Appendix H: EMPr

CONSTRUCTION AND POST CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME

Proposed Installation of Solar Panels and Associated Infrastructure on Portion 10 of Farm 502, Stellenbosch

November 2024

DOCUMENT NAME:

Proposed Installation of Solar Panels and Associated Infrastructure on Portion 10 of Farm 502, Stellenbosch

PROJECT NUMBER:	**DATE:**	**REPORT STATUS:**
N/A	November 2024	DRAFT REPORT

CARRIED OUT BY:

GroenbergEnviro (Pty) Ltd

COMMISSIONED BY:

Spier Farm Management (Pty) Ltd

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SYNOPSIS:

Not included in this report.

PREPARED BY:
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Revision Status

Rev No.	Issue Date	Author	Technical Review	Report Review
0	November 2024	M. Molife	H. Badenhorst/P. Badenhorst	H. Badenhorst/P. Badenhorst

Disclaimer

The opinions expressed in this report have been based on the information supplied to GBE by the Applicant. GBE has exercised all due care in reviewing the supplied information, with conclusions from the review being reliant on the accuracy and completeness of the supplied data.

GBE does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them.

Professional environmental opinions presented in this report apply to the site conditions and features as they existed at the time of GBE's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this report, about which GBE had no prior knowledge nor had the opportunity to evaluate.

POPIA

Regulation 42 of the Environmental Impact Assessment Regulations, 2014, as amended (EIA Regulations) provides for the opening and maintenance of a register of interested and affected parties (I&APs), by the proponent or applicant, which must contain personal information (names, contact details and addresses). It is therefore the duty of the proponent or applicant to collect the information that must be contained in the register.

Regulation 42 further requires that these registers must be submitted to the Competent Authority (CA). There is no legal requirement in the EIA Regulations that such registers must be included in the reports that are published for public consultation purposes or be made publicly available as part of the EIA process. Since the information in the registers is personal/private information, it should not be included in or attached to reports and be made available in the public domain. CAs, applicants and environmental assessment practitioners (EAPs) should take note that, if this information was previously included in reports and shared in the public domain, this now requires reconsideration in accordance with the POPIA. The Department realises that EAPs may have included some personal information in these reports when they receive and compile them. Likewise, this information may reach CAs who also now need to be sensitive about the management of this information.

Section 11(1)(a) of POPIA provides further that personal information may only be processed if the data subject consents to the processing.

The requirements of section 18.1 of POPIA requires that if personal information is collected, the responsible party must take reasonably practicable steps to ensure that the data subject is aware of, amongst other things, the information being collected, the name and address of the responsible party (in this case the EAP and applicant), the purpose for which the information is collected, whether or not the supply of the information by the data subject is voluntary or mandatory, the consequence of the failure to provide the required information,

further information such as the recipient of the information, as well as the existence of the right to object to the processing of the personal information.

EAPs should obtain express consent from commenting parties to include their names with their comments in the reports. It is therefore recommended that the EAP, when requesting comment, should also request the persons who may comment to provide consent that their names may be included with their comments in the reports. Commenting parties should also be informed that they may opt to not have their names shared, as well as an indication of the consequences of such an option being exercised, in which case only the comments will be included. This will ensure that the requirements of section 11(1)(a) of POPIA, which provides that personal information may only be processed if the data subject consents to the processing, is given effect to. Even when consent is obtained it is recommended that only the minimum details (the names) should be included in reports and the inclusion of unnecessary and excessive information should be avoided.

Contact Information

Please contact the undermentioned should you require further information.

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List of Abbreviations

AQA	Air Quality Act
BSc	Bachelor of Science (Latin Baccalaureus Scientiae)
dBA	A-weighted decibels
DEA&DP	Department of Environmental Affairs and Development Planning
DWS	Department of Water and Sanitation
EA	Environmental authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ECO	Environmental Control Officer as per the environmental authorisation
EMPr	Environmental Management Programme
EMS	Environmental Method Statement
EO	Environmental officer as appointed by the client or contractor
GN	Government Notice
HWC	Heritage Western Cape
I&AP	Interested and affected party
IAIASa	International Association for Impact Assessment South Africa
IEM	Integrated Environmental Management
NEMA	National Environmental Management Act
NEM:AQA	National Environmental Management: Air Quality Act
NEM:BA	National Environmental Management: Biodiversity Act
NEMWA	National Environmental Management: Waste Act
NHRA	National Heritage Resources Act
NWA	National Water Act
RE/Engineer	Resident Engineer Overseeing the Construction Activity
RP	Responsible person
SABS	South African Bureau of Standards
SDP	Site Development Plan

Definitions

For the purposes of this specification the following definitions shall apply:

Alien species - Plants and animals that do not arrive naturally in an area – they are brought in by humans. Alien plants often force indigenous species out of the area. *Rooikrans* is a good example of alien species in the Cape.

Alternative – A possible course of action in place of another that would meet the same purpose and need defined by the development proposal. Alternatives considered in the Environmental Impact Assessment (EIA) process can include location and/or routing alternatives, layout alternatives, process and/or design alternatives, scheduling alternatives or input alternatives.

Aspect – Element of an organisation's activities, products or services that can interact with the environment.

Auditing – A systematic, documented, periodic and objective evaluation of how well the environmental management programme is performing to help safeguard the environment by facilitating the management control that would include meeting regulatory requirements. Results of the audit help the organisation to improve its environmental policies and management systems.

Biodiversity – The rich variety of plants and animals that live in their own environment. Fynbos is a good example of rich biodiversity in the Cape.

Built environment – Physical surroundings created by human activity, e.g. buildings, houses, roads, bridges and harbours.

Conservation – Protecting, using and saving resources wisely, especially the biodiversity found in an area.

Construction site, working area or site – Any area within the boundaries of the property(ies) where construction is taking place.

Contamination – Polluting or making something impure.

Corrective (or remedial) action – Response required to address an environmental problem that is in conflict with the requirements of the Environmental Management Programme Report (EMPr). The need for corrective action will be determined through monitoring, audits or management review.

Degradation – The lowering of the quality of the environment through human activities, e.g. river degradation, soil degradation.

Ecology – The scientific study of the relationship between living things (animals, plants and humans) and their environment.

Ecosystem – The relationship and interaction between plants, animals and the non-living environment.

