- provides site and project specific rules and actions required, through the start-up report;
- forms a written record of procedures, responsibilities, requirements, and rules for Contractor(s), their staff and any other person who must comply with the EMP;
- provides for monitoring of compliance and record keeping.

The EMP is partly prescriptive (identifying specific people or organisations to undertake specific tasks, to ensure that impacts on the environment are minimised), but it is also an open-ended document in that information gained during the construction activities and/or monitoring of procedures on site could lead to changes in the EMP.

1.3 SCOPE

This EMP addresses the construction- and operational phases and all activities associated with this project. Compliance to the EMP shall be monitored by an independent Environmental Control Officer (ECO) who will visit the site on a regular basis during the construction phase (at least twice monthly). The Client or the Construction Engineer or Project Manager, on behalf of the Client, will be responsible to ensure the implementation of the requirements of this EMP by all contractors and sub-contractors.

2 PROJECT LOCATION AND DESCRIPTION

Orange River Solar Facility 1 (PTY) Ltd has initiated the process to construct a proposed 50MW photovoltaic solar plant on Portion of the Farm Rooisand 387, located near Groblershoop, Northern Cape Province. The plant will constitute the construction of the solar plant and associated supporting infrastructure such as an Eskom substation, inverter stations, an Operation and Maintenance building and an internal access road on approximately 178ha of vacant land, which is situated on Portion 18 of the Farm Rooisand 387. The footprint of the solar facility infrastructure is approximately 44ha.

Orange River Solar Facility 1 has requested expertise of a suitable service provider to carry out the necessary assessments, planning and investigations to obtain the necessary permits (Environmental Authorisation, WULA, and FLORA permits) to allow the construction of the solar facility. Environmental Management Group (Pty) Ltd. was appointed to conduct a Basic Assessment Report (BAR) for the proposed solar facility and in so doing obtain Environmental Authorisation, Water Use License and FLORA removal permits for the proposed facility.

The proposed site is in the Northern Cape Province. The subject site is located at approximately 3km from the Central Business District of Groblershoop. The eastern

boundary of the site runs parallel to the N8 Freeway. The western boundary borders the Orange River; however, the solar facility will not be constructed near the Orange River. Access to the site can be obtained from the N8 Highway via one of the dirt roads. Specialist studies have been conducted for the site.

The site of the proposed solar facility falls within the Bushmanland Arid Grassland. This grassland consists of extensive to irregular plains on a slightly sloping plateau and sparsely vegetated by grasses with *Stipagrostis*. The site also falls within a Critical Biodiversity Area (CBA) 2 which is an important ecological corridor that runs along the Orange River.

The proposed site is situated within the Bushmanland Arid Grassland (NKb3), an arid vegetation type situated within the Bushmanland and West Griqualand bioregion (Mucina and Rutherford, 2006) with a conservation status of least concern (Skowno et al., 2019). NKb3 is characterised by vast irregular plains on a slightly sloping plateau sparsely vegetated by grassland dominated by white grasses (*Stipagrostis* species), giving this vegetation type the character of semidesert 'steppe'.

Most of the site can be described as low hills and ridges laid with quarts outcrops in the main area, shifting to low undulating plains in the north.

From a heritage impact perspective, proposed development footprint and associated access road are not considered paleontologically or archaeologically vulnerable and is assigned a site rating of Generally Protected C.
The specialist recommends that the project can proceed, but it is advised that a professional archaeologist is appointed as part of the project management plan to monitor for, and map potentially rare Early Stone Age LCT occurrences at the forthcoming solar panel positions during the construction phase of the development.

Based on the avifaunal study conducted, the larger study area is estimated to have 163 avifauna species. 44 priority species occur in the larger site, 4 of which are South African Red Data species. Of the 4, two of the Red Data species that were recorded in the larger study area are also recorded in the local area namely the (Ludwig's Bustard and Karoo Korhaan).

From the assessment conducted, the pre-mitigation significance of all potential impacts identified in this study is assessed as being **Low** to **Moderate**, and the average post-mitigation significance is assessed as **Low to Very Low**. It is therefore recommended that the activity is authorised, on condition that the proposed mitigation measures and recommendations are strictly implemented.

3. Applicable legislation

Constitution of the Republic of South Africa (1996): of special relevance in terms of environment is section 24

Conservation of Agricultural Resources Act 43 of 1983 (CARA): supports conservation of natural agricultural resources (soil, water, plant biodiversity) by maintaining the production potential of the land and combating/preventing erosion; for example, by controlling or eradicating declared weeds and invader plants.

Hazardous Substances Act 15 of 1973: to control substances that may cause injury, ill-health, or death through their toxic, corrosive, irritant, strongly sensitizing or flammable nature, or by the generation of pressure.

National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA): replaces the Atmospheric Pollution Prevention Act (No. 45 of 1965).

National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA): supports conservation of plant and animal biodiversity, including the soil and water upon which it depends.

National list of ecosystems that are threatened and in need of protection (GN 1002 of 9 December 2011).

National Environmental Management: Protected Areas Act 57 of 2003 (as amended Act 31 of 2004) (NEMPAA): To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes.

National Environmental Management: Waste Act 59 of 2008 (NEMWA): To reform the law regulating waste management to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

National Heritage Resources Act 25 of 1999: supports an integrated and interactive system for the management of national heritage resources, including supports soil, water and animal and plant biodiversity.

National Veld and Forest Fire Act 101 of 1998 (NVFFA): protects soil, water and plant life through the prevention and combating of veld, forest, and mountain fires

National Water Act 36 of 1998 (NWA): promotes the protection, use, development, conservation, management, and control of water resources in a sustainable and equitable manner.

4. Recommendations

The following are site specific recommendations, as per the various specialist assessments of the project. Please note that if there is any contradiction between the following specialists' recommendations and/or the conditions of the Environmental Authorisation, and the recommendations in Section 7 and 8 below, the Environmental Authorisation and specialist recommendations take president.

4.1 Specialist's Recommendations on impact minimisation

- The construction and operational phase of the project must be done in accordance with this environmental management programme, the aim of which is, to minimise environmental impact during the construction and operational phases.
- A suitable qualified ECO must be appointed to oversee the construction phase.

Specialist recommendations:

As per the specialist reports attached as Appendix D of the Basic Assessment Report.

4.2 Environmental Authorisation

Please ensure that the Department of Forestry, Fisheries and Environment, Gauteng Province confirms their approval of this project in writing.

5 Construction Phase EMP

5.1 Structure and Responsibility

For the EMP to be successfully implemented, all the role players involved in the project need to co-operate. For this to happen, role players must clearly understand their roles and responsibilities in the project, must be professional, form respectful and transparent relationships, and maintain open lines of communication.

Table 1: Functions and Responsibilities of Project Team

KEY	FUNCTION	RESPONSIBILITY
P	Proponent	Proponent is ultimately accountable for ensuring compliance to the EMPr. The ECO must be contracted by the Proponent (full time or part time depending on the size of the project) as an independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of the EMP for the project. The Proponent is further responsible for providing and giving mandate to enable the ECO to perform responsibilities. The developer must ensure that the ECO is integrated as part of the project team.

