills or leaks. All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site. No bins containing organic solvents such as paint and thinners shall be cleaned on site. All spillages must be cleaned up with spillsorb product and contaminated soil removed as hazardous waste. Hazardous waste must be disposed of by a registered contractor at an appropriately registered disposal site. Safe Disposal Certificates must be kept as records on site.	Visual inspections to ensure no signs of hydrocarbon spillages on site. Audit compliance with site specific Waste Management Programme	Contractor/ ESO/ECO	Weekly Monthly
		To minimize pollution of surface and groundwater resources by cement	The mixing of concrete shall only be done at specifically selected sites outside the aquatic buffer zone, on mortar boards (impermeable surface/tray) or similar structures to prevent run-off into the adjacent wetland.	Visual inspections to ensure no signs of concrete spillages on site.	Contractor/ ESO/ECO	Weekly

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
		To minimize pollution of surface and groundwater resources due to effluent	No effluent (including effluent from any storage areas) may be discharged into any water surface or groundwater resource.	Visual inspection of adjacent wetland to ensure not impacted by effluent emanating from site.	Contractor/ ESO/ECO	Weekly
Aesthetics	Pollution of the development site and surrounding area due to poor waste management	Strict control over the management and disposal of waste generated on site in accordance with Waste Management Programme	Implement Waste Management Programme	Audit conformance to Waste Management Programme	Contractor/ ESO/ECO	Monthly
			Temporary waste storage locations on site shall be determined and designated. These storage points shall be accessible by waste removal trucks and these points should not be located in sensitive areas, areas highly visible from the properties of the surrounding land-owners/tenants.	Inspections to ensure waste storage locations marked out and suitable bins are provided for waste at these locations.	Contractor/ ESO/ECO	Weekly
Aesthetic	Waste generation - Visual impact and air pollution	To minimise the visual impact of the proposed activity	Waste containers should be enclosed and waste should be separated. The contractor shall ensure good housekeeping.	Inspections to ensure waste managed in accordance with site specific waste management programme	Contractor/ ESO/ECO	Weekly
Ecological integrity	Damage to natural environment	Raise environmental awareness of all persons involved with management and construction of the site	Implement Environmental Awareness Plan attached as Appendix A to this EMPr	Verbally test understanding of environmental awareness of contractor personnel	Contractor/ ESO/ECO	Weekly
	Fire risk to site and surrounding land users	To decrease fire risk	Labourers are not allowed to stay (sleep over) on site. No open fires are allowed on site. Smoking is only allowed in designated areas (signposted) and cigarette buds may not be disposed of in the open veldt.	Inspect and verbally confirm: <ul style="list-style-type: none"> ● No signs of burnt veldt. ● Fire beaters present in 	Contractor/ ESO/ECO	Weekly

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
			<p>Fire extinguishers to be provided in all vehicles and fire beaters must be available on site.</p> <p>Emergency numbers/contact details must be available on site, at the site camp and with each supervisor.</p>	<p>vehicles and on site.</p> <ul style="list-style-type: none"> Emergency numbers displayed. 		
Social and Aesthetic	Noise impact	To maintain noise levels below "disturbing" as defined in the national and provincial Noise Regulations	Construction activities may only take place during " normal working hours " which are from "sunrise to sunset", Monday through to Saturday, unless the local authority grants written consent for work to continue after hours.	Verify by inspecting Complaints Register, no complaints from surrounding residents and other Stakeholders.	Contractor/ ESO/ECO	Weekly
	Dust impact	Minimise dust from the site	<p>Dust suppressant to be applied to Road 6 and extension thereof to site as per Outline Scheme Services report recommendation.</p> <p>Dust suppression of working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution, impacting on adjacent residential areas in order to ensure compliance with the National Dust Regulations.</p>	Verify by inspecting Complaints Register, no complaints from surrounding residents and other Stakeholders.	Contractor/ ESO/ECO	Weekly
	Safety and security	To ensure the safety and security of the public	<p>Signage indicating the operations of heavy vehicles on access roads and on the construction site is to be erected in accordance with OHS Act Regulations.</p> <p>The following actions would assist in management of safety along the road:</p> <ul style="list-style-type: none"> Adequate road traffic signs; Erect proper signs indicating the danger of the excavation in and around the site; and All areas that are excavated to a depth of 1.5 m and more must be marked with barrier tape to prevent injury. 	Visual inspection of compliance	Contractor/ ESO/ECO	Weekly
	Influx of people from other areas	Employ locals	Local labourers must be given employment preference.	Confirm people from local community	Contractor/ ESO/ECO	Monthly

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
	seeking employment			employed on site		
Cultural heritage	Loss of or damage to archaeological sites	Preserve archaeological finds (if unearthed during construction)	Contractors to be trained in identification and reporting of archaeological finds. If archaeological finds are unearthed during construction, archaeologist to be called to assess find.	Confirm heritage training provided as part of Environmental Awareness	Contractor/ ESO/ECO	Monthly
Hazardous substances	Hazardous substance spillage	Safe containment of hazardous substances (vanadium sulphide/ chloride electrolyte) to be stored on site	The bunding and storage facility of the transformers and hazardous substance containers must comply with Occupation Health and Safety (OHS) Act 1993 and associated Regulations i.e. bunding 110% of actual volume stored, in order to prevent contamination of the wetland in case of spillage or an emergency incident. The battery storage facility must comply with the West Rand District Municipality By-laws and Rand West City Local Municipality by-laws.	Legal compliance in terms of hazardous substance storage	Contractor/ ESO/ECO	Monthly
Water consumption	Non-availability of water	Secure source of water supply for construction and operational phase	Install and regularly fill 5000l Jo-Jo tanks for potable water use and dust suppression.	Water tanks installed	EA holder/EAP	Once-off

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Rehabilitation phase						
Geology and soils	Loss of soil and seedbank	Ensure rehabilitation of disturbed areas	Compacted soils shall be ripped at least 200 mm deep.	Visual inspection to confirm natural grass have re-established	Contractor/ ESO/ECO	Monthly
Fauna and Flora	Destruction of protected vegetation	Rescued flora returned to development footprint or similar habitat	Comply with Biodiversity permit requirements relating to return or relocation of rescued protected flora.	Audit compliance to Biodiversity permit	Contractor/ ESO/ECO	Monthly
	Spread of invasive and alien vegetation	To prevent invasion and spread of the area with alien invaders	Alien vegetation management programme must be implemented to ensure removal of alien vegetation, following construction.	Confirm alien vegetation management programme compiled	EA holder/ Project Manager	Once-off
	Incomplete rehabilitation	To protect the existing indigenous flora and fauna	Upon completion of construction and rehabilitation the ECO should assess and approve the adequacy of the rehabilitation and ensure that sufficient levels of rehabilitation have been undertaken to allow re-establishment of the necessary vegetation. Rehabilitation works should be monitored until 80% of vegetation has been established.	ECO to audit site rehabilitation	Contractor/ ESO/ECO	Once off
Aesthetic	Pollution of environment due to illegal dumping of waste	Waste removed from construction site to be disposed of applicable registered landfill site	All construction waste has to be removed from the site during the decommissioning phase and prior to the project being regarded as operational. Safe Disposal Certificates are to be retained on site. Ensure compliance to Waste Management Programme	Audit compliance to Waste Management Programme	Contractor/ ESO/ECO	Once off
Legal compliance	Compliance with EA/EMPr/GA	ECO to conduct final site inspection and audit	ECO to conduct final inspection on site and sign off that the EMPr has been complied with or identify breaches. Submit report to GDARD for approval.	ECO to audit EMPr compliance	Contractor/ ESO/ECO	Once off

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Operational Phase						
Hydrology	Soil erosion and siltation of wetland	Prevent siltation of adjacent wetland due to erosion	Implement Stormwater Management Report recommendation related to operational phase	Audit conformance to Stormwater Management Report recommendations	O&M/ECO	Monthly
	Pollution of ground and surface water	Prevent the pollution of the ground- and surface water due to poor sewage management	Implement conditions associated with GA issued	Audit compliance with GA issued	O&M/ECO	Monthly
			<p>During the operational phase, a conservancy tank of approximately 5000l will be utilized to service the site. The developer will arrange with a Septic Tank Cleaners company to empty the conservancy tank on a regular basis by means of a honey sucker during the operational phase.</p> <p>Sewage removed from the Septic tank will be treated at the Hannes Van Niekerk Sewer treatment works located in Westonaria which currently has a capacity of 64ML/d.</p> <p>Safe disposal certificates to be retained as records on site.</p>	Audit compliance in terms of disposal	Contractor/ ESO/ECO	Monthly
Aesthetics	Waste generation - Visual impact and air pollution	To minimise the visual impact of the proposed activity	<p>Waste containers should be enclosed and waste should be separated.</p> <p>Good housekeeping shall be ensured by Operational and Maintenance (O&M).</p>	Inspections to ensure waste managed in accordance with site specific Waste Management Programme	Contractor/ ESO/ECO	Weekly
	Pollution of the development site and surrounding area with solid waste due to poor waste management	Strict control over the management and disposal of waste generated on site	Implement Waste Management Programme with the purpose of managing waste generated on site during operational phase.	Waste Management Programme implemented	O&M/ECO	Monthly

Environmental Management Programme (EMPr) for Wheatlands Urban Solar Farm and Associated Infrastructure

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Operational Phase						
	Hazardous substance spillage	Prevent spillage of large quantities of hazardous substances to be stored on site	Battery storage facility for vanadium sulphide / chloride electrolyte must be inspected to ensure compliance with the OHS Act Regulations related to hazardous substance storage. The battery storage facility must comply with the West Rand District Municipality By-laws and Rand West City Local Municipality by-laws.	Visual inspections of hazardous substance storage area	O&M/ECO	Monthly
Ecological integrity	Damage to natural environment	Raise environmental awareness of all persons involved with operation of the site	Implement Environmental Awareness Plan attached as Appendix A to this EMPr	Verbally test understanding of environmental awareness of operations personnel	O&M/ECO	Monthly
	Fire risk to site and surrounding land users	To decrease fire risk	Emergency numbers/contact details must be available on site.	Inspect and verbally confirm: <ul style="list-style-type: none"> Emergency numbers displayed. 	O&M/ECO	Weekly
	Loss of protected Vegetation	To prevent invasion and spread of alien invaders	Alien vegetation management programme must be implemented to ensure removal of alien vegetation during development phase of proposed project.	Confirm alien vegetation management programme implemented	O&M/ECO	Continuous
Access	Erosion of access road and dust entrainment due to poor road maintenance	Maintain access and internal roads to prevent erosion	Ensure access road and internal roads are graded and stormwater management structures maintained in accordance with Stormwater Management Report mitigation measures to prevent erosion and entrainment of dust.	Inspect roads	O&M/ECO	Monthly
Water consumption	Non-availability of water	Secure source of water supply for construction and operational phase	Regularly fill 5000l Jo-Jo tanks for potable water use.	Verify availability of potable water on site	O&M/ECO	Monthly

Decommissioning shall be applied for once solar farm reaches end of life.