Environment – Our surroundings, including living and non-living elements, e.g. land, soil, plants, animals, air, water and humans. The environment also refers to our social and economic surroundings and our effect on our surroundings.

Environmental Impact Assessment (EIA) – An Environmental Impact Assessment (EIA) refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of a proposed development. The EIA includes an evaluation of alternatives, recommendations for appropriate management actions to minimised or avoid negative impacts and to enhance positive impacts, as well as proposed monitoring measures.

Environmental Management System (EMS) – Environmental Management Systems (EMS) provide guidance on how to manage the environmental impacts of activities, products and services. They detail the organisational structure, responsibilities, practices, procedures, processes and resources for environmental management. The International Standards Organisation. (ISO) ISO14001 EMS standard has been developed by the International Standards Organisation.

Environmental policy – Statement of intent and principles in relation to overall environmental performance, providing a framework for the setting of objectives and targets.

Fynbos – Low-growing and evergreen vegetation found only in the south Western Cape. Fynbos is known for its rich biodiversity.

Habitat – The physical environment that is home to plants and animals in an area. It is where they live, feed and reproduce.

Hazardous waste – Waste, even in small amounts, that can cause damage to plants, animals, their habitat and the well-being of human beings, e.g. waste from factories, detergents, pesticides, hydrocarbons, etc.

Impact – A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment, within a defined time and space.

Indigenous species – Plants and animals that are found naturally in an area.

Infrastructure – The network of facilities and services that are needed for economic activities, e.g. roads, electricity, water, sewerage.

Integrated – Mixing or combining all useful information and factors into a joint or unified whole.

Integrated Environmental Management (IEM) – Managing the environment by including environmental factors in all stages of development. This includes thinking about physical, social, cultural and economic factors and consulting with all the people affected by the proposed developments.

Land use – The use of land for human activities, e.g. residential, commercial, industrial use.

Mitigation – Measures designed to avoid, reduce or remedy adverse impacts

Natural environment – Our physical surroundings, including plants and animals, when they are unspoiled by human activities.

No-Go area – Any area where no access is allowed.

Over utilisation – Over-using resources. This affects their future use and the environment.

Policy – A set of aims, guidelines and procedures to help make decisions and manage an organisation or structure. Policies are based on people's values and goals. See also Integrated Environment Management.

Process – A number of planned steps or stages.

Proponent and/or Developer – Entity who applies for environmental approval and is ultimately accountable for compliance to conditions stipulated in the Environmental Authorisation (EA) and requirements of the EMPr.

Recycling – Collecting, cleaning and re-using materials.

Refuse – refers to all solid waste, including construction debris (cement bags, wrapping materials), waste and surplus food, food packaging, organic waste etc.

Resources – Parts of our natural environment that we use and protect, e.g. land, forests, water, wildlife, and minerals.

Scoping Report – A report presenting the findings of the scoping phase of the EIA. This report is primarily aimed at reaching closure on the issues and alternatives to be addressed in the EIA. See also Integrated Environmental Management.

Stakeholders - A subgroup of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term includes the proponent, relevant authorities and all interested and affected parties.

Stormwater management – Strategies implemented to control the surface flow of stormwater, such that erosion, sedimentation and pollution of surface and ground water resources in the immediate and surrounding environments, are mitigated. This is specifically important during the construction and decommissioning phases of a project.

Sustainability – Being able to meet the needs of present and future resources.

Sustainable development – Development that is planned to meet the needs of present and future generations, e.g. the need for basic environmental, social and economic services. Sustainable development includes using and maintaining resources responsibly.

Waste Management – Classification, recycling, treatment and disposal of waste generated during the activities on site.

Wetlands – An area of land with water mostly at or near the surface, resulting in a waterlogged habitat containing characteristic vegetation species and soil types, e.g. vleis and swamps.

Zoning – The control of land use by only allowing specific type development in fixed areas or zones.

Requirements as stated in GN 982 Environmental Impact Assessment Regulations, 2014, Appendix 4 and corresponding section:

Requirement	Section
1. (1) An EMPr must comply with section 24N of the Act and include -	
(a) details of (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	EAP Details, page v of the document
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Introduction, page 1
(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;	**Appendix F**, page 47
d) a description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including- (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post-closure; and (v) where relevant, operation activities;	Aims and Objectives of the EMPr, page 8 Proposed Impact Management Actions for Construction Phase, page 19 Proposed Impact Management Actions for Post-Construction , page 53

e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Proposed Impact Management Actions for Construction Phase, page 19 Proposed Impact Management Actions for Post-Construction , page 53
(f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to – (i)avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding the closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Proposed Impact Management Actions for Construction Phase, page 19 Proposed Impact Management Actions for Post-Construction , page 53
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Proposed Impact Management Actions for Construction Phase, page 19 Proposed Impact Management Actions for Post-Construction , page 53
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Proposed Impact Management Actions for Construction Phase, page 19 Proposed Impact Management Actions for Post-Construction , page 53
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Aims and Objectives of the EMPr, page 8 Compliance with Applicable Laws, page 8. Roles and Responsibilities on page 9.

(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Proposed Impact Management Actions for Construction Phase, page 19 Proposed Impact Management Actions for Post-Construction , page 53 Monitoring and Auditing, page 13
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Proposed Impact Management Actions for Construction Phase, page 19 Proposed Impact Management Actions for Post-Construction , page 53 Monitoring and Auditing, page 13
(l)a programme for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Monitoring and Auditing, page 13
m) an environmental awareness plan describing the manner in which - (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Environmental Awareness Training, page 16
(n) any specific information that may be required by the competent authority	Environmental Authorisation, page 40

Details of EAP

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EAP registrations/Associations:	Mische – IAIAsa, EAPASA (2020/1410)	

1 Introduction

1.1 Project Description

The proposed development, situated on Portion 10 of Farm 502, is located south-west of Stellenbosch, within the Stellenbosch Municipal area (see **Figure 1**).