CE	Consulting Engineer	Contracted by the developer to design and specify the project engineering aspects. Generally, the engineer runs the works contract. The CE may also fulfil the role of Project Manager on the proponent's behalf (See PM).
PM	Project Manager	The Project Manager has over-all responsibility for managing the project, contractors, and consultants and for ensuring that the environmental management requirements are met. The CE may also act as the PM. All decisions regarding environmental procedures must be approved by the PM. The PM has the authority to stop any decommissioning activity in contravention of the EMP in accordance with an agreed warning procedure.
ER	Engineers Representative	The consulting engineer's representative on site. Has the power/mandate to issue site instructions and in some instances, variation orders to the contractor, following request by the EO or ECO. The ER oversees site works, liaison with Contractor and ECO.
EO/EM	Environmental Officer / Environmental Manager	Appointed by the Consulting Engineers as their environmental representative on site. The EO is not independent but must rather act on behalf of the consulting engineers with the mandate to enforce compliance under the project contract, which must include the EMP. The EO has the directive to issue non-conformance and hazard certificates. Further, in terms of accepted industry practice the EO could issue the equivalent of a "cease works" instruction only in exceptional circumstances where serious environmental harm has been or is about to be caused i.e., in cases of extreme urgency and then only when the ER is absent. The EO must form part of the project team and be involved in all aspects of project planning that can influence environmental conditions on the site. On certain types of projects, such as linear developments (fences, pipelines, etc), the EO must also be the liaison between the contractor and landowners. The EO must attend relevant project meetings, conduct daily inspections to monitor compliance with the EMP, and be responsible for providing reports and feedback on potential environmental problems associated with the development to the project team and ECO. The EO must convey the contents of this EMP to the Contractor site team and discuss the contents in detail with the Contractor as well as undertake to conduct an induction and an environmental

		awareness training session prior to site handover to all contractors and their workforce. The EO must be suitably experienced with the relevant qualifications and preferably competent in construction related methods and practices.
ECO	Environmental Control Officer	An independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorisations (EA's), and the EMP for the project. The ECO must be on site prior to any site establishment and must endeavour to form an integral part of the project team. The ECO must be proactive and have access to specialist expertise as and when required, these include botanists, ecologists, etc. Further, the ECO must also have access to expertise such as game capture, snake catching, etc. The ECO must conduct audits on compliance to relevant environmental legislation, conditions of EA, and the EMP for the project. The size and sensitivity of the development, based on the EIA, will determine the frequency at which the ECO will be required to conduct audits. (A minimum of a monthly site inspection must be undertaken). The ECO must be the liaison between the relevant authorities and the project team. The ECO must communicate and inform the developer and consulting engineers of any changes to environmental conditions as required by relevant authoritative bodies. The ECO must ensure that the registration and updating of all relevant EMP documentation is carried out. The ECO must be suitably experienced with the relevant environmental management qualifications and preferably competent in construction related methods and practices. The ECO must handle information received from whistle blowers as confidential and must address and report these incidences to the relevant Authority as soon as possible. On small projects, where no EO is appointed, the ECO must convey the contents of this EMP to the Contractor site team and discuss the contents in detail with the Contractor as well as undertake to conduct an induction and an environmental awareness training session prior to site handover to all contractors and their workforce.
C	Contractor	The principal contractor, hereafter known as the 'Contractor', is responsible for implementation and compliance with the requirements of the EMP and conditions of the EA's, contract, and relevant environmental legislation. The Contractor must

		ensure that all sub-contractors have a copy of and are fully aware of the content and requirements of this EMP. The contractor is required, where specified, to provide Method Statements setting out in detail how the management actions contained in the EMP will be implemented.
ESO	Environmental Site Officer	The ESO is employed by the Contractor as his/her environmental representative to monitor, review and verify compliance with the EMP by the contractor. This is not an independent appointment; rather the ESO must be a respected member of the contractor's management team. Dependent on the size of the development the ESO must be on site one week prior to the commencement of construction. The ESO must ensure that he/she is involved at **all phases** of the constriction (from site clearance to rehabilitation).
A	Lead Authority	The authorities are the relevant environmental department that has issued the Environmental Authorisation. The authorities are responsible for ensuring that the monitoring of the EMP and other authorisation documentation is carried out, this will be achieved by reviewing audit reports submitted by the ECO and conducting regular site visits.
OA	Other Authorities	Other authorities are those that may be involved in the approval process of an EMP. Their involvement may include reviewing EMP's to ensure the accuracy of the information relevant to their specific mandate. Other authorities may be involved in the development, review, or implementation of an EMP. For example, if a specific development requires a water use licence for the relevant national authority, then that authority should review and comment on the content of the section pertaining to that mandate.
EAP	Environmental Assessment Practitioner	The definition of an environmental assessment practitioner in Section 1 of NEMA 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 introduced through regulations*".
KEY	**FUNCTION**	**RESPONSIBILITY**
P	Proponent/Developer	Proponent is ultimately accountable for ensuring compliance to the EMP. The ECO must be contracted by the Proponent (full time or part time depending on the size of the project) as an independent appointment to objectively monitor implementation

		of relevant environmental legislation, conditions of the EMP for the project. The Proponent is further responsible for providing and giving mandate to enable the ECO to perform responsibilities. The developer must ensure that the ECO is integrated as part of the project team.
PM	Project Manager	The Project Manager has over-all responsibility for managing the project, contractors, and consultants and for ensuring that the environmental management requirements are met. The CE may also act as the PM. All decisions regarding environmental procedures must be approved by the PM. The PM has the authority to stop any decommissioning activity in contravention of the EMP in accordance with an agreed warning procedure.
ECO	Environmental Control Officer	An independent Environmental Control Officer (ECO) shall be appointed, for the duration of the pre-construction and construction phase of the services and bulk Infrastructure, by the developer to ensure compliance with the requirements of this EMP. Thereafter, the individual property owners will be responsible for the further appointment of the ECO). 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, Consulting Engineer, and Contractor. The Environmental Control Officer shall ensure that the developer staff and/or contractor are adhering to all stipulations of the EMP. The Environmental Control Officer shall be responsible for monitoring the EMP throughout the project 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 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 EMP have been adhered to
C	Contractor	The contractors shall be responsible for ensuring that all activities on site are undertaken in accordance with the environmental provisions detailed in this document and that sub-contractor 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 EMP 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 regulations
ESO	Environmental Site Officer	The ESO is employed by the Contractor as his/her environmental representative to monitor, review and verify compliance with the EMP by the contractor. This is not an independent appointment; rather the ESO must be a respected member of the contractor's management team. Dependent on the size of the development the ESO must be on site one week prior to the commencement of construction. The ESO must ensure that he/she is involved at **all phases** of the constriction (from site clearance to rehabilitation).
A	Lead Authority	The authorities are the relevant environmental department that has issued the Environmental Authorisation. The authorities are responsible for ensuring that the monitoring of the EMP and other authorisation documentation is carried out, this will be achieved by reviewing audit reports submitted by the ECO and conducting regular site visits.
OA	Other Authorities	Other authorities are those that may be involved in the approval process of an EMP. Their involvement may include reviewing EMP's to ensure the accuracy of the information relevant to their specific mandate. Other authorities may be involved in the development, review, or implementation of an EMP. For example, if a specific development requires a water use licence for the relevant national authority, then that authority should review and comment on the content of the section pertaining to that mandate.
EAP	Environmental Assessment Practitioner	The definition of an environmental assessment practitioner in Section 1 of NEMA 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 introduced through regulations*".

5.2 Lines of Communication

The Environmental Control Officer in writing should immediately report any breach of the EMP to the Project Manager. 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 developer should be notified immediately before any additional steps are taken.

5.3 Commencement of works

The site project contractors must timeously receive a copy of the construction phase EMP (CEMP) and any other further additional information that pertains to site conditions/amendments or deviations from original site plan.

- This EMP must be included to form part of the Contractors site specification documentation.
- A copy of the EMP must be always on site and available for presentation to any authority requesting to see such document.

5.4 Method Statements

The Contractor shall submit written Method Statements for all environmentally sensitive aspects of the work. It should be noted that Method Statements must contain sufficient information and detail to mitigate the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him / her to undertake the works. Work shall not commence until Method Statements have been put in place.

The method statement defines the nature of the planned work with a step-by-step outline such that the ECO and the applicant may understand the intentions of the contractor. It would enable them to assist in the implementation of any mitigating steps that will mitigate the environmental effects across such tasks. Until any construction activity is scheduled to start, the contractor must submit the method document. Work may not begin until the method statement has been accepted by the ECO and the applicant.