5 EMPr review and reporting on compliance

The EMPr is a dynamic document which should be reviewed and amended as the need arises, in accordance with the EIA Regulations.

In terms of Section 32 (1) of the EIA Regulations, 2014 as amended, if the project scope is changed subsequent to EA being granted, then a Part 2 Amendment Application together with an amended EMPr has to be subjected to another public participation process of at least 30 days.

In terms of Section 34 (1) and (2) of the EIA Regulations, 2014 as amended the holder of the EA must have the EA and EMPr audited by an independent person and submit an audit report to the relevant authority at intervals stipulated in the EA. If the auditor finds insufficient mitigation measures or non-compliance to the EA or EMPr, the holder must submit recommendations to the competent authority to amend the EMPr together with the audit report.

The audit report and amended EMPr must be made available to potential and registered interested and affected parties within 7 days of submission to the competent authority.

In terms of Section 35 (1) and (2) of the EIA Regulations, 2014 as amended the competent authority may approve the amended EMPr resulting from an audit or request further amendments to manage and mitigate environmental impacts.

In terms of Section 37 of the EIA Regulations, 2014 as amended the holder of the EA may apply for amendment of the EMPr from the competent authority following publications of the amended EMPr for 30 day review as part of public participation process.

APPENDIX A: ENVIRONMENTAL AWARENESS PLAN

SITE ENVIRONMENTAL RULES

TOOLBOX TALK 1: Site environmental rules.

ISSUE: Do's and Don'ts of the Construction Site.

PRESENTER:

What is the Environment?

Environment (NEMA, 1998) - means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- microorganisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;

What is the Pollution?

Pollution (NWA, 1998) - means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it -

- (a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or
- (b) harmful or potentially harmful -
 - (aa) to the welfare, health or safety of human beings;
 - (bb) to any aquatic or non-aquatic organisms;
 - (cc) to the resource quality; or
 - (dd) to property;

What is an EMPr?

Environmental Management Programme – refers to a document that is used to investigate, assess and evaluate the impacts that a development is likely to have on the environment during the construction, operation and decommission phases.

Why should we protect the Environment?

- It is our right to live in a clean and healthy environment.
- To ensure that future generations live in a clean environment.
- To prevent the loss of species diversity.
- To prevent loss of ecological goods and services

Environmental Site Rules:

- *No urinating or defecating on site. Toilet facilities provided at the construction site must be used at all times.*
- *Do not waste water.*
- *No littering.*
- *No washing of cars or other vehicles on site.*
- *No open fires allowed on site.*

DATE:	TIME:	LOCATION:
TOPIC:	Site environmental rules	
ISSUE:	EMPr compliance	



DISPENSING, STORAGE AND DISPOSAL OF HYDROCARBONS/CHEMICALS**TOOLBOX TALK 2:** Dispensing, storage and disposal of hydrocarbons/chemicals**ISSUE:** Do's and Don'ts.**What is a Hydrocarbon (mineral oil)?**

Diesel/hydraulic oil etc. are hydrocarbons and therefore classified as hazardous substances. A hazardous substance is any material that poses an unreasonable risk to people, property and the environment. The environment is our surroundings, soil, air and water.

Chemicals

Vanadium sulphide/chloride electrolyte is stored on site for use within the urban solar farm. These chemicals are hazardous and should be used and stored in accordance with the relevant Material Safety Data Sheet (MSDS).

Hydrocarbons/chemicals are toxic if swallowed by humans or animals. The presence of Hydrocarbons/chemicals in water can also prevent aquatic organisms from breathing and may result in aquatic kills depending on the extent of the spill. Hydrocarbons should therefore be prevented from contaminating ground or surface water.

Note:

Only 1 litre of oil can contaminate a soccer field size of water. It is therefore essential to prevent spillages as far as possible and to ensure that if they do occur that they are properly cleaned up and that the resulting material is disposed of correctly.

What is a spillage?

All situations involving the spilling of a Hydrocarbons/chemicals on to the floor or ground or in water, irrespective of volume.

How do we manage this?**1 Correct Storage:**

- Refer to issues around the bunded area.
- Should be contained in waterproof and leak proof containers. Any containers or points that are leaking to be addressed immediately.
- Should be stored in a dedicated area on site.

2 Correct Dispensing:

- Should check lines for leaks before starting with dispensing.
- Place drip tray so as to catch any drips. How would you and into what would you empty the drip tray?
- Ensure all residual Hydrocarbons/chemicals is drained from pipe before disconnecting.

3 Maintenance of vehicles and equipment

- Check equipment and vehicles for leaks daily. Report leaks to supervisor immediately. Contain slow drips using a drip tray.
- Do not use excessive grease when greasing vehicle or equipment parts.

4 Correct Spillage Handling and Disposal:

- Clean all spillages immediately. This means treat using spill kit and remove spillage.
- Dispose in hazardous waste drum or skip.
- Report spillage to supervisor.

DATE:	TIME:	LOCATION:
TOPIC:	Dispensing, storage and disposal of Hydrocarbons/chemicals	
ISSUE:	Spillage	

USE AND MAINTENANCE OF DRIP TRAYS

TOOLBOX TALK 3: Use and maintenance of drip trays.

ISSUE: Do's and Don'ts of the Construction Site.

What is a Drip Tray?

A drip tray is a plastic or metal container that can be used to contain a liquid. A container is suitable to be used as a drip tray, if

- It is heavy enough not to be blown away;
- Has no holes in the base or side from which a liquid could leak; and
- The sides are high enough that the liquid will not overflow.

The drip tray must be sized according to the amount of liquid that needs to be captured and contained.

What is the risk?

There is a risk of spillage of hydrocarbons or other chemicals under the following circumstance:

- Various equipment and vehicles may develop slow hydrocarbon leaks (oils);
- During maintenance of vehicles and equipment, there is a risk that hydrocarbons, grease, diesel/petrol may be spilt;
- Refueling of equipment and vehicles;
- During decanting of chemicals such as paint and curing compound etc., some of the chemicals may be spilt on the ground; and/or
- While applying paint or grease you need something to put the tin, paint brush or roller into.
- Temporary storage of chemicals at point of use

Under all these circumstances the correct use of a drip tray could prevent a spillage on to the ground or into water.

What is correct use of a drip tray?

Note that the use of a drip tray should be an additional precaution to other controls. For example:

- Decanting of chemicals should be done within a bunded area as far as possible. A funnel should be used when discharging liquids into a container with a small opening. Spillage of chemicals should always be avoided. A drip tray should be used only as a precaution in case there is a spill.
- Vehicles and equipment should be checked daily and maintained correctly to prevent leaks. Drip trays should be placed underneath equipment and vehicles when stationary as a precaution in case there is a leak.
- Temporary storage of chemicals at point of use. Chemicals should always be returned to chemical store at the end of the shift.
- When refueling vehicles or equipment a drip tray should be used to capture any excess or spillages from the nozzle of the hose. There should be no overfilling of vehicles and equipment.
- Drip trays may be used for the placing of paint brushes and rollers while applying curing compound.

Correct maintenance?

Drip trays should be maintained empty. Drip trays are to be checked daily, cleaned and emptied into the hazardous waste skip. Drip trays that are not being used should be stored under cover to prevent them filling with rain water.

DATE:	TIME:	LOCATION:
TOPIC:	Use and maintenance of drip trays	
ISSUE:	Spillage	



USE, HANDLING AND STORAGE OF HAZARDOUS CHEMICALS

TOOLBOX TALK 4: Use, Handling and storage of hazardous chemicals

ISSUE: Do's and Don'ts of the Construction Site.

What is a Hazardous Chemical?

These are substances that may be dangerous to humans and or the environment if not handled, stored and disposed of correctly. The definition of a hazardous chemical is based on the amount, concentration or inherent properties of the waste.

e.g. Consumption of Alcohol,

Amount – the effect of 1 glass versus 5 litres. It is the same with a chemical. One drop may not be harmful but continuous dripping over a period of a week could be very harmful

Concentration – Beer as opposed to wine, there is alcohol in both but there is more alcohol in the wine than in the beer. It is the same with some chemicals

Inherent properties – Methylated spirits versus Beer, one bottle of methylated spirits could kill you but one beer won't because of the type of alcohol in the beer versus that in methylated spirits. It is the same with some chemicals

What is the risk?

There is a risk of spillage of chemicals under the following circumstance:

- During decanting of chemicals such as paint and curing compound etc, some of the chemicals may be spilt on the ground; and/or
- While applying paint or grease you need something to put the tin, paint brush or roller into.
- Temporary storage of chemicals at point of use

What are the correct use, handling and storage of hazardous chemicals?

- Hazardous chemicals should be stored in a roofed, bunded area that is kept locked. Entry of rain water into the bunded area must be prevented.
- All chemicals or chemical contaminated items should be stored within the bunded area. NOT on the wall of the bunded area or outside the bunded area on a concrete slab.
- Empty chemical containers and drums should be stored in the bunded area until removed or smaller containers thrown in the hazardous waste skip e.g. paint tins, paint brushes or rollers.
- Decanting of chemicals should be done within a bunded area as far as possible. A funnel should be used when discharging liquids into a container with a small opening. Spillage of chemicals should always be avoided.
- All chemical containers should be labelled. No food related containers are to be used for the storage of chemicals e.g. cool drink bottles.
- Temporary storage of chemicals at point of use. Chemicals should always be returned to chemical store at the end of the shift.
- Drip trays may be used for the placing of paint brushes and rollers while applying curing compound or shutter oil.
- All these chemicals must have an MSDS (material safety data sheet). This information is required to ensure that all chemicals are stored, handled and disposed of in the best possible way to ensure the safety of staff and the environment.

Correct maintenance of bunded area

Any cracks in the walls or floors and holes in the roof are to be repaired as soon as possible. Bunded area is to be kept free of spillages. Any spillages are to be cleaned up and disposed of as hazardous waste.

DATE:	TIME:	LOCATION:
TOPIC:	Use and storage of hazardous chemicals	
ISSUE:	Spillage	



WASTE SEGREGATION AND SEPARATION

TOOLBOX TALK 5: Waste segregation and separation.

ISSUE: Do's and Don'ts of the Construction Site.

What is waste separation?

This is the separation of hazardous and general waste

Some examples of hazardous wastes generated on site:

Used oils (hydrocarbons), contaminated spill absorbent or sand, paints, batteries (acid), fluorescent tubes (mercury), concrete.

Some examples of general waste generated on site:

Cool drink bottles, chip packets, plastic, leftover food, paper etc.

Correct handling, storage and disposal

- General waste must be disposed of in the green wheelie bins or marked skips provided
- Hazardous waste to be thrown in marked skips provided or 210L marked drums provided in certain areas
- The two must not be mixed!
- If hazardous waste is found in general waste, all must be disposed of as hazardous waste.

Why?