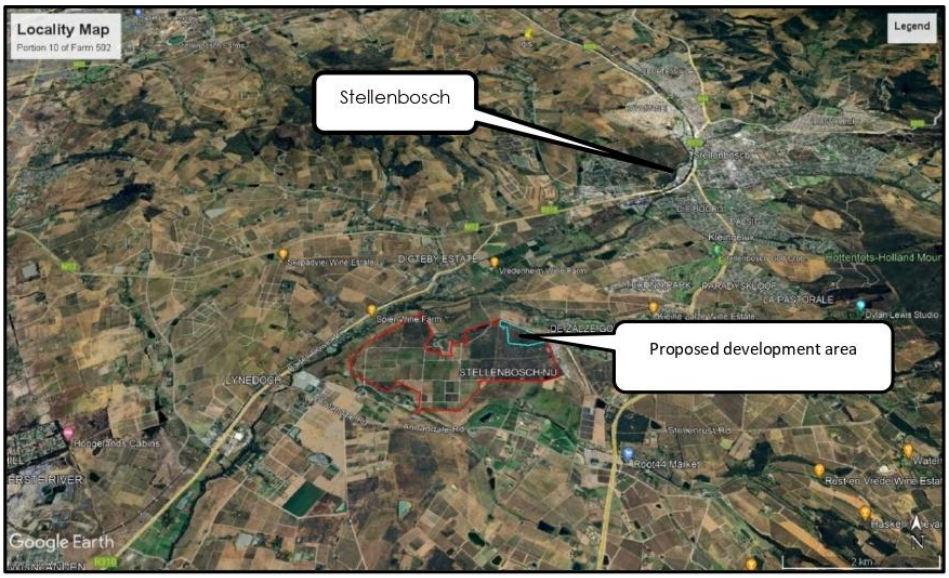


Figure 1: Proposed development location (indicated by the red polygon)

The proposed development requires the clearance of approximately 19ha of vegetation for the installation of solar panels and associated infrastructure, which covers an area of more than 1ha. **Figure 2** illustrates the development layout.

The proposed development will require the following:

- Ground Mounted Solar Panels and associated infrastructure.
  - The solar panels are fixed and do not move with the sun.
  - The panel frames are secured to the ground by drilling reinforced poles into the ground.
- A container for inverters will be installed. This will be a heavy-duty aluminium powder-coated container on stilts.
- Underground feeder cables from the inverter building to the areas where electricity is required.
- Security fence (e.g. Clearvu fencing) will be installed around the solar panel site perimeter.

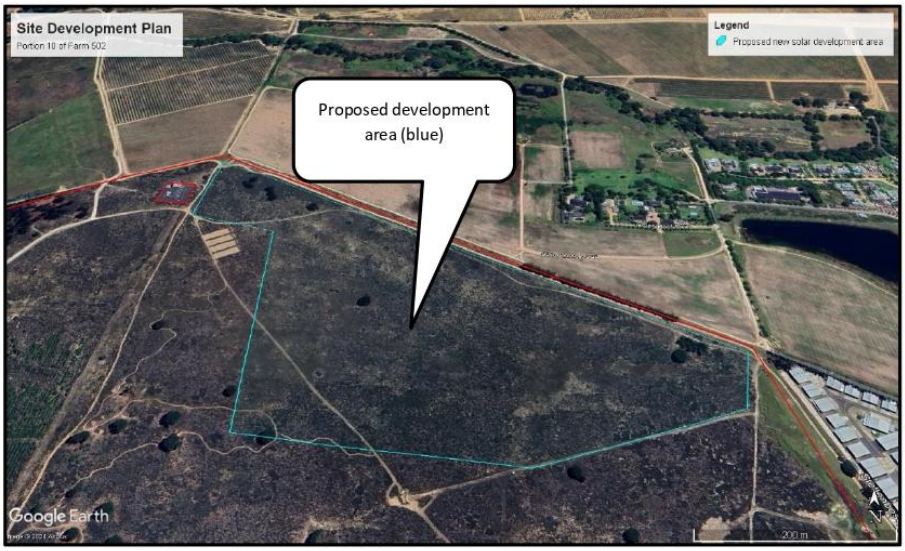


Figure 2: Proposed development layout

The proposed development will be conducted in 2 phases.

- Phase 1 – +/- 1.8MW for own consumption (+/- 2.5ha) (refer to **Figure 3**).
- Phase 2 – Up to 7MW for distribution/wheeling. (+/- 12ha).
- Phase 1 will be for Spier's own energy security needs.
- Phase 2 would be connected to the Eskom grid for purposes of wheeling electricity to other Eskom-connected customers.

Figure 3: Illustration of Phase 1

The applicant considered the need for the conservation of the natural environment on which the two phases of this proposed development will be constructed, by enhancing

and incorporating other activities being conducted by Spier to achieve dual use of the land area.

The project will include an Agri-voltaic solution, meaning low soil and vegetation impact and the establishment of pollinators on and around the proposed development area. This makes use of low-impact mounting structures with no concrete bases, wider row spacing that reduces shading on vegetation between rows and higher mounting of panels to allow light under the panels for plant growth. Refer to **Figure 4** and **Figure 5** for an illustration of the proposed panels.

Figure 4: Illustration of the solar panels (1)

Figure 5: Illustration of the solar panels (2)

Shading is particularly important to consider for winter months in the Western Cape to allow plant growth to continue.

On the approval of this updated EMPr by the Department of Environmental Affairs and Development Planning (DEA&DP), the developer must ensure that its conditions are implemented by making the document available to the contractor and also ensure that

an Environmental Control Officer (ECO) or the Resident Engineer (RE) are appointed, and systems are in place to evaluate compliance. The contractor(s) is/are expected to familiarise himself with the contents of this document and to implement its conditions.

Overall the EMPr will aim to:

- Control the construction and operational activities in such a way that negative impacts on the physical environment, sensitive areas and surrounding residential areas are minimised or prevented.
- Ensure that mitigation and rehabilitation measures are implemented where required.

Please note that this document does not replace any other regulations, laws and bylaws that the contractor must adhere to. It specifically does not replace the regulations of the Occupational Health and Safety Act of 1993 (Act No. 85 of 1993).

Funding for the implementation of the Construction EMPr is the financial responsibility of the developer.

The project environmental issues are shown in Chapter 2 with the aim and objectives shown in Chapter 3 and compliance with applicable laws included in Chapter 4. Chapter 5 details the roles and responsibilities, while Chapter 6 discusses the monitoring and auditing, with the different schedules for auditing and monitoring shown in Chapter 7. The pre-construction and construction EMPr are shown in Chapter 8 and impact management actions included in Chapter 9. The operational management actions are included in Chapter 10.