The method statement must cover the relevant information concerning:

- Location and timing of activities
- How to store material
- How to get equipment to and from site
- Procedures for the construction
- Compliance/ non-compliance with the Specifications, and
- Any other information which the applicant and ECO find appropriate

The contractor must comply with these approved method statements and any operation covered by a method statement must not begin until the applicant and the ECO have approved this method statement.

5.5 Record Keeping

All records relating to the implementation of this Environmental Management Plan must be kept together, be readily retrievable and available for scrutiny by any relevant authority. Records include the following:

- Declarations of understanding;
- ECO Checklist, audits and/or diary;
- Method statements
- Photographs (must be taken before, during and immediately after construction as a visual reference);
- The Environmental completion statement.
- These records must be available for scrutiny by any relevant authorities

5.6 Environmental Mitigation Specifications for Impacts

5.6.1 Social and Environmental Issues

It is important to minimize any negative perception, by taking proactive measures to prevent any social conflicts or social gaps and to develop a positive attitude within the community of the project. The following management strategies are to be implemented:

- Transparent fair recruitment and procurement practices. The contractor chosen should maximize the involvement of local communities in construction and support activities, to the extent possible, based on available skill levels. Whenever possible, training programmes that will benefit both construction stage skills requirements and long-term employment demand should be developed.
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.
- Priority should be given to the local suppliers of goods and services, which meet requirements of project procurement as far as is possible. To optimize the opportunities for local businesses to supply goods and services to the project, the contractor will do a survey of the capabilities of the goods and services that are locally available that are of an acceptable standard and quality and a survey of the capabilities of local construction companies and identify opportunities for local suppliers.
- A public complaint register and system to ensure that community complaints clearly investigated and adequate remedial taken should be instituted.
- Adequate notification should be done to people residing close to where construction activities are taking place especially if they are to be affected by them. In addition, there should be a system of compensation for any damages to infrastructure that may occur.

- Each worker should be required to abide by a Code of Conduct which will limit unsavoury activities in local towns and communities and restrict certain behaviours in the work sites and accommodation.

5.6.2 Establishing Office / Camp Sites

- The area chosen for these purposes shall be the minimum reasonably required and which will involve the least disturbance to vegetation. No trees or shrubs will be felled or damaged for the purpose of obtaining firewood, unless agreed to by the landowner/tenant.
- Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a firebreak shall be cleared around the perimeter of the camp and office sites.
- Lighting and noise disturbance or any other form of disturbance that may influence the landowner/tenant/persons lawfully living in the vicinity shall be kept to a minimum.
- Chemical toilet facilities or other approved toilet facilities should be sited in such a way that they do not cause water or other pollution. The use of existing facilities (if any) must take place in consultation with the landowner/tenant.
- In cases where facilities are linked to existing sewerage structures, all necessary regulatory requirements concerning construction and maintenance should be adhered to. The facilities must comply with water act requirements.
- Adequate signage must be provided, and the area must be appropriated secured.
- Adequate parking and security should be provided at the campsites.

5.6.3 Air Quality

The main sources of impact on air quality are mobilization of equipment, and earthworks. To ensure air quality characteristics of the project area are maintained near the baseline conditions during of the construction stage, the following measures shall be done:

- Regular inspection and scheduled maintenance of all equipment to ensure that construction vehicles are in good condition, are utilising fuel efficiently and do not smoke.
- Periodically watering the bare surfaces and excavations during construction to keep the dust level down.
- Slowing down the vehicles carrying the construction materials to reduce dust generation.
- Properly wrapping the material truck containers with cover to avoid dust spreads on windy days and prohibiting transport of over loaded trucks.
- Confine vehicle movements on unpaved roads to demarcated areas only.
- Speed control for all roads to limit dust generation.
- Providing and using the safety equipment such as dust mask, noise cover for employees who work near the dusty location such as the heavy equipment operators.
- Optimization of working schedule and work to help to minimize several material vehicle mobilization trips.

5.6.4 Noise and Vibrations

The primary noise sources will be vehicles and equipment utilized during the construction stage including graders, bulldozers, general purpose vehicles, etc. To manage the impact the following will be done:

- Working schedule for the activities with high noise level will be arranged between 08:00 AM to 17:00 PM.
- Only well-maintained vehicles and equipment should be operated onsite, and all machinery should be serviced regularly during the construction stage.
- Avoiding unnecessary simultaneous noisy activities.
- No amplified music shall be allowed at the site.
- Selecting 'quiet' construction equipment and working method and avoiding unnecessary revving and hooting.
- Providing ear protection for activities that are likely to create noise to protect worker's health and safety.

5.6.5 Erosion Control

Construction activities will require the removal of vegetation cover, potentially resulting in soil erosion and subsequent impacts on surface water quality due to uncontrolled rainwater run-off or mechanical/wind action.

The following measures are necessary to minimise impacts.

- Clearance of vegetation should be restricted to the absolute minimum required to facilitate construction activities to proceed. No protected plant species shall be removed without a permit. Disturbance of topsoil and vegetation rootstock must be minimized as far as possible.
- Appropriate drainage systems will be built to accommodate the surface water movement from the rain and wind.
- Construction activities shall take place only within the approved demarcated area. Appropriate drainage facilities must be constructed to make sure water runs smoothly downstream.
- Topsoil layer will be kept to rehabilitate and will be adequately stored to protect it from erosion.
- Areas where construction has been finished should immediately be re-vegetated.
- Buffer zones in the riparian zones should be provided.
- Construction to be contained within the approved boundaries and unnecessary disturbance adjacent to the site be avoided.
- Designated roads should be used during construction.
- Implement a monitoring program for the early detection of alien invasive plant species. The control program to combat declared alien invasive plant species should be continued during the operational phase.

5.6.6 Contamination of Land

Land contamination may occur because of fuel and oil leaks or spills and/or poor fuel, chemical and waste storage.

- The storage areas shall be securely fenced and secured and appropriately marked to indicate the goods in the storage. Material Safety Data Sheets should be kept for all hazardous materials on site.
- All hazardous substances and stocks such as diesel, oils, detergents, etc., shall be stored in areas with impervious flooring such as concrete and properly bunded. Drip pans, other impervious surface, shall be installed in such storage areas with a view to prevent soil and water pollution.
- Dedicated impervious areas should be designated for concrete mixing and the spillage from concrete mixed should be cleaned immediately.
- The waste management strategy on the construction site should be hinged on the waste hierarchy model of 'reduce, reuse and recycle' waste to reduce the ultimate impact on the environment.
- All used oils, grease or hydraulic fluids shall be placed in appropriate impervious containers and these receptacles will be removed from the site on a regular basis for disposal at a licensed disposal facility or sent for recycling/reuse with a registered facility.
- Residues from machinery maintenance and other sources contaminated with hazardous waste should be stored in proper containers that avoid seepage to ground.
- Spills should be cleaned up immediately by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. In areas where the spills are some, an absorbent agent can be used, and the area treated in situ.
- Adequate waste receptacles shall be made available, and all waste shall be adequately stored so that it does not pose a pollution risk. General waste is to be disposed of through the municipal service. Any other waste will be disposed of through only licensed waste disposal facilities.

5.6.7 Use of cement or concrete

Concrete and cement may only be mixed on existing hard surfaced areas, or edged mortar boards or a suitable container. Concrete may not be mixed or stored directly on the ground under any circumstances;

- The visible remains of the batch and concrete, either solid, or from washings, must be physically removed immediately and disposed of as hazardous waste.
- Washing of equipment shall be done in a container to prevent any runoff of contaminated washing water.
- Extreme care must be taken to limit the amount of water contaminated by washing equipment. Water from concrete washing can be re-used in concrete mixes or must be stored in drums, then removed from the site and disposed of at a licensed municipal dump site.