- The two waste types are disposed of at different waste dumps. The general waste dump is built only to deal with general waste. Hazardous waste accidentally disposed of here, could pollute the water and harm the people in the area.
- Disposal of general waste at a hazardous waste site results in an unnecessary cost to the company, as it is a lot more expensive to dispose of hazardous waste than general waste.

What is an incident?

- Mixed waste in any of the skips or bins.

DATE:	TIME:	LOCATION:
TOPIC:	Waste segregation and separation	
ISSUE:	Waste management	

WASTING DRINKING WATER

TOOLBOX TALK 6: Definitions, EMP, and Site Environmental Rules.

ISSUE: Do's and Don'ts of the Construction Site.

What are examples of wasting of drinking water?

- Not turning a tap off properly after use.
- Poor maintenance of water fittings resulting in continuous leaking or dripping.
- Overfilling and / or overflowing of water containers.

Why should we not waste drinking water?

- Good, clean water is scarce in South Africa and expensive to produce and must therefore be used sparingly. Remember anything we put into the water (river, lake or dam) has to be removed before we can drink the water. The more we pollute the water the more expensive it becomes to clean it.

Ways to save water:

- Don't drink directly from the tap, rather fill a glass with water, switch the tap off and drink from the glass.
- Report any maintenance issues with water fittings or lines, as soon as possible.

What is an incident?

- Dripping or leaking taps or water connections.
- Overflowing of containers that contain water.

DATE:	TIME:
TOPIC:	Wasting drinking water
ISSUE:	Scarcity of drinking water
	Expense to supply drinking water

GENERAL PROCEDURES:

	SITE INCEPTION	CONSTRUCTION	POST CONSTRUCTION	OPERATION	KEY ISSUES
GENERAL ADMINISTRATION	<p>SITE INCEPTION</p> <ul style="list-style-type: none"> • An emergency response plan must be available on site as must a copy of the EMPr and the EA. • An incident register must be maintained and kept on site. • A record of training must be maintained and kept on site. • Records proving source of materials must be kept on site. • A record of audits conducted on operations, as well as findings must be kept by the Site Engineer, and findings from audits are to be communicated to the Foreman on site. Proof of communication of findings is to be kept on site. • The site must be sufficiently lit, enabling security and policing should work be required at night. • The following details are to be available at each site: <ul style="list-style-type: none"> ▪ Emergency contact numbers: Name, contact details ▪ Environmental Control Officer: Name, contact details ▪ A list of the sensitive areas identified for that site ▪ Proof of communication of these details to the staff at that particular site. • A hazardous chemical/waste storage area must be provided for, if required. This could be in the form of a leak proof container or suitably sized drip tray. An inventory of goods stored must be maintained and updated weekly. • General waste bins with lids must be provided on site. Accumulated waste must be removed from site regularly and disposed of at a suitably licensed landfill site. • Adequate spill kits and containers for spilled and contaminated material must be provided on site. • Designated areas for stockpiling of raw materials must be identified on site. No stockpiling is to occur on or near slopes or watercourses. All stockpiling areas must be approved by the Site Engineer. • Haulage roads must be identified and demarcated at site set up. Turning areas must be identified and clearly demarcated. Roads may not be located in the designated sensitive areas. • Temporary stormwater protection measures must be established before construction activities commence. <p>All staff is to be trained on their environmental responsibilities before commencing work. All new staff is to be trained before they start work on site. All construction staff will have basic environmental awareness training, which can be conducted at the same time as the required health, & safety training. Training should include (1) the definition of environment (people + air + soil + water +business); (2) reasons for conserving and protecting the environment; (3) how the following activities can impact the environment: - Not using assigned ablutions, hazardous materials, uncleaned spills, mixing of cement or paint on soil or grass surfaces, waste management i.e. use of waste receptacles and waste separation for recycling, vehicle washing polluting soil & ground water; litter; (4) What to do to prevent the above impacting the environment i.e. assign impermeable mixing areas, no vehicle washing on site, use of waste</p>				

THIS ENVIRONMENTAL AWARENESS PLAN IS A LIFE DOCUMENT, AND AWARENESS TRAINING TOPICS IS DEPENDENT UPON SITE SPECIFIC NEEDS AS DETERMINED BY THE ECO OR ESO.



APPENDIX H

DETAILS OF EAP



Bokamoso

**Landscape Architects &
Environmental consultants**

**P.O.BOX 11375
Maroelana
0161**

**Tel: (012) 346 3810
Fax: (086) 570 5559**

**E-mail: lizelle@bokamoso.net
reception@bokamoso.net
Website: www.bokamoso.net**

- 01** Executive Summary
- 02** Vision, Mission & Values
- 03** Human Resources
- 04** Services
- 05** Landscape Projects
- 06** Corporate Highlights
- 07** Environmental Projects
- 08** Indicative Clients
- 09** Tools

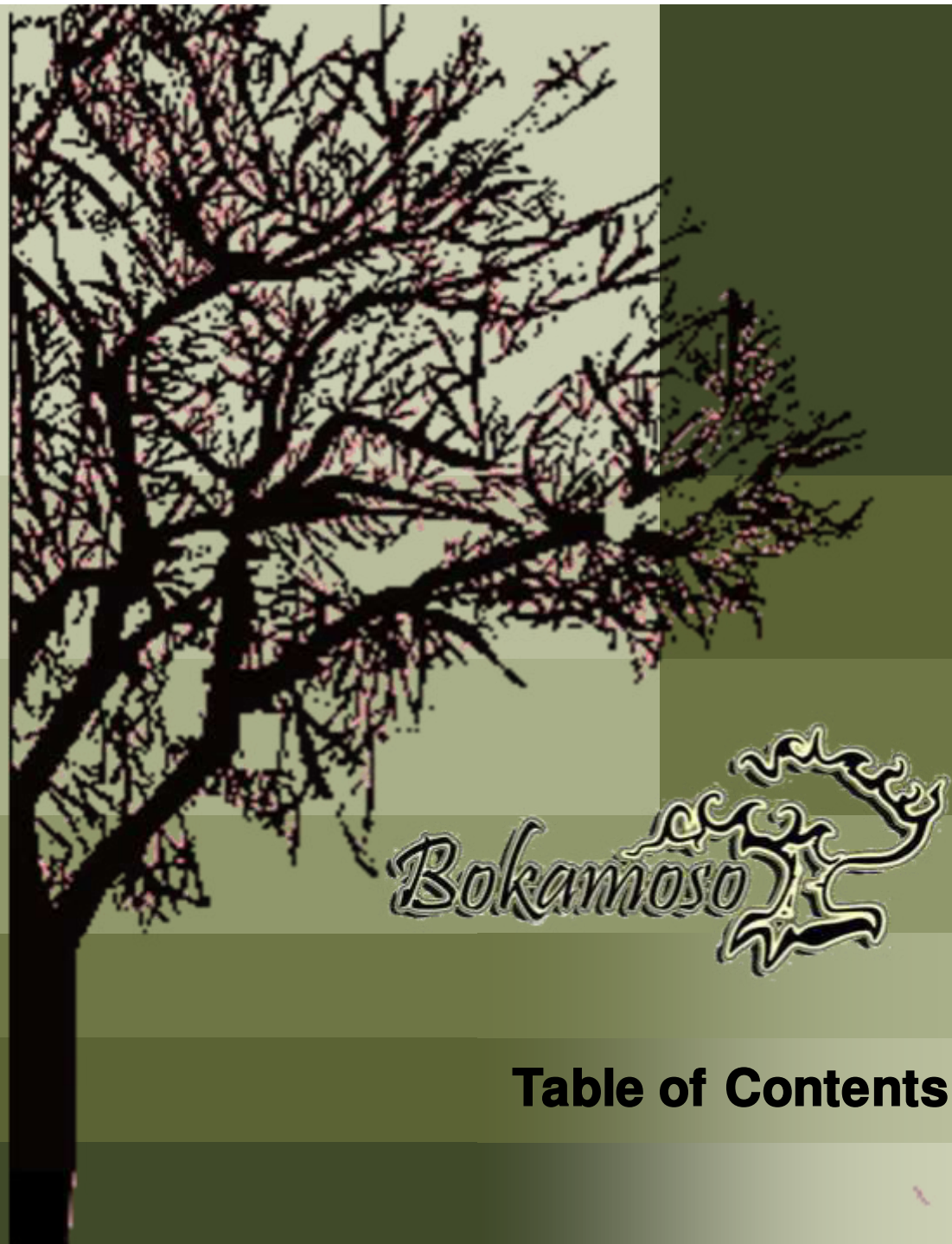


Table of Contents

Bokamoso specialises in the fields of Landscape Architecture and all aspects of Environmental Management and Planning. Bokamoso was founded in 1992 and has shown growth by continually meeting the needs of our clients. Our area of expertise stretches throughout the whole of South Africa. Our projects reflect the competence of our well compiled team. The diversity of our members enables us to tend to a variety of needs. Our integrated approach establishes a basis for outstanding quality. We are well known to clients in the private, commercial as well as governmental sector.

At Bokamoso we stand on a firm basis of environmental investigation in order to find unique solutions to the requirements of our clients and add value to their operations.



01 Executive Summary

011 Company Overview



Vision:

At Bokamoso we strive to find the best planning solutions by taking into account the functions of a healthy ecosystem. Man and nature should be in balance with each other.

Mission:

We design according to our ethical responsibility, take responsibility for successful completion of projects and constitute a landscape that contributes to a sustainable environment. We add value to the operations of our clients and build long term relationships that are mutually beneficial.

Values:

Integrity

Respect



Bokamoso stands on the basis of fairness. This include respect within our multicultural team and equal opportunities in terms of gender, nationality and race.

We have a wide variety of projects to tend to, from complicated reports to landscape installation. This wide range of projects enables us to combine a variety of professionals and skilled employees in our team.

Bokamoso further aids in the development of proficiency within the working environment. Each project, whether in need of skilled or unskilled tasks has its own variety of facets to bring to the table.

We are currently in the process of receiving our BEE scorecard. We support transformation in all areas of our company dynamics.



03 Human Resources

031 Employment Equity

Lizelle Gregory (100% interest)

Lizelle Gregory obtained a degree in Landscape Architecture from the University of Pretoria in 1992 and passed her board exam in 1995.

Her professional practice number is PrLArch 97078.

Ms. Gregory has been a member of both the Institute for Landscape Architecture in South Africa (ILASA) and South African Council for the Landscape Architecture Profession (SACLAP), since 1995.

Although the existing Environmental Legislation doesn't yet stipulate the academic requirements of an Environmental Assessment Practitioner (EAP), it is recommended that the Environmental Consultant be registered at the International Association of Impact Assessments (IAIA). Ms. Gregory has been registered as a member of IAIA in 2007.

Ms. Gregory attended and passed an International Environmental Auditing course in 2008. She is a registered member of the International Environmental Management and Assessment Council (IEMA).