Appendix A is earmarked for the environmental authorisation which will be included upon receipt. The tracking table is included in **Appendix B**, and the schedule of fines shown in **Appendix C**. The method statement forms are shown in **Appendix D** and **Appendix E**. The superimposed project map is shown in **Appendix F**.

2 Environmental Issues

2.1 Sensitive Environment

2.1.1 Botanical and Biodiversity Assessment (Appendix G1 of the BAR)

"General Assessment and Recommendations

- *Only vegetation type was originally found in the study area namely Swartland Granite Renosterveld. This vegetation no longer exists in its typical state in the study area, and this is ascribed to historical agriculture. The entire site was cleared and ploughed. The vegetation is now a uniform, secondary plant community dominated by weedy species in the family Asteraceae and lacking characteristics of true renosterveld.*
- *Swartland Granite Renosterveld is classified as Endangered A2b, A3, A3alt, B1(i), B1(iii) in the Revised National List of Ecosystems Threatened and in need of Protection (Government Gazette, 2022).*
- *Development of the area earmarked for the solar energy facility would not result in any further loss of Swartland Granite Renosterveld. What would be lost is secondary semi-natural vegetation in moderate to poor condition.*
- *When scrutinizing the WCBSP 2017 map as shown in Figure 24, it is seen that the study area falls largely within a CBA1. It is my view that this classification is exaggerated and at best should be mapped as ESA1.*
- *The anticipated direct impacts would be Low Negative prior to mitigation. However, no mitigation on the site itself is recommended. In the broader context, apart from the agricultural development, there is active conservation of other parts of Re Portion 10 of Farm Louw's Bos 502, Stellenbosch, in some areas actively encouraging the return of near-natural Swartland Granite Renosterveld as opposed to simply leaving the land to lie fallow and permitting the dominance of such species as Eriocephalus africanus (kapokbos), Stoebe plumosa (slangbos) and Passerina corymbosa. The conservation farming approach is articulated on the Spier website.*
- *No rare or threatened plant species (species of conservation concern – SCC) were found during the survey despite the survey being conducted in spring. This is ascribed to the loss of these species from the seedbank because of historical cultivation of the land.*

11. Conclusions

The vegetation in the proposed solar energy development area at Re Portion 10 of Farm Louw's Bos 502, Stellenbosch, would originally have been Swartland Granite Renosterveld. No typical Swartland Granite Renosterveld remains and instead a uniform, secondary, species-poor plant community is now present. No plant species of conservation concern were recorded, and the vegetation is not deemed to be sensitive.

It is my strong view that the classification of the area as a CBA1 in the Western Cape Biodiversity Plan is highly exaggerated and it should, at the most, be classified as an Ecological Support Area. This view is supported by field observation as well as the Red Listed Ecosystems classification that hardly includes the study area within endangered habitat. The proposed solar energy facility development is thus supported from both botanical and biodiversity perspectives, with the principal mitigation measure being to conserve as much semi-natural habitat elsewhere on the property that should be actively managed (not simply left fallow!) to attempt to get the vegetation to revert to more typical Swartland Granite Renosterveld."

2.1.2 Agricultural Compliance Statement (Appendix G2 of the BAR)

"The potential of the soils of the development site varies between medium-low to medium-high. With appropriate soil preparation and irrigation, the site has the potential to be used for intensive crop production. However, within the context of the rest of the farm, it is highly unlikely to be developed for cultivation within the medium to long term, due to the following facts:

- *It is situated far from the existing irrigation and other farming infrastructure;*
- *There is ample land with similar or better soils available for expansion closer to the existing infrastructure;*
- *Developing the land will require encompassing environmental authorisation and approval for the clearing of vegetation for cultivation in terms of CARA;*

The applicant proposes the implementation of the concept generally known as Agricvoltaics for the development of the solar PV facility. Agrivoltaics, involves the installation of solar panels above crops, creating a dual-use system that can potentially enhance the efficiency of land use while providing additional benefits, such as microclimate moderation and crop protection against excessive wind and/or sunlight. In the case of the Spier agrivoltaic facility, no crop production is proposed, but rather the retention or enhancement of the grazing capacity of the vegetation and the utilization thereof by small stock. The agricultural (grazing) potential of the land will thus not be lost, but more importantly the vegetation cover will be retained, which will protect the soil from erosion or degradation while surface runoff will be mitigated. The benefit of the retention of the grazing capacity is small (6 SSU's with the current vegetation – see paragraph 4.1.6) and rather irrelevant given the extensive grazing opportunities elsewhere on the farm.

The very high agricultural sensitivity of the neighbouring land to the north – as indicated by the Screening Tool – is the result of land that was previously used for irrigated cultivation. This land is fallow at the moment, but can be used for intensive

crop production again in future. The solar facility as proposed, will have no impact on such possible future cultivation.

The development site is directly next to an existing substation and therefore there will be no need for long overhead powerlines. Also, the development footprint of the facility falls within the allowable limits.

The above arguments and factors are all in support of the application and thus approval is recommended, irrespective of the implementation of an agrivoltaics or conventional solar PV option."

3 Aims and Objectives of the EMPr

The aim of the EMPr is to:

- Identify those construction activities identified for the proposed project that may have a negative impact on the environment;
- Outline the mitigation measures that will need to be taken and the steps necessary for their implementation; and
- Describe the reporting system to be undertaken during construction.

The objectives of the EMPr are to:

- Identify a range of mitigation measures to reduce and mitigate the potential adverse impacts to minimal or insignificant levels;
- Provide a pro-active and practical working mechanism to enable the measurement and monitoring of environmental performance on site; and,
- Ensure that the environmental specifications are identified, effective and contractually binding to ensure compliance on site.

4 Compliance with Applicable Laws

The supreme law of the land is the Constitution of the Republic of South Africa, which states: "*Every person shall have the right to an environment which is not detrimental to his or her health or well-being.*" Laws applicable to the protection of the environment in terms of Environmental Management (and relating to construction activities) include, but are not restricted to:

- National Environmental Management Act (NEMA), No. 107 of 1998, as amended;
- National Environmental Management: Air Quality Act (NEM:AQA), No. 39 of 2004;
- National Environmental Management: Biodiversity Act (NEM:BA), No. 10 of 2004;
- National Environmental Management: Waste Act (NEMWA), No. 59 of 2008;
- National Heritage Resources Act (NHRA), No. 25 of 1999;
- National Water Act (NWA), No. 36 of 1998 and amendments;
- National Veld and Forest Fire Act, No. 101 of 1998;
- Occupational Health and Safety Act, No. 85 of 1993.