5.6.8 Surface Water and groundwater Quality

Poor chemical storage and poor waste management practices may lead to the contamination of water sources. Sewage and sanitary effluent have the potential to adversely affect the quality of receiving water bodies unless properly managed. To eliminate the risk of contamination, the following measures must be instituted.

- Chemical toilets shall be used during the construction stage and a registered service provider shall be contracted to service the toilets regularly.
- Suitable covered receptacles for waste shall be always available and conveniently placed for the disposal of waste.
- Warehouse floors and workshop areas should be of concrete. Drainage from warehouse is collected separately with trap for oil or fuels oil. Trap containers when full will be removed, properly stored and sent out to oil waste management company.
- Refuelling, fuel loading/unloading, oil change-outs, waste storage and disposal activities must be carefully managed to prevent spillages.
- Adequate toilets must be always available on site for use by construction staff. The digging of pit latrines for this purpose is not allowed under any circumstances. Should chemical toilets be used, an appropriate contractor must be employed to service these facilities on an ongoing basis.
- Spills or overflows from chemical or other toilets used by construction staff must be dealt with by a sanitation expert immediately.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and treated prior to discharge or removed from the site for appropriate disposal at a recognised facility.
- Responsible management of the site will be required to reduce risks/threats to groundwater and surface water.

5.6.9 Stream Embankment Management Plan

- The storm water management needs to be maintained to ensure natural flow of water will not be disturbed.

- No movement of heavy machinery is allowed in the delineated river areas.
- The floodlines need to be clearly demarcated prior to construction to ensure no movement occurs within the flood plains.
- Drip trays needs to be placed under stationary vehicles during construction, to prevent contamination of soil water.
- The flood plains should be treated as no-go areas as far as possible and no construction activities, material or waste should occur or be placed in these areas.
- Adequate monitoring of weed establishment and their continued eradication must be maintained.
- Monitoring of construction including weed establishment and erosion should take place and should also specifically include any impacts or alterations to the surrounding flood plains.

5.6.10 Water Usage

- Any water that is used which does not emanate from Municipality supplies must be registered and authorised by the Department of Water and Sanitation (DWS) prior to usage commencement.
- The contractor shall promote responsible water use by all personnel.

5.6.11 Fauna and Flora

Fauna and flora are negatively impacted by noise from construction activities (disturbance) and gathering/ hunting of flora and fauna by workers. The following measures are necessary to mitigate impacts.

- Topsoil shall be removed and kept for use during rehabilitation.
- The Contractor shall be responsible for the removal of alien vegetation within areas affected by the construction activities including cleared ground and topsoil stockpiles. Equipment used should be regularly washed down to avoid transporting seeds (invasive species) or plant diseases.
- No protected or endangered plant species shall be removed without a permit or license.
- No trees or shrubs will be felled or damaged for the purpose of obtaining firewood, unless agreed to by the landowner/tenant.
- The rehabilitation activities require the re-planting of vegetation in any areas cleared for the construction activities. This will promote soil stability, improve the visual environment, and provide faunal habitat.
- Hunting/gathering by construction workers must not be permitted.
- Localized habitat features such as nests, dens or burrow sites should be avoided as much as possible. In addition, care should be taken in working in areas of active nesting, spawning, and feeding areas.
- An Avifaunal specialist must be appointed to form part of the Environmental Awareness training and must be notified if a nest is found
- Prevent mortality of avifauna:
- A single perimeter fence should be used.
- Wire fence lines must always remain stiffly torqued and topmost wires strands must not contain any barbs.
- Prevent unnecessary displacement of avifauna by ensuring that contractors are aware of the requirements of the Construction Environmental Management Programme (CEMPr), as per Appendix 4 of the Avifaunal Impact Assessment.
- Prevent displacement of avifauna: Buffer Zones as stipulated in the Avifauna Impact Assessment; 200m from the pan and 100m from the identified seasonal wetlands must be strictly implemented and adhered to.
- Prevent unnecessary displacement of avifauna by ensuring that the rehabilitation of transformed areas is implemented by an appropriately qualified rehabilitation specialist, according to the recommendations of the ecological and wetland specialist studies: Develop a Habitat Restoration Plan (HRP) and ensure that it is approved.
- Monitor rehabilitation via site audits and site inspections to ensure compliance. Record and report any non-compliance.
- Prevention of ongoing electrocution of avifauna through reactive mitigation if necessary, depending on the gravity of the problem: Implementation of

mitigation measures such as insulation of live parts to prevent further electrocutions.

- Prevent unnecessary displacement of avifauna by ensuring that contractors are aware of the requirements of the CEMPr: A site-specific CEMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted. All contractors are to adhere to the CEMPr and should apply good environmental practice during construction. The CEMPr must specifically include the following:
- No off-road driving.
- Maximum use of existing roads.
- Measures to control noise and dust according to latest best practice.
- Restricted access to the rest of the property.
- Strict application of all recommendations in the ecological and wetland specialist reports pertaining to the limitation of the footprint.
- Implementation of buffer zones as stipulated in this report.

5.6.12 Safety

- The Contractor shall be responsible for the protection of the public and public property from any dangers associated with the construction and operation activities.
- All work should be handled in accordance with the Occupational Health and Safety Act and adequate safety precautions taken and suitable sanitation facilities provided in line with the requirements of the act. It is the duty of the contactor to ensure that all protective measures against accidents are done.
- Any works/activities which may pose a hazard to humans and/or domestic animals are to be protected or cordoned off and, if appropriate, warning signage erected.
- Appropriate security is to be provided at the site to protect equipment and provide for a safe construction site and works areas.
- Any damage caused because of the construction activities shall be repaired to the satisfaction of the project manager and owner.

5.6.13 Historical, Archaeological and Heritage Impacts

- A Phase 1 Heritage Impact Assessment has been conducted for the proposed solar facility.
- The specialist recommends that the project can proceed, but it is advised that a professional archaeologist is appointed as part of the project management plan to monitor for, and map potentially rare Early Stone Age LCT occurrences at the forthcoming solar panel positions during the construction phase of the development.

5.6.14 Solid waste Management

Waste refers to all solid waste, including domestic waste, hazardous waste, and construction debris. The Contractor is responsible for the establishment of a refuse control system (which must consider recycling wherever possible) that is acceptable to the ECO. Disposal arrangements must be made in advance and cleared with the ECO before construction starts.

- No littering or on-site burying or dumping of any waste materials, vegetation, litter, or refuse may occur.
- All solid waste must be disposed of offsite at an approved landfill site in terms of section 20 of the Environment Conservation Act (Act No. 73 of 1989). The Contractor must supply the ECO with a certificate of disposal.
- The Contractor must provide problem animal- and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced daily. The lids must be always kept firmly on the bins. Bins must not be allowed to become overfull and must be emptied regularly.
- Waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger proof and which the Engineer and the ECO has approved.
- All hazardous waste must be disposed of at a registered hazardous waste disposal site and certificates of safe disposal must be obtained.
- All waste generated during the decommissioning and reconstruction activities must be removed by the Contractor as soon as possible, and within the period specified in the EMP and disposed of at a registered landfill site.
- The Contractor must make provision for workers to clean up the Contractor's camp and working areas daily so that no litter is left lying around and so that the site is in a neat and tidy state. The Contractor must remove from site the refuse collected at least once a week.
- All sewage as well as any waste generated during the construction phase, should be collected, contained, and disposed of at the permitted and/or licensed facilities of the Local Authority. Please note that proof of the agreement between the Applicant and the concerned Local Authority must be submitted to the Department of Water and Sanitation.
- The disposal of general waste and that of hazardous waste must be carried out in an environmentally safe way as to prevent and/or minimise the potential for pollution of water resources and collection of which should be done by an accredited waste collector. All applicable Sections of the National Environmental Management: Waste Act (Act 59 of 2008) should be strictly adhered to.

5.6.15 Rehabilitation

- On completion of operations, all buildings, structures, or objects on the camp/office site shall be demolished and removed.
- Where office/camp sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.