She has lectured at the Tshwane University of Technology (TUT) and the University of Pretoria (UP). The lecturing included fields of Landscape Architecture and Environmental Management.

Ms. Gregory has more than 25 years experience in the compilation of Environmental Evaluation Reports:

Environmental Management Plans (EMP);

Strategic Environmental Assessments;

All stages of Environmental input ;

EIA under ECA and the new and amended NEMA regulations and various other Environmental reports and documents.

Ms. Gregory has compiled and submitted more than 600 Impact Assessments within the last 5-6 years. Furthermore, Ms. L. Gregory is also familiar with all the GDARD/Provincial Environmental policies and guidelines. She assisted and supplied GAUTRANS/former PWV Consortium with Environmental input and reports regarding road network plans, road determinations, preliminary and detailed designs for the past 12 years.



03 Human Resources

032 Members

Qualifications And Experience In The Field Of Environmental Planning And Management (Lizelle Gregory (Member Bokamoso)):

Qualifications:

- Qualified as **Landscape Architect** at UP 1991;
- Qualified as **Professional Landscape Architect in 1997**;
- A Registered Member at The **South African Council for the Landscape Architect Profession (SACLAP)** with Practise Number: **PrLArch97078**;
- A Registered Member at the **International Association for Impact Assessment Practitioners (IAIA)**;
- Qualified as an **Environmental Auditor in July 2008** and also became a Member of the International Environmental Management Association (IEMAS) in 2008.

Working Experience:

- Worked part time at Eco-Consult – 1988-1990;
- Worked part time at **Plan Associates as Landscape Architect in training** – 1990-1991;
- Worked as Landscape Architect at **Environmental Design Partnership (EDP)** from 1992 - 1994
- Practised under **Lizelle Gregory Landscape Architects** from 1994 until 1999;
- Lectured** at Part-Time at **UP** (1999) – Landscape Architecture and **TUT** (1998- 1999)- Environmental Planning and Plant Material Studies;
- Worked as **part time Landscape Architect and Environmental Consultant at Plan Associates** and **managed their environmental division for more than 10 years** – 1993 – 2008 (assisted the **PWV Consortium** with various road planning matters which amongst others included environmental Scans, EIA's, Scoping reports etc.)
- Renamed business as **Bokamoso in 2000** and is the only member of Bokamoso Landscape Architects and Environmental Consultants CC;
- More than 25 years experience in the compilation of Environmental Reports**, which amongst others included the compilation of various **DFA Regulation 31 Scoping Reports**, EIA's for EIA applications in terms of the applicable environmental legislation, Environmental Management Plans, Inputs for Spatial Development Frameworks, DP's, EMF's etc. Also included EIA Application on and adjacent to mining land and slimes dams (i.e. Brahm Fisherville, Doornkop)

Qualifications And Experience In The Field Of Landscape Architecture (Lizelle Gregory (Member Bokamoso)):

Landscape Architecture:

-Compiled landscape and rehabilitation plans for more than 22 years.

The most significant landscaping projects are as follows:

-Designed the Gardens of the Witbank Technicon (a branch of TUT). Also supervised the implementation of the campus gardens (2004);

-Lizelle Gregory was the Landscape Architect responsible for the paving and landscape design at the UNISA Sunnyside Campus and received a Corobrick Golden Award for the paving design at the campus (1998-2004);

-Bokamoso assisted with the design and implementation of a park for the City of Johannesburg in Tembisa (2010);

-The design and implementation of the landscape gardens (indigenous garden) at the new Coca-Cola Valpre Plant (2012-2013);

-Responsible for the rehabilitation and landscaping of Juksei River area at the Norwood Shopping Mall (Johannesburg) (2012-2013);

-Designed and implemented a garden of more than 3,5ha in Randburg (Mc Arthurpark). Bokamoso also seeded the lawn for the project (more than 2,5 ha of lawn successfully seeded) (1999);

-Bokamoso designed and implemented more than 800 townhouse complex gardens and submitted more than 500 Landscape Development Plans to CTMM for approval (1995 – 2013);

-Assisted with Landscape Designs and the Masterplan at Eco-Park (M&T Developments) (2005-2011);

-Bokamoso designed and implemented an indigenous garden at an office park adjacent to the Bronberg. In this garden it was also necessary to establish a special garden for the Juliana Golden Mole. During a recent site visit it was established that the moles are thriving in this garden. Special sandy soils had to be imported and special indigenous plants had to be established in the natural section of the garden.

-Lizelle Gregory also owns her own landscape contracting business. **For the past 20 years she trained more than 40 PDI jobless people (sourced from a church in Mamelodi)** to become landscape contracting workers. All the workers are (on a continuous basis) placed out to work at nurseries and other associated industries;

-Over the past 20 years the Bokamoso team compiled more than 800 landscape development plans and also implemented most of the gardens. Bokamoso also designed and implemented the irrigation for the gardens (in cases where irrigation was required). Lizelle regarded it as important to also obtain practical experience in the field of landscape implementation.

Consulting

Anè Agenbacht

Introduction to Sustainable Environmental Management—An overview of Principles, Tools, & Issues (Potch 2006)
Leadership Training School (Lewende Woord 2010)
BA Environmental Management (UNISA 2011)
PGCE Education (Unisa 2013) - CUM LAUDE
Project Manager
More than 10 years experience in the compilation of various environmental reports

Mary-Lee Van Zyl

MSc Plant Science (UP)
BSc (Hons) Plant Science (UP)
BSc Ecology (UP)
More than 5 years working experience in the Environmental field
Specialises in ECO works, Basic Assessments, EIA's, and Flora Reports
Compilation of various Environmental Reports

Dashentha Moodley

BA (Hons) Degree in Environmental Management (UNISA) - CUM LAUDE
Bachelor of Social Science in Geography & Environmental Management (UKZN)
More than 6 years experience in WUL Applications & Integrated Environmental Management within water resource management.
Senior Environmental Practitioner & Water Use Licence Consultant
Specialises in Water Use License & Compilation of various Env. Reports

Adèle Drake

BA Geography & History (UP)
NQF Level 7 Air Quality Management (UJ)
More than 15 years experience in the field of Environmental Management within Mining Industry (surface and underground), Forestry Industry, Renewable Energy Industry (WEF), and Environmental Consulting. Also ISO 14000, ISO 9000, and Safety Management Auditor.

Ronell Kuppen

BSc (Hons) in Geography (UNISA)
BA Environmental and Development (UKZN)
More than 5 years experience in Environmental Consulting
Specializing in WUL Applications, Waste License Applications, EIAs, Basic Assessments, Public Participations, Borrow Pits



03 Human Resources

033 Personnel

Ben Bhukwana

BSc Landscape Architecture (UP)

More than 8 years experience in the field of Landscape Architecture (Design, Construction, Implementation, and Management).

Specialises in landscape design, ECO, rehabilitation plans and compilation various environmental reports and compilation of tender documents

Juanita de Beer

Diploma Events Management and Marketing (Damelin)

Specializes in Public relations and Public Participation Processes (4 years experience)

Specialises in compiling various environmental reports

Alfred Thomas

CIW Foundation& Internet Marketing (IT Academy)

12 years experience in GIS and IT in general.

GIS Operator and Multimedia Specialist.

Lizette Delport

MSc. In Aquatic Health (UJ)

BSc. Hons. Environmental Management

Environmental Assessment Practitioner and Wetland Specialist

Registered with the South African Wetland Society (SAWS)

A.E. van Wyk

BSc Environmental Sciences (Zoology and Geography)

Environmental Control Officer

Junior avifauna specialist

Juan Gregory

LLB (UP)

BA Law (UP)

Junior Environmental Impact Practitioner

Environmental Control Officer



03 Human Resources

034 Person-

Elsa Viviers

Interior Decorating (Centurion College)

(Accounting/ Receptionist) and Secretary to Lizelle Gregory

Loura du Toit

N. Dip. Professional Teacher (Heidelberg Teachers Training College)

Librarian and PA to the Project Manager

Merriam Mogalaki

Administration Assistant with in-house training in bookkeeping

Landscape Contracting

Elias Maloka

Assisting with Public Participations and Office Admin

Site manager overseeing landscape installations.

Irrigation design and implementation.

Landscape maintenance

More than 18 years experience in landscape construction works.

The contracting section comprises of six permanently employed black male workers. In many cases the team consists of up to 12 workers, depending on the quantity of work.



03 Human Resources

035 Personnel

In-house Specialists

Corné Niemandt

MSc Plant Science (UP 2015) – Cum Laude

BSc (Hons) Zoology (UP 2012)

BSc Ecology (UP 2011)

Specialises in ecological surveys and report writing

Compilation of fauna and flora specialist reports

GIS: Generating maps



03 Human Resources

036 Personnel



01 Environmental Management Services

- Basic Assessment Reports
- EIA & Scoping Reports
- Environmental Management Plans
- Environmental Scans
- Strategic Environmental Assessments
- EMP for Mines
- Environmental Input and Evaluation of Spatial Development Frameworks
- State of Environmental Reports
- Compilation of Environmental Legislation and Policy Documents
- Environmental Auditing and Monitoring
- Environmental Control Officer (ECO)
- Visual Impact assessments
- Specialist Assistance with Environmental Legislation Issues and Appeals
- Development Process Management
- Water Use License applications to DWA
- Waste License Application



04 Services

041 Consulting Services

02 Landscape Architecture

- Master Planning
- Sketch Plans
- Planting Plans
- Working Drawings
- Furniture Design
- Detail Design
- Landscape Development Frameworks
- Landscape Development Plans (LDP)
- Contract and Tender Documentation
- Landscape Rehabilitation Works

03 Landscape Contracting

Implementation of Plans for:

- Office Parks
- Commercial/ Retail / Recreational Development
- Residential Complexes
- Private Residential Gardens
- Implementation of irrigation systems