Of particular importance is Section 28 (1) of the NEMA, which places an obligation on all individuals to take due care of the environment and to ensure remedial action is instituted to minimise and mitigate environmental impact.

The EMPr forms part of the contract documentation and is thus a legally binding document. In terms of this Act, an individual responsible for environmental damage to both the environment and human health must pay for the costs, and for the preventative measures to reduce or prevent additional pollution and/or

environmental damage from occurring. This is referred to as the Polluter Pays Principle.

5 Roles and Responsibilities

The key role players during the proposed work are anticipated to be as follows:

- Applicant (Holder of the EA) – Spier Farm Management (Pty) Ltd;
- Responsible Person (RP), who will oversee the activities of the contractors on site;
- Environmental Control Officer (ECO);
- Contractor responsible for the construction and maintenance activities; and
- Any sub-contractors hired by the contractor.

The anticipated management structure (organogram) is presented in **Figure 6** below and shows the proposed lines of communication for construction and maintenance activities. The applicant retains overall responsibility for construction and maintenance and the implementation of the EMPr.

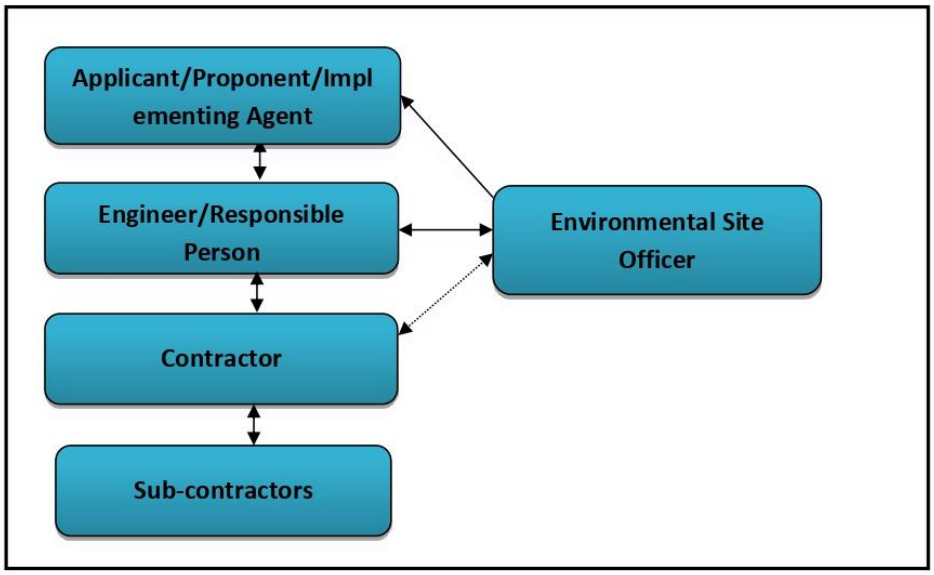


Figure 6: Management reporting structure

Key roles and responsibilities with respect to the implementation of an EMPr are outlined below.

5.1 Applicant – Spier Farm Management (Pty) Ltd

The applicant has overall responsibility for management of activities. In terms of environmental management, the applicant/proponent will:

- Appoint suitably experienced engineers, if required, who will be responsible for the overall management of activities on site;
- Identify any activities not covered by the scope of this EMPr, and determine the need for, and where required, obtain relevant authorisations;
- Ensure that the engineers are aware of the requirements of the EMPr, implement the EMPr and monitor the contractor's activities on site;
- Ensure that the contractor is aware of and contractually bound to the provisions of this EMPr by including the relevant environmental management requirements in tender and contract documents, as appropriate;
- Appoint a suitably qualified and experienced ECO to oversee environmental management of the required works;
- Ensure that the contractor remedies environmental problems timeously and to the satisfaction of the engineer and authorities (where necessary); and
- Notify the authorities, should problems not be remedied timeously.

5.2 Responsible Person

The applicant will appoint suitably qualified engineers (if necessary), who in turn will designate a Responsible Person (RP) to oversee activities of the contractor. This role will be fulfilled either by the Resident Engineer (RE) or a suitably qualified representative of the applicant, if applicable. The RP shall:

- Ensure that the contractor is duly informed of the EMPr and associated responsibilities and implications of this EMPr prior to commencement of construction and maintenance activities;
- Identify the need for, and request/provide method statements (MS) for future maintenance and repair works;
- Monitor the contractor's activities with regard to the requirements outlined in the EMPr;
- Report any environmental emergencies/concerns to the applicant immediately; and
- Ensure that non-compliance is remedied timeously and to the satisfaction of the relevant authorities.

5.3 Environmental Control Officer

The ECO shall be a suitably qualified/experienced environmental professional or professional firm appointed by the applicant/proponent (developer) for the duration of repair or maintenance works. The ECO shall:

- Request method statements (MS) from the contractor prior to the start of relevant activities, where required, and approve these (as appropriate) without causing undue delay;
- Monitor, review and verify compliance with the EMPr by the main contractor, as well as any sub-contractors and specialist contractors;
- Identify areas of non-compliance and recommend corrective actions (measures) to rectify them in consultation with the applicant, the RP and the contractor, as required;
- Compile a checklist highlighting areas of non-compliance following each ECO inspection;
- Ensure follow-up and resolution of all non-compliances;
- Provide feedback for continual improvement in environmental performance;
- Respond to changes in project implementation or unanticipated activities which are not addressed, and which could potentially have environmental impacts, and advise the applicant, the RP and contractor as required.

5.4 Contractor

The contractor will be required to appoint or designate a Contractor's Environmental Representative (CER) who will assume responsibility for the contractor's environmental management requirements on site and be the point of contact between the contractor, the ECO and the RP. The CER shall:

- Ensure that all activities on site are undertaken in accordance with the CEMPr and OEMPr and/or an approved MS;
- Monitor all sub-contractor(s)' activities with regard to the requirements outlined in the EMPr;
- Ensure that all employees and sub-contractors comply with the EMPr;
- Immediately notify the RP and ECO of any non-compliance with the EMPr, or any other issues of environmental concern; and
- Ensure that non-compliance is remedied timeously and to the satisfaction of the RP and ECO.