- On completion of operations, the areas shall be cleared of any contaminated soil, which must be dumped as per the waste management plan.
- The entire infrastructure, equipment, plant, temporary housing and roads and other items used during the construction period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble, and tyres, will be removed entirely from the area, and disposed of at a registered waste disposal facility. It will not be permitted to be buried or burned on the site.
- Disturbed areas should be left in a safe and stable manner. Preventative measures may be necessary to construct adequate drainage structures including ditches and other structures to facilitate the movement of surface water.
- Photographs of the camp and office sites, before and during the construction and after rehabilitation, shall be taken at selected fixed points and kept on record.
- The disturbed surfaces shall then be ripped or ploughed and the topsoil previously stored shall be spread evenly to its original depth over the whole area. The area shall then be fertilised if necessary (based on a soil analysis).
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, there might be need that the soil be analysed and any deleterious effects on the soil arising from the construction operation be corrected and the area be seeded with a seed mix to his or her specification.

6 Operational Phase EMP

6.1 Traffic access routes

Operator of the site must control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes. In addition, such vehicles and plant must be so routed and operated as to minimise disruption to regular users of the routes not on the Site.

- On public roads adjacent to the Site vehicles/ delivery trucks/ tankers will adhere to municipal and provincial traffic regulations.
- Only approved access roads may be used.
- All measures must be implemented to minimize impacts on local commuters e.g., limiting tanker vehicles travelling on public roadways during the morning and late afternoon commute time and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.

6.2 Water Management

- Ensure that all additional water uses are correctly registered with the Department of Water and Sanitation.
- Water conservation measures such as low flow taps, high pressure hoses, duel flush toilets, water wise gardens, rainwater tanks etc. must be encouraged and implemented where possible if required.
- Every reasonable effort must be made to reduce the long-term water demand.
- Environmental training of personnel must include water conservation awareness.
- A monthly water monitor program with the aim of ever reducing the water usage must be implemented (records must be kept).

6.3 Waste Management

- An integrated waste management approach based on waste minimisation (e.g., reduction, recycling, re-use, and disposal) must be encouraged. Poor waste management can lead to adverse environmental impacts (e.g., odours, pollution, and visual impact) as well as health risks. Sound waste management is thus non-negotiable.
- To decommissioning the landfill site all waste from the surrounding environment must be gathered and levelled, which thereafter covered with gravels and soil.
- All solid waste will be disposed of at a landfill licensed in terms of section 2 (schedule 2) of National Environment Waste Act No. 59 of 2008 as amended.

- If required, any future industries on site requiring additional waste and/or emissions permits or licences in terms of the applicable legislation, the owner/tenants must obtain these permits/licences before the specific operations can commence.

6.4 Recycling

Whenever possible, a suitable recycle arrangement must be negotiated with a local recycle agent to ensure the re-use of recyclable material. Recycling should aim at sorting as much of the following materials as practical:

- Paper and cardboard
- Aluminium
- Copper
- Metals (other than aluminium and copper)
- Glass
- Organic waste
- Batteries
- Electronic equipment

6.5 Pollution Management

All possible pollution sources must be identified, and all reasonable steps taken to prevent pollution or accidental spillages.

- Ensure that all concentrated potential sources of pollution are protected (bunded) to minimise the risk of accidental spillage or pollution. Storage tanks should be bunded in such a way to contain at least 120% of the storage tank's capacity.
- Vehicles and other machinery must be serviced well above the 1:100-year flood line or within a horizontal distance of 100m from any watercourse or 500m of a wetland/pan. Oils and other potential pollutants must be disposed at an appropriate licensed site, with the necessary agreement from the owner of such a site.

6.6 Sewerage Management (if applicable)

If applicable, sewerage must be installed in accordance with the Municipal regulations and Department of Water and Sanitation (DWS) requirements.

- Sewerage management must aim at the prevention of pollution and must be maintained on a regular basis.
- Maintenance records must be kept.

- Sewage generated by the proposed solar facility will be collected in on-site conservancy tanks, transported, and disposed at the Groblershoop Sewage Treatment Works oxidation ponds which have been upgraded recently. The proposed solar facility in collaboration with the Destination River Resort will maintain the conservancy tanks by abstracting, transporting, and disposing sewage to the oxidation ponds.

6.7 Chemical management (if required)

Proper chemical management is required to minimize or eliminate the risk of environmental damage, as well as the risk of fatalities, illnesses, injuries, and incidents arising from the storage, handling, transport, and disposal of hazardous material.

- Compliance with the Occupational Health and Safety Act of 1983.
- An emergency plan must be made to comply with section 30 (Control of emergency incidents) of the National Environmental Management Act (NEMA), No. 107 of 1997.
- In case of a spill or leak of product, such incident must be reported to all relevant authorities and the Directorate: Pollution Management in accordance with Section 30 (10) of NEMA, No. 107 of 1997.
- All staff on the site should be well trained and have the appropriate PPE in all aspects of the Occupational Health and Safety procedures pertaining to activities of the filling station.
- Access to chemical storage areas must be strictly restricted authorised personnel.
- Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible the available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.
- A system shall be in place to ensure that MSDS are available to all personnel (including first aiders and medical personnel) involved in the transportation, storage, handling, use and disposal of hazardous materials on site.
- Labelling shall be in place on all storage vessels, containers, and tanks, where significant risks exist (based on a risk assessment). Labelling shall clearly identify the stored material.
- Personnel using and handling chemicals shall have received proper training for this purpose, using information available from the MSDS.
- For each site establishment, yard or other temporary chemicals storage area, a map indicating the potential sources of pollution and corresponding location of spill kits will be prepared. Spill kits will be placed at sufficient proximity in accordance with the degree of risk for spillage, and a responsible person designated for each.

- Emergency response equipment for spillage containment, fires, explosions, burns, etc. must be made available.
- Visible safety signs should be placed in areas of potential hazard, e.g., where tap water is not to be used for drinking purposes, indicating the dangers of chlorine, or informing of the safety equipment to be worn when entering a certain area, etc.
- Where chemicals such as chlorine are being dosed self-contained breathing apparatus (SCBA) must be available and the expiry date is relevant. This apparatus must be kept out of the chlorine room.
- Appropriate response arrangements with external medical providers e.g., ambulance, hospitals, fire brigade etc. must be made and emergency numbers must be easily available and prominently displayed.
- Emergency response procedures appropriate to the hazardous materials and the disposal of the hazardous material must be drafted.
- All emergency equipment to be checked at least every 6 months and serviced as required. A record of all checks must be kept.
- All associated records, documentation and registers, reports, monitoring data relating to the chemical management plan must be stored on file and available for audit purposes.

6.8 Emergency/contingency

Responsible management and operation of the facility and the adoption of best practice during the operation of the plant must take place.

- Downstream users are to be notified immediately by the site supervisor if a total system failure takes place.
- A list of contact details of suitably qualify technicians (fitters, electricians etc.) must be on site.
- The installed leak detection systems must be regularly checked.
- All relevant municipal and provincial water authorities are to be immediately notified in case of flooding, accidental overflow, or leakage from the facility.
- A safety representative must be allocated, and all personnel on the site must know who the safety representative is, and safety meetings should take place regularly.
- Maintenance and management roles should be clearly defined.
- All new operational staff and maintenance contractors to undergo general environmental awareness training before working on site, as well as health and safety induction. All staff to be suitably qualified and have the necessary training.
- Suitable response protocols implemented to ensure optimum and safe operation of the facility and corrective actions must be implemented in the event of any wastewater/effluent leaks or spills.

APPENDIX H: DETAILS OF EAP AND EXPERTISE

EAP DETAILS

NAME: S.E. van Rooyen

CONTACT DETAILS: Email: svr@envmgp.com
Cell: 083 678 3032

QUALIFICATIONS: Sampie van Rooyen has a MSc degree in Environmental Science. He has over 7 years environmental assessment experience in projects covering road construction, waste management, agri-industrial developments, water treatment works and bulk water infrastructure, mining, among many other.