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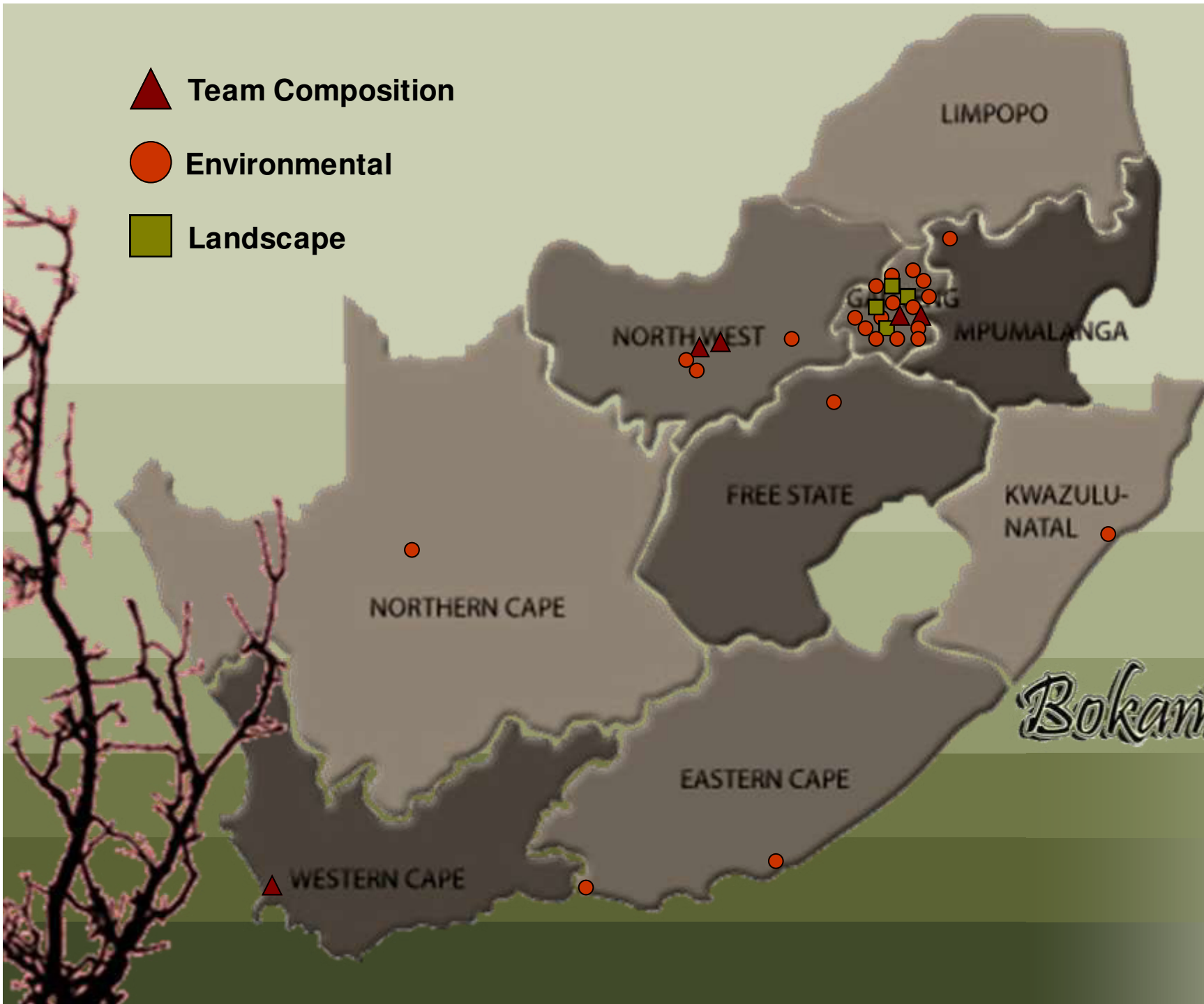
04 Services

042 Contracting Services

▲ Team Composition

● Environmental

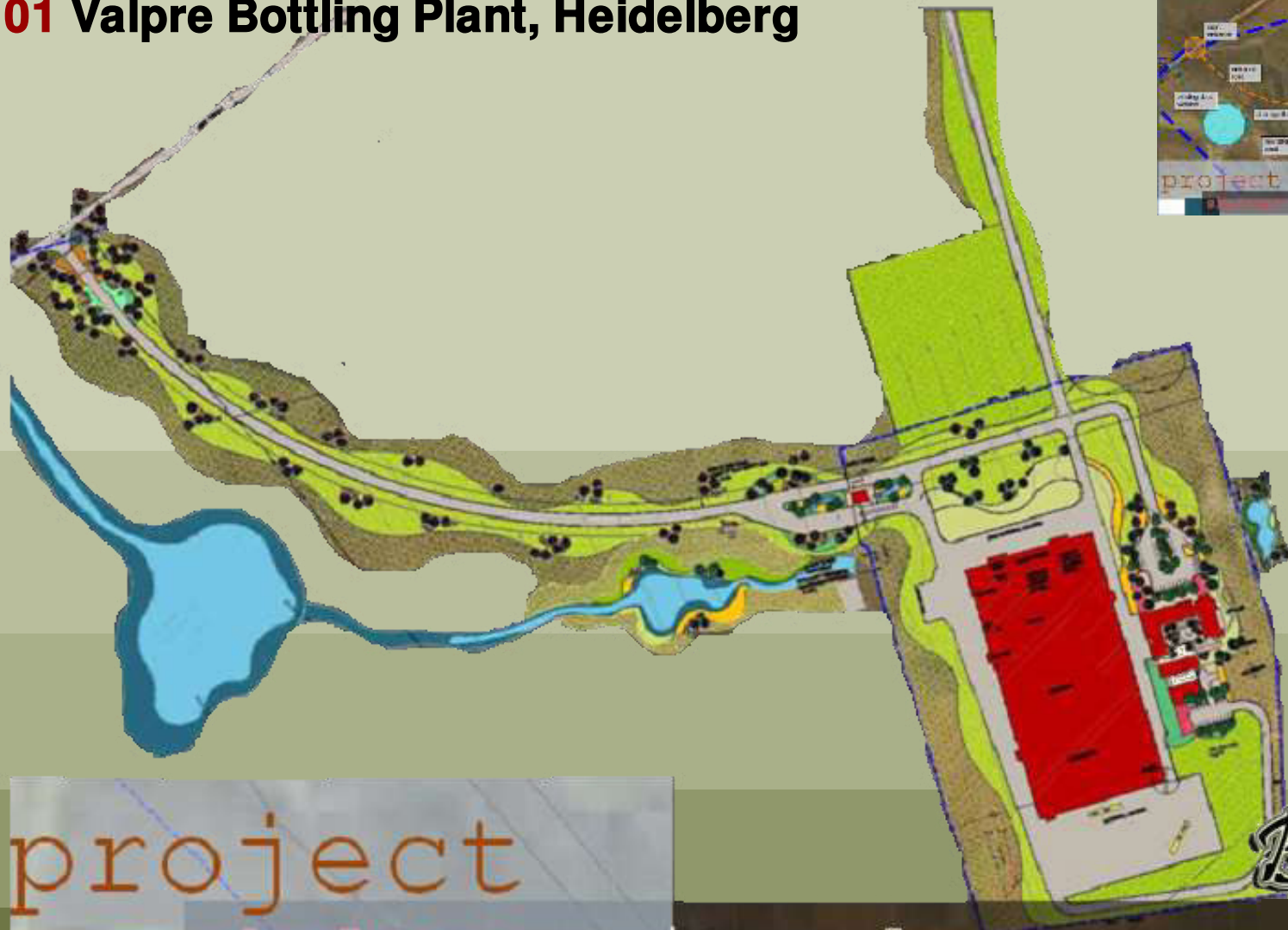
■ Landscape



04 Services

043 Orientation

01 Valpre Bottling Plant, Heidelberg



project
shelter-site plan

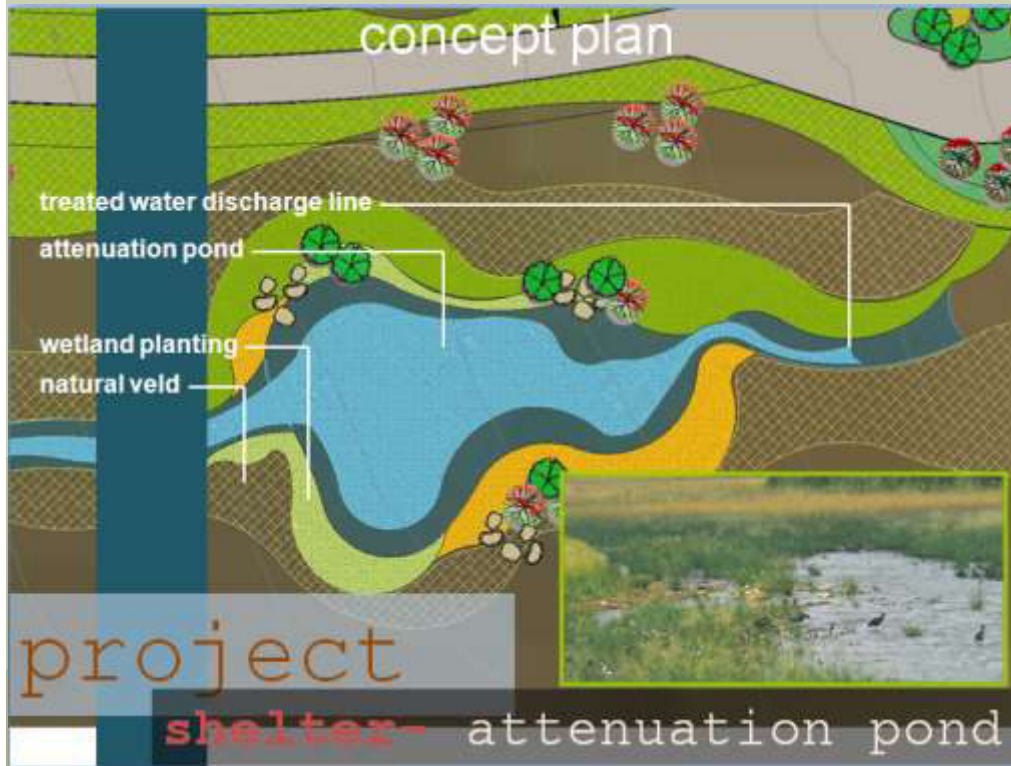


05 Landscape Projects- Current

051 Commercial



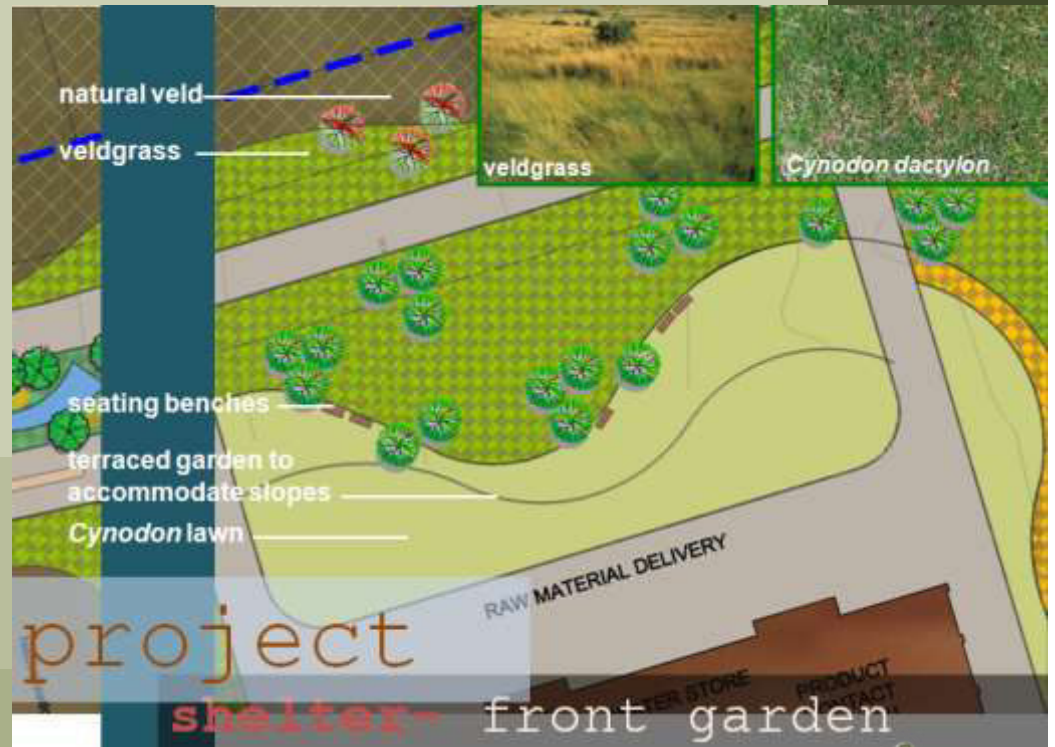
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05 Landscape Projects- Current