The contractors have a duty to demonstrate respect and care for the environment. The contractors will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the EMPr, environmental regulations and relevant legislation.

5.5 Sub-contractors

All sub-contractors will be required to:

- Ensure that all employees are duly informed of the EMPr and associated responsibilities and implications of this EMPr prior to maintenance activities;
- Ensure that all activities on site are undertaken in accordance with the EMPr;
- Monitor employees' activities with regard to the requirements outlined in the EMPr;
- Immediately notify the RP and ECO of any non-compliance with the EMPr, or any other issues of environmental concern; and
- Ensure that non-compliance is remedied timeously and to the satisfaction of the RP and ECO.

The sub-contractor(s) has/have a duty to demonstrate respect and care for the environment. The sub-contractors will be responsible for the cost of rehabilitation of any environmental damage that may result from his/their presence on site, and thus his/their non-compliance with the EMPr, environmental regulations and relevant legislation.

6 *Monitoring and Auditing*

6.1 Monitoring

The holder of the EA must appoint a suitably experienced Environmental Control Officer (ECO), for the duration of the construction phase of implementation.

The **ECO** must –

- be appointed prior to commencement of any vegetation clearing or construction activities commencing;
- ensure compliance with the EMPr and the conditions contained herein;
- keep a record of all activities on site, problems identified, transgressions noted, and task schedule of tasks undertaken by the ECO; and
- Remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.

An ECO will implement and monitor environmental control of the development. The ECO duties will be as follows:

- Ensure implementation and monitoring of the EMPr;
- Make changes to the EMPr as required;
- Visit the site prior to the commencement of activities to ensure that the correct method statements are prepared. The site must be visited within ten (10) days after the commencement of activities, and once a month thereafter;
- Prepare ECO reports as required by mitigation measures or by the EA;
- Maintain a photographic record of the work and environmental issues;
- ECO visits must take place 1) prior to construction and site clearing, 2) monthly after construction has commenced;
- Site visit reports must be compiled and include photographic evidence and recommendations. The report must be made available to the contractor, applicant and applicable authorities;
- An audit report must be compiled within six (6) months after completion of construction.

6.1.1 Documentation

A copy of the Environmental Authorisation, EMPr, any independent assessments of financial provision for rehabilitation and environmental liability, closure plans, audit reports and compliance monitoring reports must be kept at the site of the authorised activities.

Access to the site must be granted, and the environmental reports mentioned above must be produced to any authorised official representing the competent authority who requests to see it for the purposes of assessing and/or monitoring compliance with the conditions contained herein.

The **ECO** will maintain a file containing the following:

- Copy of the EMPr;
- Methodology statement(s) by the contractor(s);
- Site establishment plan;
- Letter from the contractor(s) indicating that he has familiarised himself with the contents of the EMPr;
- Letter from the contractor(s) on environmental awareness training;

The applicant must ensure that complaints received are documented.

The **contractor** shall maintain a copy of the following documents on-site:

- Operational Plan;
- Emergency response and remedial action plan;
- Environmental Management Programme (EMPr) and other documents related to the operation in the file.
- Tracking table (see **Appendix B**).

6.2 Independent Auditing

The holder must, for the period during which the environmental authorisation and EMPr remain valid-

- Ensure the compliance with the conditions of the environmental authorisation and the EMPr is audited,
- The auditing report will address the requirements of the Environmental Impact Assessment Regulations, 2014,
- During the non-operational phase (construction phase), the holder must undertake annual environmental audit(s), and shall not exceed intervals of 5 years. The holder must submit these Environmental Audit Report(s) to the Competent Authority,
- A final audit report must be compiled within 6 months after completion of construction and must be submitted to the Competent Authority within sixty (60) days of completion of construction,
- The holder must, within 7 days of the submission of the environmental audit report to the Competent Authority, notify all registered I&APs of the submission and make the report available to anyone on request and where the holder has such a facility, be placed on a publicly accessible website,

- The environmental audit report must be prepared and submitted to the Competent Authority, by an independent person with the relevant environmental auditing expertise,
- The Environmental Audit Report, must-
  - provide verifiable findings, in a structured and systematic manner, on-
    i. the level of compliance with the conditions of the environmental authorisation and the EMPr and whether this is sufficient or not; and
    ii. The ability of the measures contained in the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.
  - identify and assess any new impacts and risks as a result of undertaking the activity;
  - evaluate the effectiveness of the EMPr;
  - identify shortcomings in the EMPr;
  - identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr;
  - indicate the date on which the construction work was commenced with and completed or in the case where the development is incomplete, the progress of the development and rehabilitation;
  - indicate the date on which the operational phase was commenced with and the progress of the rehabilitation;
  - include a photographic record of the site applicable to the audit; and
  - Be informed by the ECO reports (where applicable to the construction phase).

7 *Environmental Monitoring and Auditing Schedule*

Environmental auditing and monitoring schedule			
Non-operational phases			
Activity	**Frequency**	**Record & duties to be fulfilled**	**Report**
ECO site visits	Once Monthly	• Ensure compliance with the EMPr and the conditions contained herein; • Keep a record of all activities on site; problems identified; transgressions noted, and a task schedule of tasks undertaken by the ECO; • Remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.	Site visit report to the holder of EA as well as other conditions that might be prescribed in the EA.
Final construction phase Environmental Audit Report	Within sixty (60) days of completion of construction	Ensure the compliance with the conditions of the environmental authorisation and The EMPr.	Auditing
Post construction phases			
Environmental audit(s)	The frequency of the auditing of compliance with the conditions of the environmental authorisation and of compliance with the EMPR shall not exceed intervals of five (5) years	• The holder must ensure that environmental audit(s) are performed when required; • The Report must comply with the EA.	Submit these Environmental Audit Report(s) to the competent authority, • The environmental audit report must be prepared and submitted to the competent authority, by an independent person with the relevant environmental auditing expertise; • The holder must, within seven (7) days of the submission of the environmental audit report to the competent authority, and as per conditions set out in the issued EA.