APPENDIX I: SPECIALIST'S DECLARATION OF INTEREST

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgp.com
Director General: C.W. Vermeulen | 082 824 9308 | cwv@envmgp.com

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

(1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and

(2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

50MW PV ORANGE RIVER SOLAR FACILITY 1, GROBLERSHOOP, NORTHERN CAPE PROVINCE.

Specialist:	Dirk van Driel		
Contact person:	Dirk van Driel		
Postal address:	PO Box 681 Melkbosstrand		
Postal code:	7437	Cell:	0793335800
Telephone:		Fax:	
E-mail:	Saligna2030@gmail.com		
Professional affiliation(s) (if any)	SACNASP 400041/96		

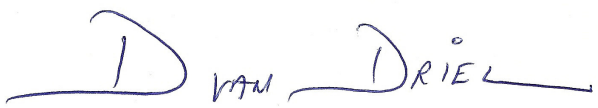
Project Consultant:	Environmental Management Group (Pty) Ltd		
Contact person:	Sampie van Rooyen		
Postal address:	P.O. Box 37473, Langenhoven Park		
Postal code:	9310	Cell:	083 678 3032
Telephone:	051 412 6350	Fax:	
E-mail:	svr@envmgp.com		

4.2 The specialist appointed in terms of the Regulations_

I, Dirk van Driel , declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Date: 1 May 2022

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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PROJECT TITLE

50MW PV ORANGE RIVER SOLAR FACILITY 1, GROBLERSHOOP, NORTHERN CAPE PROVINCE.

Specialist:	Noel van Rooyen		
Contact person:	Noel van Rooyen		
Postal address:	7 St George Street, Lionviham, Somerset West		
Postal code:	7130	Cell:	0828820886
Telephone:		Fax:	
E-mail:	noel@ekotrust.co.za		
Professional affiliation(s) (if any)	SACNASP Reg no. 401430/83		

Project Consultant:	Environmental Management Group (Pty) Ltd		
Contact person:	Sampie van Rooyen		
Postal address:	P.O. Box 37473, Langenhoven Park		
Postal code:	9310	Cell:	083 678 3032
Telephone:	051 412 6350	Fax:	
E-mail:	svr@envmgp.com		

4.2 The specialist appointed in terms of the Regulations_

I, Noel van Rooyen , declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Ekotrust cc

Name of company (if applicable):

2 May 2022

Date:

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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PROJECT TITLE

50MW PV ORANGE RIVER SOLAR FACILITY 1, GROBLERSHOOP, NORTHERN CAPE PROVINCE.

Specialist:	EcoFocus Consulting (Pty) Ltd		
Contact person:	Mr. AJH Lamprecht Pr. Sci. Nat.		
Postal address:	7a AG Visser Street Langenhovenpark, Bloemfontein		
Postal code:	9330	Cell:	072 230 9598
Telephone:	N/A	Fax:	N/A
E-mail:	ajhlamprecht@gmail.com		
Professional affiliation(s) (if any)	SACNASP: 115601; IAIA`sa: 5232; SAGIC Reg: 2405/2459		

Project Consultant:	Environmental Management Group (Pty) Ltd		
Contact person:	Sampie van Rooyen		
Postal address:	P.O. Box 37473, Langenhoven Park		
Postal code:	9310	Cell:	083 678 3032
Telephone:	051 412 6350	Fax:	
E-mail:	svr@envmgp.com		

4.2 The specialist appointed in terms of the Regulations_

I, **AJH Lamprecht** declare that

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

EcoFocus Consulting (Pty) Ltd

Name of company (if applicable):

2022/05/03

Date:

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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PROJECT TITLE

50MW PV ORANGE RIVER SOLAR FACILITY 1, GROBLERSHOOP, NORTHERN CAPE PROVINCE.

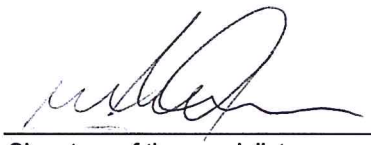
Specialist:	BVi Consulting Engineers		
Contact person:	Marius Pretorius		
Postal address:	PO Box 1155, Upington		
Postal code:	8800	Cell:	082 805 5629
Telephone:	054 337 6600	Fax:	
E-mail:	mariusp@bvinc.co.za		
Professional affiliation(s) (if any)	Registered as Professional Engineer with ECSA. PrEng 20010016		

Project Consultant:	Environmental Management Group (Pty) Ltd		
Contact person:	Sampie van Rooyen		
Postal address:	P.O. Box 37473, Langenhoven Park		
Postal code:	9310	Cell:	083 678 3032
Telephone:	051 412 6350	Fax:	
E-mail:	svr@envmgp.com		

4.2 The specialist appointed in terms of the Regulations_

I, Marius Pretorius, declare that -- General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realize that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

BVi Consulting Engineers Northern Cape (Pty) Ltd

Name of company (if applicable):

4 May 2022

Date:

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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PROJECT TITLE

50MW PV ORANGE RIVER SOLAR FACILITY 1, GROBLERSHOOP, NORTHERN CAPE PROVINCE.

Specialist:	Paleo Field Services		
Contact person:	Dr L Rossouw		
Postal address:	PO Box 38806 Langenhovenpark		
Postal code:	9330	Cell:	0842505992
Telephone:		Fax:	
E-mail:	lloyd@paleofs.co.za		
Professional affiliation(s) (if any)	ASAPA PSSA		

Project Consultant:	Environmental Management Group (Pty) Ltd		
Contact person:	Sampie van Rooyen		
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Postal code:	9310	Cell:	083 678 3032
Telephone:	051 412 6350	Fax:	
E-mail:	svr@envmgp.com		

4.2 The specialist appointed in terms of the Regulations_

I, Lloyd Rossouw , declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Paleo Field Services cc

Name of company (if applicable):

30 / 06 / 2022

Date:

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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PROJECT TITLE

50MW PV ORANGE RIVER SOLAR FACILITY 1, GROBLERSHOOP, NORTHERN CAPE PROVINCE.

Specialist:	CW Vermeulen (Environmental Management Group)		
Contact person:	CW Vermeulen		
Postal address:	10 New Market Road Greenvlei (Bfn)		
Postal code:	9301	Cell:	082 824 9308
Telephone:	051-4126350	Fax:	051-4126351
E-mail:	cwv@envmgp.com		
Professional affiliation(s) (if any)	EAPASA		

Project Consultant:	Environmental Management Group (Pty) Ltd		
Contact person:	Sampie van Rooyen		
Postal address:	P.O. Box 37473, Langenhoven Park		
Postal code:	9310	Cell:	083 678 3032
Telephone:	051 412 6350	Fax:	
E-mail:	svr@envmgp.com		

4.2 The specialist appointed in terms of the Regulations_

I, CW. VERMEULEN , declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Environmental Management Grap

Name of company (if applicable):

07 July 2022

Date:

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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PROJECT TITLE

50MW PV ORANGE RIVER SOLAR FACILITY 1, GROBLERSHOOP, NORTHERN CAPE PROVINCE.