051 Commercial

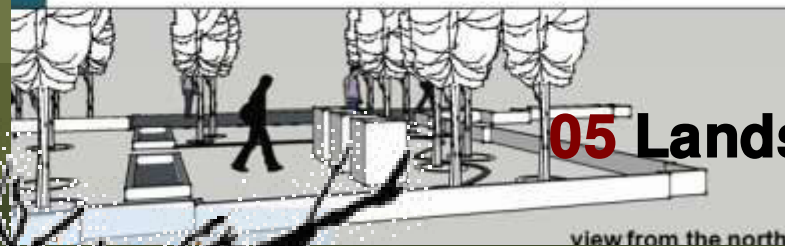
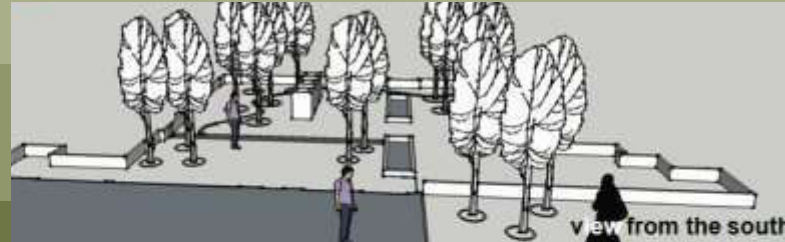
01 Valpre Bottling Plant, Heidelberg



05 Landscape Projects– Current

051 Commercial

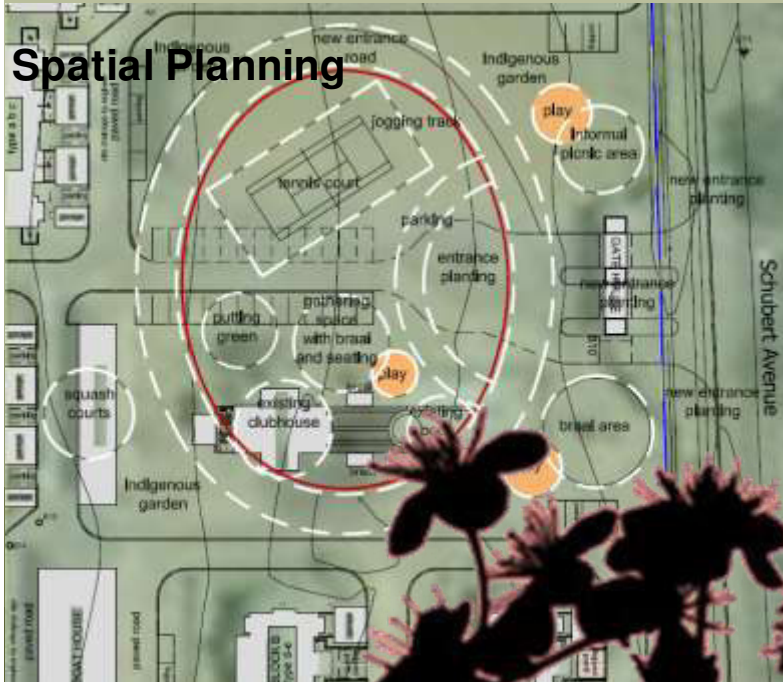
01 Valpre Bottling Plant, Heidelberg



05 Landscape Projects– Current

051 Commercial

02 Melodie Waters, Hartebeespoortedam



Streetscape

Indigenous Planting



05 Landscape Projects – Current

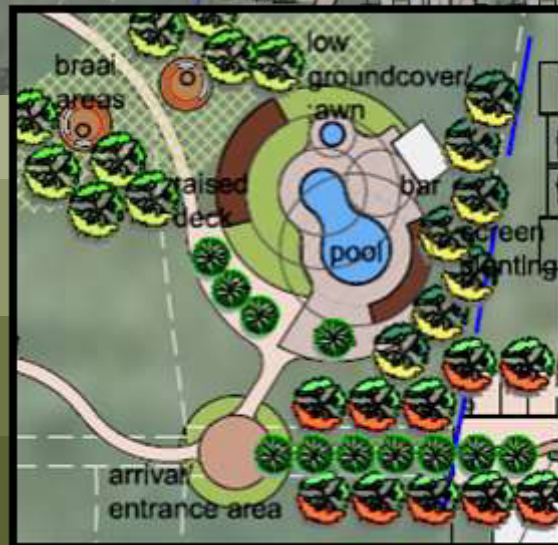
052 Commercial/Recreational



02 Melodie waters, Hartebeestpoortdam



Rehabilitation



Area Layout



05 Landscape Projects– Current

052 Commercial/Recreational

03 Grain Building, Pretoria



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05 Landscape Projects– Completed

053 Offices

04 Ismail Dawson offices, Pretoria



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05 Landscape Projects – Conceptual

053 Offices

05 Celtic Manor, Pretoria

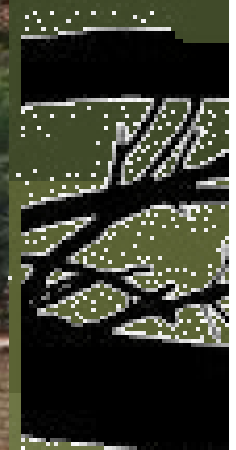
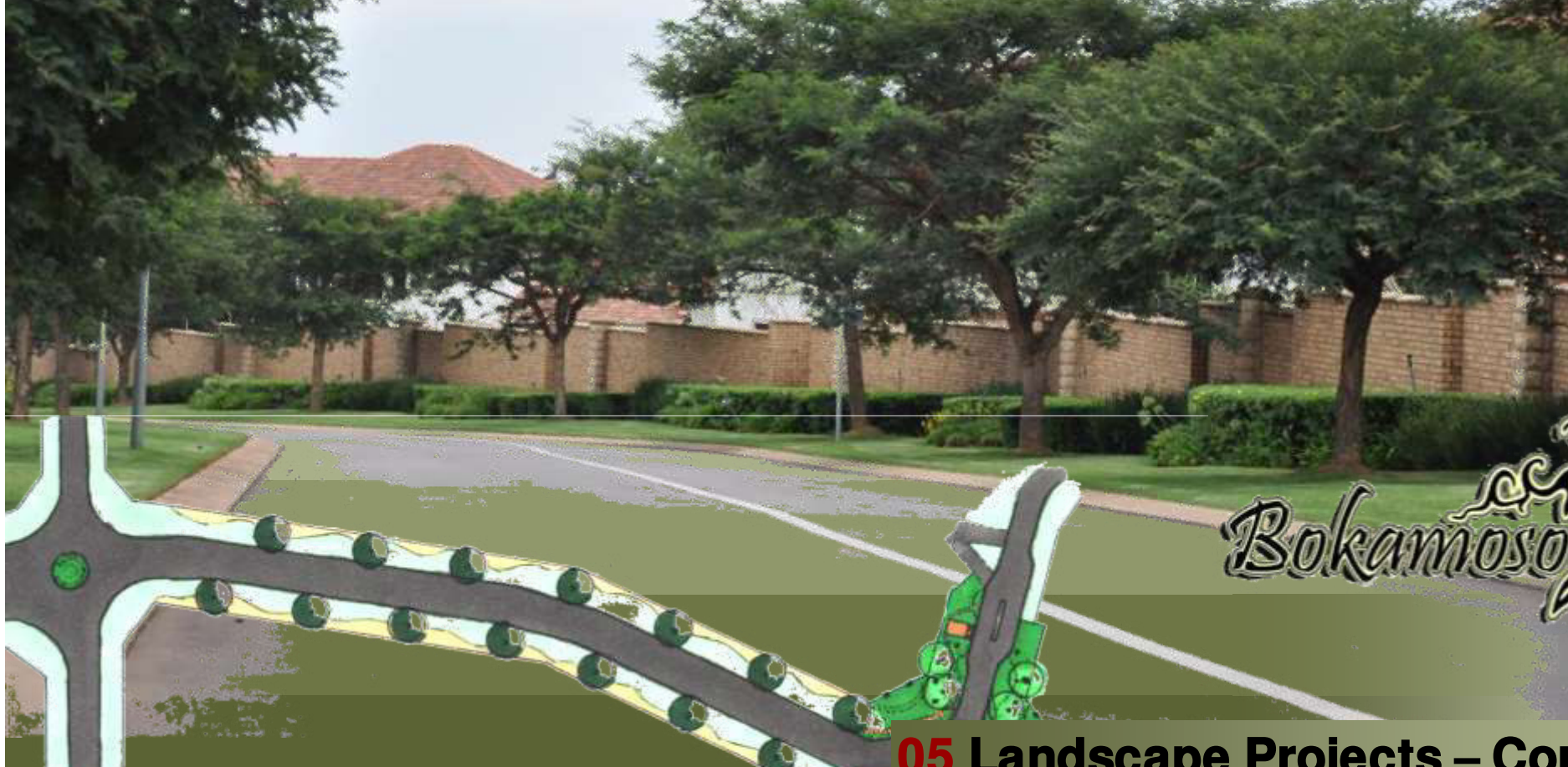


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05 Landscape Projects - Completed