8 *Non-Operational Management Programme – Pre-Construction and Construction*

Please note that the EMPr must be included in any tender documentation and all sub-contractors on the site must be made aware of this EMPr and they must at all times adhere to the procedures specified.

Only those sections applicable to the specific construction activity are relevant and to be implemented.

8.1 Specific Conditions as Stated in EA

To be included after issue of EA.

8.2 Contractual Obligations

- The contractor shall acknowledge receipt of copies of the EMPr and confirm in writing that he has familiarised himself with the contents thereof;
- The contractor shall comply with all environmental obligations imposed by the RE/ECO/EO.
- The contractor shall co-operate fully with the RE/ECO/EO and use his best endeavours to ensure that the objectives of the EMPr are fulfilled in the course of the contractor's execution of the works or the relevant part thereof.
- The contractor shall erect an information board containing background information for the construction activity and listing the relevant contact details for complaint.
- The contractor must ensure that all workers are given environmental awareness training on the requirements of the EMPr. This must form part of the contractor's contract agreement. The RE/ECO/EO must be informed in writing of implementation.
- The working hours will be from 7:00 am to 18:00 pm Monday to Saturday. No work will be allowed on Sundays or public holidays.
- Deliveries will only be allowed between 8:00 am and 17:00 pm.
- Preference must be given to local labour.
- Workers (except security guards) shall not be housed on-site.

8.3 Penalties

Penalties must be instituted for non-compliance. The penalty is over and above the cost of rectifying the problem and/or damage. Penalties vary on a sliding scale from R 500 to R 5 000 for non-serious to serious issues as determined by the RE/ECO/EO.

These penalties must be paid into a separate account to be administered by the developer. The RE/ECO/EO will decide how the penalties, if any, are to be spent. Refer to **Appendix C** for the Schedule of Fines.

9 *Proposed Impact Management Actions for Construction Phase*

The environmental management and mitigation measures that must be implemented during all construction activities, as well as responsibilities and timelines for the implementation of these measures are presented in the table below. The monitoring there-of is discussed in Chapter 6.1 - Monitoring, page 13

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
Method Statements	Method Statements must be compiled by the contractor(s) before any construction or activity shall commence. The statement must include a site establishment plan indicating all relevant areas. The ECO must approve the MS. Refer to **Appendix E**. The ECO must identify method statements that will be required as part of the project implementation. The list provided below is generic (to ensure any possible occurrence is covered), and only that which is applicable to the proposed development will be required, as per the recommendation of the ECO. **Access routes** • Upgrading and construction of access routes. • Rehabilitation of temporary access routes. • Location of proposed access routes. **Alien plant clearing** • Method of control to be used for the eradication or control of alien vegetation. **Blasting** • Details of all methods and logistics associated with blasting. **Bunding**	Holder of EA or representative	Before commencement of activities	Relevant Method Statements should be identified by the ECO and communicated with the contractor. To ensure that the contractor prepare the Method Statements in line with the EMPr and submit them to the ECO before construction commences.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	• Method of bunding for the static plant. **Camp Establishment** • Layout and preparation of the construction camp. • Method of installing fences required for No Go areas, working areas and construction camp areas. • Preparation of the working area. **Cement /concrete batching** • Location, layout and preparation of cement/concrete batching facilities including the methods employed for the mixing of concrete including the management of run-off water from such areas. **Contaminated water** • The contaminated water management plan, including the containment of run-off and polluted water. **Demolition** • The proposed method(s) of demolition. **Drilling and jack hammering** • Method of drill coring with water or coolant lubricants. • Methods to prevent pollution during drilling operations. **Dust** • Dust control.			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	Earthworks • Method for the control of erosion during bulk earthwork operations. • Method of undertaking earthworks, including hand excavation and spoil management. **Emergency** • Emergency construction method statements. **Environmental awareness course** • Logistics for the environmental awareness course for all the contractor's employees. • Logistics for the environmental awareness course for the contractor's management staff. **Erosion Control** • Method of erosion control, including erosion of spoil material. **Exposed aggregate finishes** • The method of control, treatment and disposal with respect to exposed aggregate finishes. **Fire, hazardous and poisonous substances** • Handling and storage of hazardous wastes. • Emergency spillage procedures and compounds to be used. • Emergency procedures for fire. • Use of herbicides, pesticides and other poisonous substances.			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	• Methods for the disposal of hazardous building materials including asbestos, fibre claddings, refrigerants and coolants. **Fuels and fuel spills** • Methods of refuelling vehicles. • Details of methods for fuel spills and clean-up operations. • Refuelling of construction vehicles in high flow areas (or in the 1-in-50-year floodplain). • Method of refuelling dredger during dredging operations. • Piling, jacking and thrust boring • The method of piling operation (e.g. driven or bored) or in situ casting or pre-cast pile structures. **Rehabilitation** • Rehabilitation of disturbed areas and revegetation after construction is complete. • Rehabilitation of street or hardened surfaces after construction is complete. • Retaining walls and gabions. • Method for construction and installation of retaining walls/ gabion baskets. **Riverine corridors** • Method for all construction activities within the 1-in-50-year floodplain. **Rock breaking**			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	• Details of chemical applications to be used for rock breaking. **Settlement ponds and sumps** • Layout and preparation of settlement ponds and sumps. **Solid waste management** • Solid waste control and removal of waste from the site. • Methods for the disposal of vegetation cuttings, building materials or rubble generated by construction. **Sources of materials** • Details of materials imported to the site (where applicable). • Sensitive environments • Proposed construction methods within any sensitive environments. These can include, but are not limited to, wetlands, dams and rivers. **Traffic** • Traffic safety measure for entry exit onto/off public roads. • Traffic control when crossing roads or pedestrian routes with construction activities. **Vegetation clearing** • Method of vegetation clearing during site establishment. **Wash areas** • Location, layout, preparation and operation of all wash areas, including vehicle wash, workshop washing and paint washing			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	and clearing.			
Environmental awareness training	• All the contractor's employees, sub-contractors' employees and any suppliers' employees that spend more than 1 day a week or four days in a month on site, must attend an Environmental Awareness Training course presented by the contractor – the first of which shall be held within one week of the commencement date. Subsequent courses shall be held as and when required. • The contractor shall supply the ECO with a monthly report indicating the number of employees that will be present on site during the following month and any changes in this number that may occur during the month. • The contractor shall submit a Method Statement detailing the logistics of the environmental awareness training course.	Holder of EA or representative	Within one week of the commencement date. Subsequent courses shall be held as and when required.	Limiting environmental degradation or pollution as a result of ignorance or accidents.
Demarcation and protection	• The development footprint must be kept to an absolute minimum. • The property must be fenced prior to the start of construction to determine the construction/work area. Proper access control must be implemented to ensure that only authorised people obtain access to the site. • No-Go areas must be clearly demarcated prior to commencing of demolition and/or earthworks/building operations. • The construction area must be demarcated by an appropriate method (drop lines, danger tape, fence, pegs etc) as agreed between the contractor and ECO.	Holder of EA or representative	Before construction commences and maintained throughout.	• Ensure there are no illegal entries. • Prevent entry into no-go areas and thereby environmental degradation. • Ensure there is no degradation of the natural environment. • Ensure no unauthorised vegetation cleared or disturbed. • Containment of footprint.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	• The contractor must ensure that fencing and/or demarcations are maintained for the duration of the project. • No work outside of the property boundary will be allowed. • Special features shall be marked on a site layout plan prior to any works commencing on site. These areas shall be designated No Go areas. • Outcrops, rock faces, trees and natural vegetation or any other natural or special features inside and outside the site shall not be defaced, painted for benchmarks for the survey or any other purposes, or otherwise damaged in any way without the prior approval of the ECO. These features shall be demarcated as No Go areas and shall be fenced or similarly protected, as determined by the ECO.			