Specialist:	Rick Nuttall		
Contact person:	Ric Nuttall		
Postal address:	10 Herdepoor Avenue, Woodlands, Bfn		
Postal code:	9301	Cell:	072 133 7627
Telephone:	072 133 7627	Fax:	
E-mail:	rick.nuttall.bfn@gmail.com		
Professional affiliation(s) (if any)	Ornithologist		

Project Consultant:	Environmental Management Group (Pty) Ltd		
Contact person:	Sampie van Rooyen		
Postal address:	P.O. Box 37473, Langenhoven Park		
Postal code:	9310	Cell:	083 678 3032
Telephone:	051 412 6350	Fax:	
E-mail:	svr@envmgp.com		

4.2 The specialist appointed in terms of the Regulations_

I, Rick Nuttall. , declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

R. J. Nuttall

Signature of the specialist:

Rick Nuttall

Name of company (if applicable):

07 July 2022

Date:

APPENDIX J: TITLE DEEDS

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgp.com
Director General: C.W. Vermeulen | 082 824 9308 | cwv@envmgp.com

3

Frylinck & Walker

LANGE CARR & WESSELS ING.
Oasis Protea Lodge Gebou
Schröderstraat 26
Upington, 8800
DOCEX 3

Opgestel deur my,

TRANSPORTBESORGER
ALTON ALEXANDER VILJOEN

SEËLREG
STAMP DUTY R
FOOI
FEES R 1050,00

T 1098 -- 2018

AKTE VAN TRANSPORT

HIERMEE WORD BEKEND GEMAAK

DAT ~~**ALTON ALEXANDER VILJOEN**~~ **WILTON DU LEY VILJOEN**

voor my die REGISTRATEUR VAN AKTES verskyn het te VRYBURG, die genoemde Komparant synde behoorlik daartoe gemagtig deur 'n Volmag aan hom/haar verleen deur

CORNEULUIS STEPHANUS VAN ECK
Identiteitsnommer 600812 5113 08 1
Ongetroud

gedateer 31 AUGUSTUS 2017

en geteken te UPINGTON

EN genoemde Komparant het verklaar dat die gesegde CORNEULUIS STEPHANUS VAN ECK die ondergemelde eiendom op 29 MAART 2017 waarlik en wettiglik verkoop het en dat hy/sy in sy/haar voornoemde hoedanigheid hierby sedeer en transporteer aan en ten gunste van:

LEON HUMPHREYS
Identiteitsnommer 620520 5134 08 2
en
MARIA CARMEN HUMPHREYS
Identiteitsnommer 690124 0241 08 6
Getroud binne gemeenskap van goed met mekaar

hulle erfgename, eksekuteurs, administrateurs of regverkrygendes in volkome en vrye eiendom:

GEDEELTE 18 VAN DIE PLAAS ROOISAND 387
GELEE IN DIE MUNISIPALITEIT !KHEIS
ADMINISTRATIEWE DISTRIK GORDONIA
PROVINSIE NOORD-KAAP
GROOT: 359,4451 (DRIE HONDERD NEGE EN VYFTIG KOMMA VIER VIER VYF EEN) HEKTAAR

AANVANKLIK OORGEDRA kragtens Transportakte Nommer T788/1965 met Kaart Nommer 8506/69 wat daarop betrekking het EN GEHOU kragtens Transportakte Nommer T2330/2014

ONDERHEWIG AAN die volgende voorwaardes:

A. Onteieningskennisgewing Nommer 30/1971 in guns van die Kaapse Provinsiale Administrasie, van 'n gedeelte ongeveer 22,2955 hektaar vir padreserwe, soos aangetoon op Kompilasie Plan Nommer H.464.

B. 'n Ewigdurende serwituut van elektriese kraggeleiding, 31 (een en dertig) meter wyn en strek 15,5 (vyftien komma vyf) meter weerskante van die middel van die kraglyn, in algemeen terme oor die eiendom onderworpe aan enige bestaande serwituut of ander saaklike reg, om elektrisiteit oor die eiendom te gelei deur middel van bogrondse kraglyne en ondergrondse kabels elk bestaande uit geleiers op pale of strukture met sodanige struktuur ondersteunings meganisme as wat nodig of gerieflik mag wees, soos geskep in Notariële Serwituutakte Nommer T221/2014.

C. 'n Ewigdurende serwituut vir telekommunikasie en ander aanverwante doeleindes oor die eiendom wesenlik langs die roete/s na verwys in B hierbo, deur middel van geleiers, kabel en/of ander toerusting gemonteer op die pale en/of strukture met sodanige struktuur ondersteunings meganisme as wat nodig of gerieflik mag wees, soos geskep in Notariële Serwituutakte Nommer T221/2014

WESHALWE die Komparant afstand doen van al die regte, titel en belang wat die gesegde

CORNEULUIS STEPHANUS VAN ECK

voorheen op genoemde eiendom gehad het en gevolglik ook erken dat hy geheel en al van die besit daarvan onthef en nie meer daartoe geregtig is nie, en dat, kragtens hierdie akte, bogenoemde

LEON HUMPHREYS en MARIA CARMEN HUMPHREYS, Getroud binne gemeenskap van goed met mekaar,

hulle erfgename, eksekuteurs, administrateurs of regverkrygendes tans en voortaan daartoe geregtig is, ooreenkomstig plaaslike gebruik, behoudens die regte van die Staat en erken hy ten slotte dat die koopprys van die eiendom wat hiermee getransporteer word die bedrag van **R1 800 000.00 (EEN MILJOEN AGT HONDERD DUISEND RAND)** is.

TEN BEWYSE WAARVAN EK, die genoemde Registrateur van Aktes, tesame met die Komparant hierdie Akte onderteken en dit met die Ampseël bekragtig het.

ALDUS GEDOEN EN VERLY op die kantoor van die REGISTRATEUR VAN AKTES te **VRYBURG** op 19 -06- 2019

q.q. Handtekening van komparant

In my teenwoordigheid

REGISTRATEUR VAN AKTES

SYE Kaapse Voet		RIGTINGS -HOEKE		KOÖRDINATE Y Stelsel 1° 21° X		
		Konstant		± 0·0	+10000000·0	
AB	9922·0	212. 10. 43	A	-307000·4	+ 145373·3	
BC	1070·4	308. 42. 0	B	-312284·5	+ 136975·4	
CD	9925·0	15. 2. 35	C	-313119·9	+ 137644·7	
DE	4370·2	53. 51. 30	D	-310543·9	+ 147229·6	
EA	4433·8	179. 48. 50	E	-307014·7	+ 149807·1	
Aa		32. 10. 43				
Ee		53. 51. 30				
BF	5592·0	212. 10. 43	F	-315262·5	+ 132242·4	
		Brug	Δ	-310805·2	+ 144806·0	