054 Complex Development

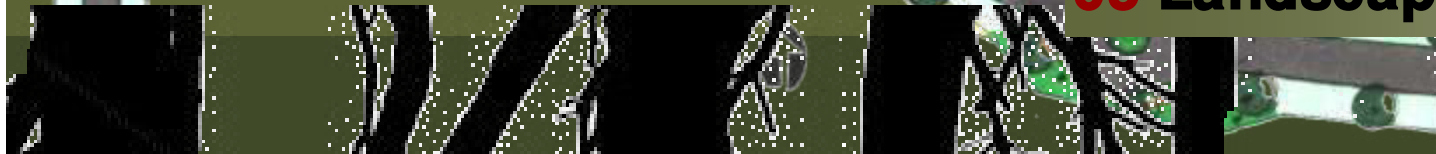
06 The Wilds, Pretoria



Bokamoso

05 Landscape Projects – Completed

054 Complex Development



07 The Wilds, Pretoria

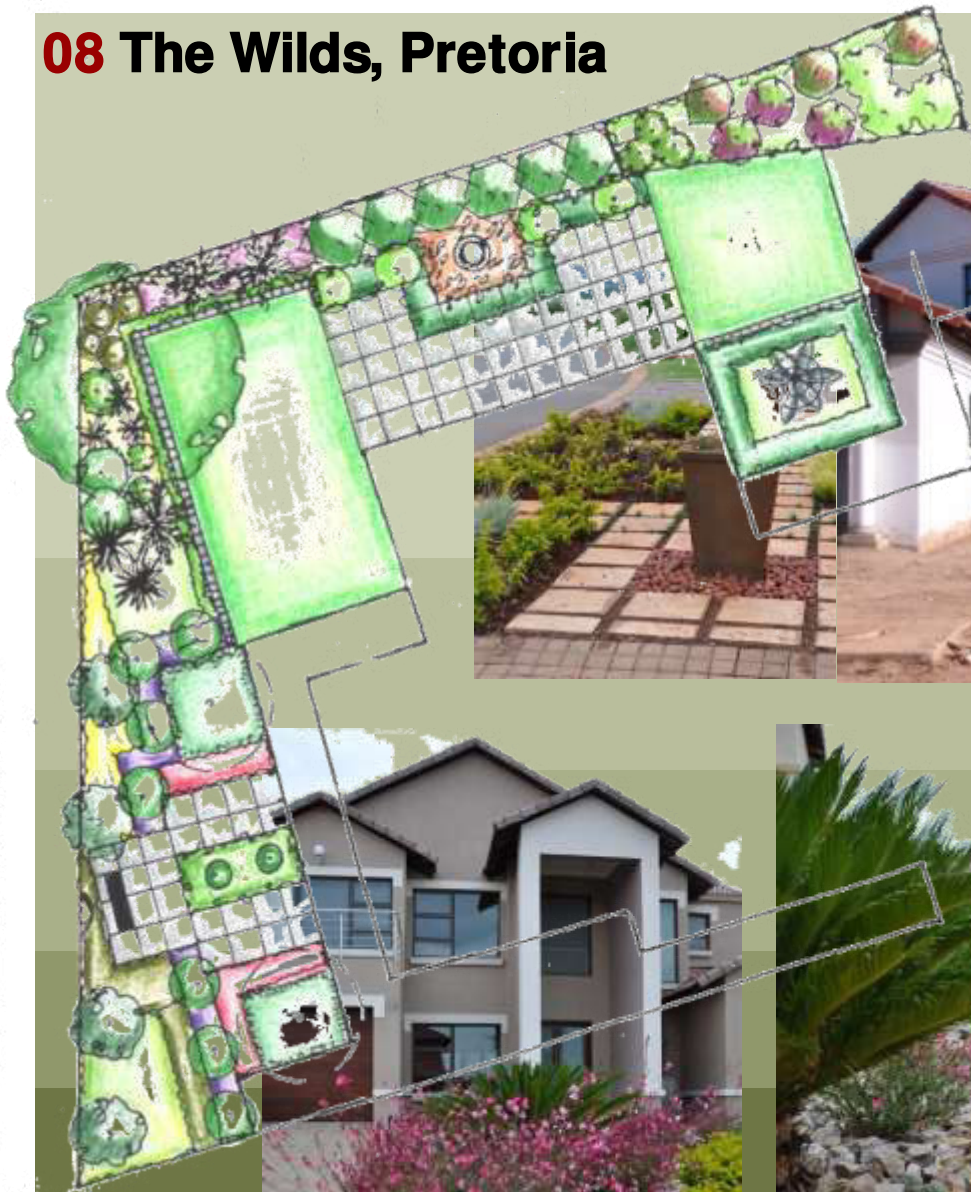


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05 Landscape Projects – Completed

055 Residential

08 The Wilds, Pretoria



Bokamoso

05 Landscape Projects – Completed

055 Residential

09 The Wilds, Pretoria

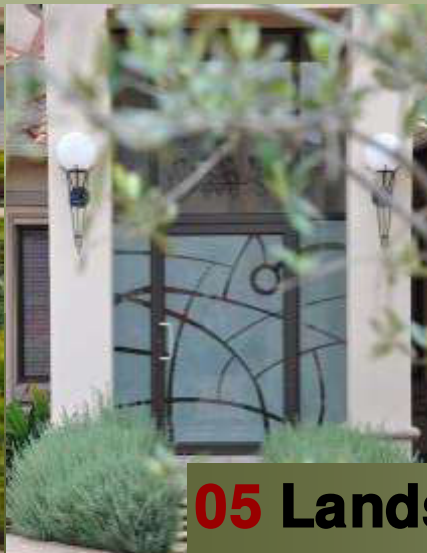


Bokamoso

05 Landscape Projects – Completed

055 Residential

010 The Wilds, Pretoria



Bokamoso

05 Landscape Projects – Completed

055 Residential

011 Governor of Reserve Bank's Residence, Pretoria



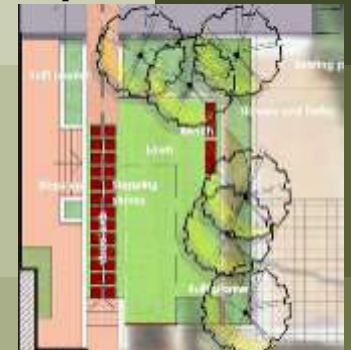
Plant Palette



Option 1



Option 2



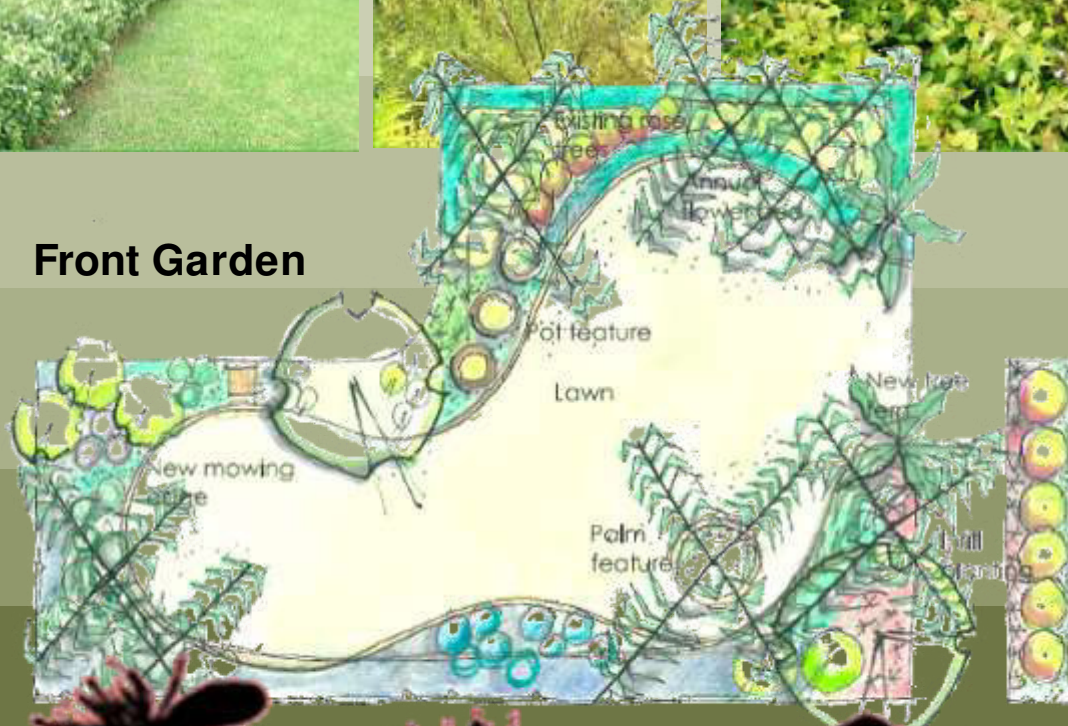
05 Landscape Projects – Conceptual

055 Residential

012 House Ismail, Pretoria



Front Garden



Back Garden



05 Landscape Projects - Conceptual

055 Residential



013 Forest Garden, Pretoria

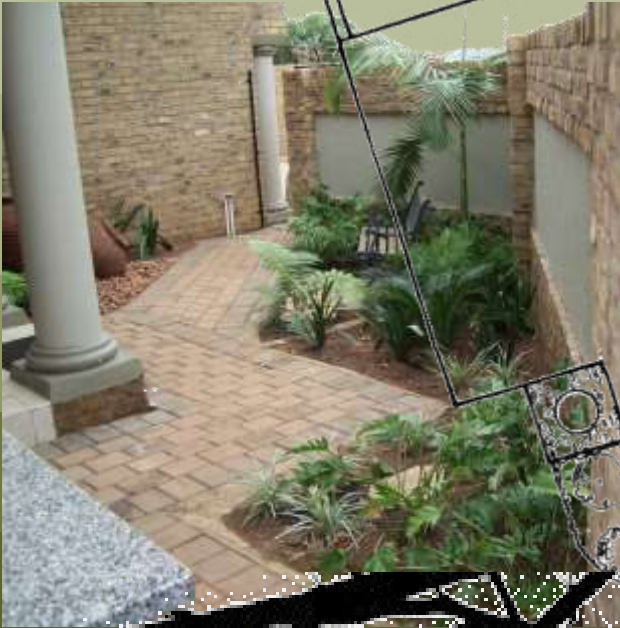


Bokamoso

05 Landscape Projects – Completed

055 Residential

015 Forest Garden, Pretoria



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05 Landscape Projects - Completed

055 Residential

01 Safari Garden Expo

Received a Silver Certificate at the Safari Garden Expo, 2010



Bokamoso 

06 Corporate Highlights

061 Awards

02 UNISA Sunnyside Campus, Pretoria

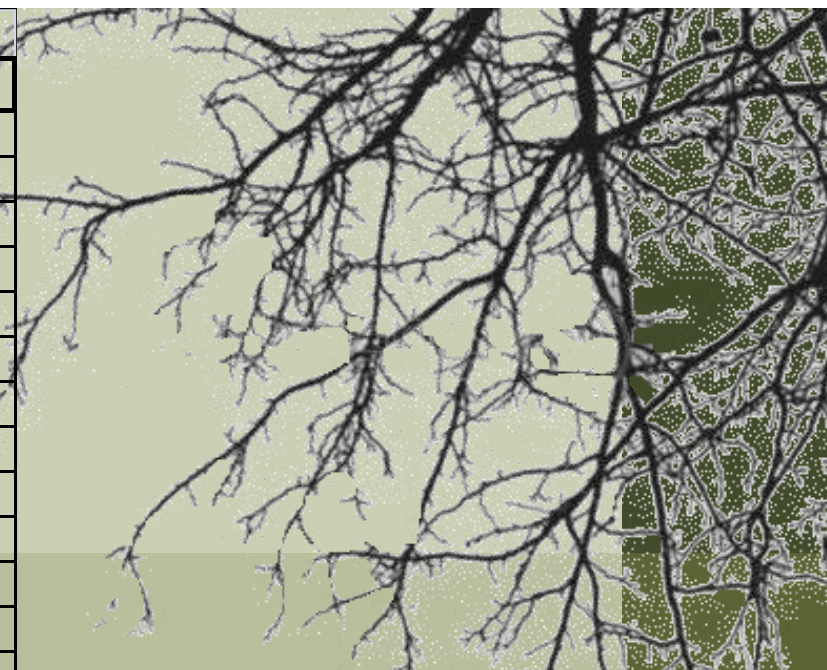
Best Commercial Paving Plan in Gauteng, 1997