L.G. No. F 8506/69

Goedgekeur

K. Bom

n. Landmeter-generaal

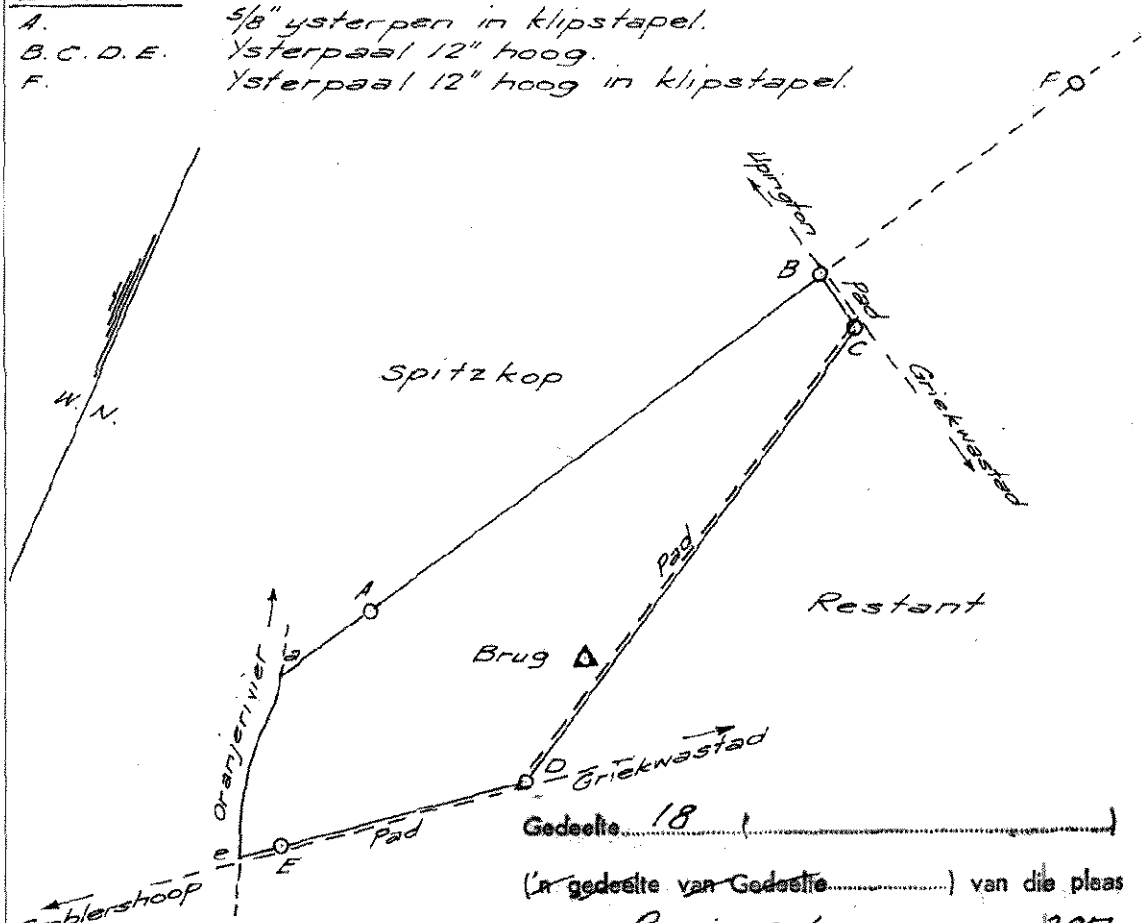
11-12-1969

Bakens.

A. 5/8" ysterpen in klipstapel.

B.C.D.E. Ysterpaal 12" hoog.

F. Ysterpaal 12" hoog in klipstapel.



Gedeelte 18 (Nr gedeelte van Gedeelte .....) van die plaas Rooisand Nr. 387

GORDONIA

Skaal: 1:40000

E K TE
359,4451 K AAR

Die figuur a. B. C. D. e. regterwal van Oranjerivier a.

stel voor 419·6517 morg grond, synde

Gedeelte 18 van die plaas Rooisand

geleë in die Administratiewe Distrik

Gordonia, Provinsie Kaap die Goeie Hoop.

Opgemeet in September 1969.

deur my, J.J. van Zyl Landmeter

Hierdie kaart is geheg aan No. T/A 916/71 gedateer t.g.v. Registrateur van Aktes	Die oorspronklike kaart is. No. B.1295/1894 geheg aan ~~Transport~~/Grondbrief No. Gor. Q. 3.39	Lêer No. S.8633/63 M.S. No. C.2343/69. Komp. GK-8BDD, ~~GK-8~~, GL-7 GL-7ACC GK-8DBB

387/18

APPENDIX K: WATER USE LICENCE

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgp.com
Director General: C.W. Vermeulen | 082 824 9308 | cwv@envmgp.com

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

Private Bag X313, Pretoria, 0001, Sedibeng Building, 185 Francis Baard Street, Pretoria,
Tel: (012) 336-7500 Fax: (012) 323-4472 / (012) 326-2715

LICENCE IN TERMS OF CHAPTER 4 OF THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998) (THE ACT)

I, ***Trevor Balzer,*** in my capacity as Acting Director-General in the Department of Water and Sanitation: and acting under authority of the powers delegated to me by the Minister of Department of Human Settlement, Water and Sanitation, hereby authorizes the following water uses in respect of this licence.

SIGNED: .....

DATE: 4/12/2020

LICENCE NO: 10/D73D/ACEGI/9892
FILE NO: 27/2/2/D473/6/1

1. Licensee: **Mr. L. Humphreys: Destination River Resort**

Postal Address:
5 De Laan 29
Oosterville
Upington
8801

2. Water Uses:

2.1	Section 21 (a) of the Act:	Taking water from a water resource; subject to the conditions set out in Appendices I and II
2.2	Section 21 (b) of the Act:	Storing water; subject to the conditions set out in Appendices I and III.
2.3	Section 21(c) of the Act:	Impeding or diverting the flow of water in a watercourse; subject to the conditions set out in Appendices I and IV.
2.4	Section 21 (e) of the Act:	Engaging in a controlled activity; irrigation of any land with waste or water containing waste; subject to the conditions set out in Appendices I and V.
2.5	Section 21(g) of the Act:	Disposing of waste in a manner which may detrimentally impact on a water resource subject to the conditions set out in Appendices I and VI.
2.6	Section 21 (i) of the Act:	Altering the bed, banks, course or characteristics of a watercourse; subject to the conditions set out in Appendices I and IV.

B12341

3. Properties is respect of which this licence is issued

3.1 Portion 18 of Farm Rooisand, No. 387

4. Registered owners of the Properties

Table 1: Property (ies) details where the water use(s) will take place

Farm names	Portion	Registered Owner	ID Number	Extent (ha)	Title deed number
Farm Rooisand No.387	Portion 18	Mr. L. Humphreys and Mrs. C. Humphreys	6205205134082 6901240241086	359.4451	T1098/2018

5. Licence and Review Period

5.1 This licence is valid for a period of 20 years from the date of issuance and may be reviewed within a period not exceeding five (5) years.

6. Definitions

Any terms, words and expressions as defined in the National Water Act, 1998 (Act 36 of 1998) shall bear the same meaning when used in this licence.

"The Regional Head"- means Chief Director: Northern Cape, Department of Water and Sanitation, Private Bag X6101, Kimberley, 8300.

"Extent of the watercourse" means the outer edge of the 1:100 year floodline or the delineated riparian habitat, whichever is the greatest.

"Regulated area of a wetland" is the use of water for section 21 c and i water uses within 500m radius from the boundary of any wetland.

A wetland means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

The characteristics of a watercourse/s mean the flow regime, water quality, habitat (including the physical structure of the watercourse/s and associated vegetation) and biota found within the extent of the watercourse/s. The Resource Quality characteristics as defined in the National Water Act, 1998 (Act 36 of 1998).

Report" refers to the reports entitled:

i. Fresh Water Report, prepared for EnviroAfrica, compiled by Watsan Africa, dated September 2019;
ii. Heritage Impact Assessment Report prepared for EnviroAfrica, compiled by Ubique Heritage Consultants, dated 25 August 2018;
iii. Environmental Impact Assessment Report prepared for EnviroAfrica, compiled by Watsan Africa, dated June 2019;
iv. Botanical Assessment Report compiled by Ekotrust CC, dated 23 August 2018
v. Traffic Impact Assessment Report compiled by BVi Consulting Engineers NC Pty Ltd, dated July 2019;

7. Description of activity

The ultimate aim of this development is the construction of chalets for a resort in Groblershoop. The resort will comprise of 12 chalets, 6 containers which have been converted into luxury rooms, and 6 tents erected in the form of luxury rooms. The resort is covering an area of approximately 7.5ha. The resort will also comprise of a holding dam, JoJo tanks, swimming pool, sports area, conservancy tanks and waste water treatment facility. Some of the infrastructure is within the 1:100 year flood plain.

The applicant proposes to abstract 7 599.6 m^3/a of water from the Orange River using an electric pump for the operation of the Resort. The applicant developed a storage (holding dam) of 20 000 m^3 north of the resort in which water will be pumped into 2×10 000L JoJo tanks. This water is further pumped to the Water Treatment Plant next to the JoJo tanks for purification purposes. Clean water is stored in 3×10 000L JoJo tanks and distributed to the different areas within the resort (Chalets, restaurant, laundry room ect). Waste water from the treatment plant is pumped into a second holding dam from where it will be used to irrigate the landscape gardens and the grass on the sports field.