06 Corporate Highlights

061 Awards

Project Name	Status	Project
Environmental Impact Assessment(EIA) and Scoping Report		
Junction 21	ROD	EIA
5 O'clock site access	In Progress	EIA
Bokamoso X 1	In Progress	Scoping & EIA
Doornvallei Phase 6 & 7	In Progress	EIA
Engen Interchange	In Progress	Scoping & EIA
Erasmia X15	In Progress	EIA
Franschkloof	In Progress	EIA
K113	Amendment of ROD	EIA
K220 East	ROD	EIA
K220 West	ROD	EIA
K54 ROD conditions	In Progress	EIA
Knopjeslaagte 95/Peachtree	ROD	EIA
Knopjeslaagte portion 20 & 21	ROD	EIA
Lillieslief/Nooitgedacht	In Progress	EIA
Mooiplaats 70 (Sutherland)	In Progress	EIA
Naauwpoort 1 - 12/Valley View	In Progress	EIA
PeachTree X5	In Progress	EIA
Strydfontein 60	In Progress	EIA
Thabe Motswere	In Progress	Scoping & EIA
Vlakplaats	In Progress	EIA
Waterval Valley	In Progress	EIA
Environmental Opinion		
Doornkloof 68 (Ross)	In Progress	Opinion
Monavoni X 53	In Progress	BA & Opinion
Mooikloof (USN)	In Progress	Opinion
Norwood Mall/Sandspruit	In Progress	Opinion
Riversong X 9	In Progress	Opinion
Sud Chemie	In Progress	Opinion
USN Benjoh Fishing Resort	In Progress	Opinion



The adjacent list host the status of our current projects. Only a selected amount of projects are displayed.



07 Current Environmental Projects

071 EIA, Scoping & Opinion

Project Name	Status	Project
Basic Assessment(BA)		
Annlin X 138	In Progress	BA
Clubview X 29	ROD	BA
Darrenwood Dam	In Progress	BA
Durley Holding 90 & 91	In Progress	BA
Elim	In Progress	BA
Fochville X 3	In Progress	BA
Hartebeeshoek 251	In Progress	BA
Klerksdorp (Matlosana Mall)	In Progress	BA
Monavoni External Services	ROD	BA
Monavoni X 45	Amendment of ROD	BA
Montana X 146	In Progress	BA
Rooihuiskraal X29	In Progress	BA
Thorntree Mall	In Progress	BA

Environmental control officer (ECO)		
Grace Point Church	In Progress	ECO
R 81	In Progress	ECO
Highveld X 61	In Progress	ECO
Mall of the North	In Progress	ECO
Olievenhoutbosch Road	In Progress	ECO
Orchards 39	In Progress	ECO
Pierre van Ryneveld Reservoir	In Progress	ECO
Project Shelter	In Progress	ECO

S24 G		
Wonderboom	In Progress	S24 G
Mogwasi Guest houses	Completed	S24 G



07 Current Environmental Projects

072 BA, ECO & S24 G

Project Name	Status	Project
Objection		
Colesberg WWTW	In Progress	Objection
Nigel Steelmill	Completed	Objection
Chantilly Waters	Completed	Objection

Development facilitation Act- Input (DFA)		
Burgersfort	In Progress	DFA & BA
Doornpoort Filling Station	In Progress	DFA & EIA & Scoping
Eastwood Junction	In Progress	DFA
Ingersol Road (Erf 78, 81 - 83)	In Progress	DFA
Roos Senekal	In Progress	DFA & EIA & Scoping
Thaba Meetse 1	In Progress	DFA & EIA & Scoping

Water Use License Act (WULA)		
Britstown Bulk Water Supply	In Progress	WULA
Celery Road / Green Channel	In Progress	WULA
Clayville X 46	In Progress	WULA
Dindingwe Lodge	In Progress	WULA
Doornpoort Filling Station	In Progress	WULA+DFA+EIA+SC
Eco Park Dam	In Progress	WULA
Groote Drift Potch	In Progress	WULA
Jozini Shopping Centre	In Progress	WULA+BA
K60	Completed	WULA
Maloto Roads	In Progress	WULA
Kwazele Sewage Works	In Progress	WULA
Monavoni External Services	In Progress	WULA+BA
Nyathi Eco Estate	In Progress	WULA
Prairie Giants X 3	In Progress	WULA
Waveside Water Bottling Plant	Completed	WULA



07 Current Environmental Projects

073 Objection, DFA & WULA

Project Name	Status	Project
Environmental Management Plan(EMP)		
Heidelberg X 12	ROD	EMP
Monavoni Shopping Centre	Completed	EMP
Forest Hill Development	Completed	EMP
Weltevreden Farm 105KQ	Completed	EMP+EIA
Raslouw Holding 93	Completed	EMP+BA
Durley Development	Completed	EMP+BA
Rooihuiskraal North X 28	Completed	EMP

Rehabilitation Plan		
Norwood Mall/Sandspruit	In Progress	Rehabilitation
Project Shelter Heidelberg	In Progress	Rehabilitation
Sagewood Attenuation Pond	ROD	Rehabilitation
Velmore Hotel	Completed	Rehabilitation
Grace Point Church	Completed	Rehabilitation
Mmamelodi Pipeline	Completed	Rehabilitation

Visual Impact Assessment		
Swatzkop Industrial Developme	Completed	Assessment +DFA
Erasmia	Completed	Assessment

Signage Application		
Menlyn Advertising	Completed	Signage
The Villa Mall	Completed	Signage+EMP+BA



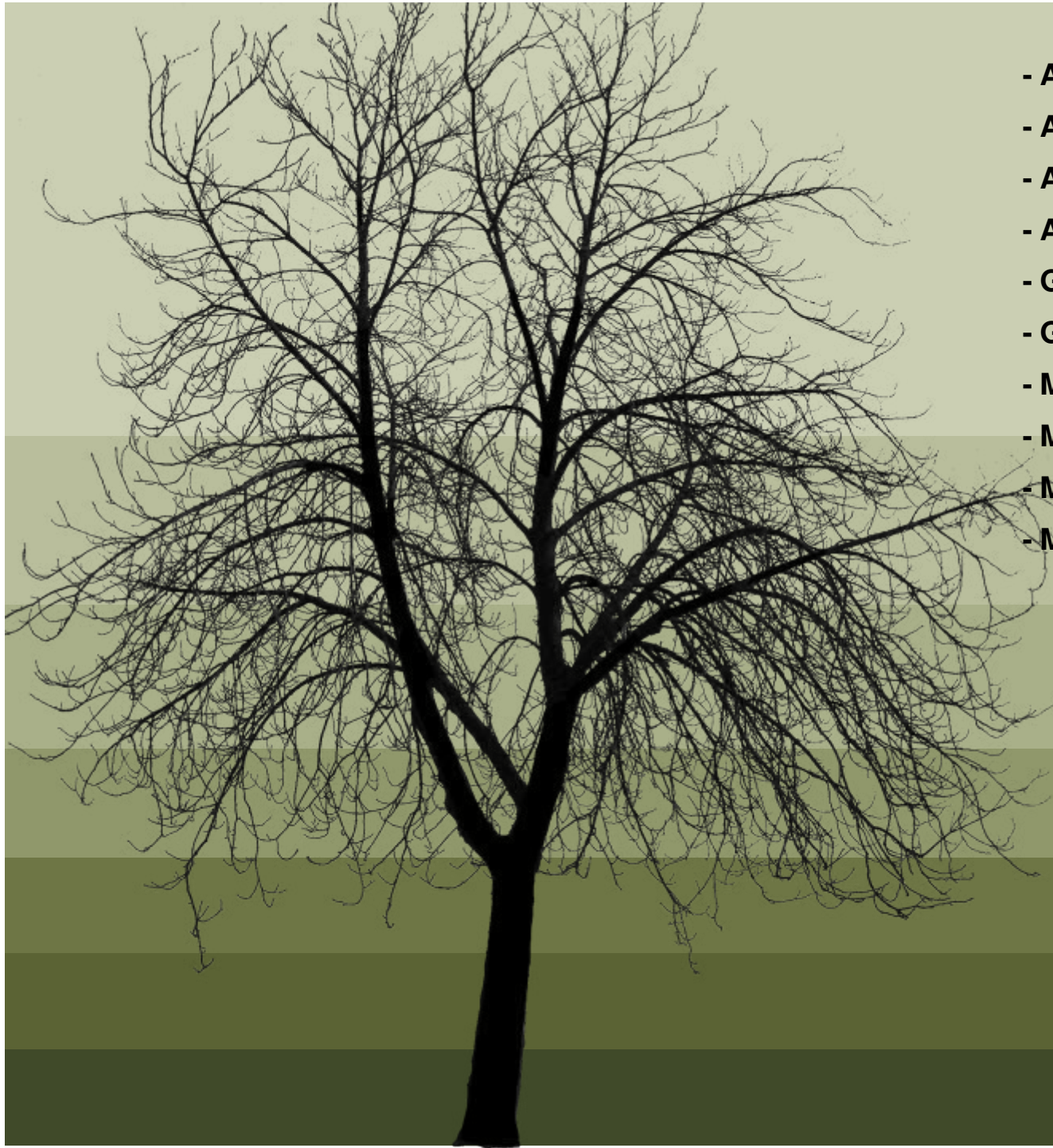
07 Current Environmental Projects

074 EMP, Rehabilitation , Waste Management & Signage Application

- Billion Property Group
- Cavaleros Developments
- Centro Developers
- Chaimberlains
- Chieftain
- Century Property Group
- Coca Cola
- Elmado Property Development
- Flanagan & Gerard
- Gautrans
- Hartland Property Group
- Moolman Group
- MTN
- M&T Development
- Old Mutual
- Property Investment Company
- Petroland Developments
- RSD Construction
- SAND
- Stephan Parsons
- Twin City Developments
- Urban Construction
- USN



08 Indicative Clients



- Adobe Illustrator CS3
- Adobe Photoshop CS3
- Adobe InDesign CS3
- AutoCAD
- Google SketchUP
- GIS
- Microsoft Office Word
- Microsoft Office Excel
- Microsoft Office Publisher
- Microsoft Office Power Point

Bokamoso 