Aesthetics	The aesthetics measures indicated below must be implemented as required by the specific site and situated and as agreed with the ECO.
	• The contractor shall be required to visually screen the site.
	• Visual screening shall be aesthetically pleasing and shall be erected by the contractor prior to commencing any activities.
	• Visual screening shall be maintained by the contractor for the duration of the contract.
	• Visual screening must be of the following types:
	  ○ Shade cloth;
	  ○ Hessian;
	  ○ Berms.
		Holder of EA or representative	Before construction commences and maintained throughout.	• Ensuring that the construction site is aesthetically pleasing.
				• Ensuring reduced possible visual impact.
				• Limiting possibility of complaints from I&APs.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
Camp	• The contractor's camp, offices, and storage facilities shall not be located within an environmentally sensitive area or the No-Go areas. The camp's position must be approved by ECO. • The camp must be fenced as agreed with the ECO unless it is situated inside an existing building on the property. • Water from the kitchens, showers, sinks, etc., shall be discharged in a manner approved by the ECO. • The contractor must ensure that all temporary structures, equipment, materials, and facilities used or created on-site during the construction phase are removed and appropriately disposed of. • No littering by the contractor's employees shall be tolerated under any circumstances, anywhere in the demarcated area for construction. **Site of the construction camp** • The choice of site for the contractor's camp requires the ECO's permission and must consider the location of local residents and/or ecologically sensitive areas, including flood zones and slip/unstable zones. A site plan must be submitted to the ECO and project manager for approval. • The size of the construction camp must be minimised (especially where natural vegetation or grassland has had to be cleared for its construction). • The contractor must attend to drainage of the campsite to avoid standing water and/or sheet erosion.	Holder of EA or representative	Before construction commences and maintained throughout.	• Ensuring that all construction infrastructure etc. is located within a demarcated camp, within which possible impacts on the environment can be mitigated. • Ensuring that the site is not located close to any environmentally sensitive areas. • Preventing water or soil pollution. • Ensuring that there does not occur any environmental pollution or littering. • Creating a neat workplace area.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	• Suitable control measures over the contractor's yard, plant and material storage to mitigate any visual impact of the construction activity must be implemented. **Storage of materials (including hazardous materials) at site camp.** • The choice of location for storage areas must consider prevailing winds, distances to water bodies, general on-site topography and water erosion potential of the soil. • Storage areas must be designated, demarcated and fenced. • Storage areas must be secure to minimise the risk of crime. They must also be safe from access by unauthorised persons. • Fire prevention facilities must be present at all storage facilities. • Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials used must be provided to prevent the migration of spillage into the ground and groundwater around the temporary storage area(s). These pollution prevention measures for storage must include a bund wall high enough to contain at least 150% of any stored volume, and this must be sited away from drainage lines with the approval of the ECO. • These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of stormwater from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources. • Clear signage must be placed at all storage areas containing hazardous substances/materials. Staff dealing with these			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	materials/substances must be aware of their potential impacts and follow the appropriate safety measures. • A waste disposal contractor must be employed to remove waste oil. These wastes must only be disposed of at licensed landfill sites designed to handle hazardous wastes. A disposal certificate must be obtained from the waste disposal contractor. • The contractor must ensure that its staff are made aware of the health risks associated with any hazardous substances used, have been provided with the appropriate protective clothing/equipment in case of spillages or accidents, and have received the necessary training. • All excess cement and concrete mixes are to be contained on the construction site prior to the disposal off-site. • Any spillage that may occur, shall be investigated and immediate action must be taken. This must also be reported to the ECO and DEA&DP, as well as local authorities if so required. **Drainage of the construction camp** • Run-off from the campsite must not discharge into neighbours' properties. **End of construction** • Once construction has been completed on site and all excess material has been removed, the storage area shall be rehabilitated. If the area was badly damaged, reseeding shall be done. • Such areas shall be rehabilitated to their natural state. Any			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	spilled concrete shall be removed, and soil compacted during construction shall be ripped, levelled and re-vegetated.			
Sensitive environments and buffer area	• Rocks and vegetation debris should not be dumped onto adjacent natural vegetation. • Any animals encountered during the land clearing activities should be left unharmed and relocated to adjacent natural areas where appropriate (e.g. tortoises). • The following mitigation measures were provided by the Agricultural Specialist: *"In the case of the Spier agrivoltaic facility the sensitivity of the receiving environment is not high and the following impact management protocol is recommended:* *• Liaise and coordinate construction activities with landowners/farm mangers to minimise disruption to farming activities;* *• Contain vehicle movement to single tracks as far as possible. All service routes that will be used to gain access to the renewable energy structures for maintenance purposes have to be covered in gravel, tarred or compressed in order to limit the possibility of degradation and erosion. All access routes, existing or newly constructed and utilized during the construction and / or maintenance of the renewable energy structures should be restore to its original state after completion of the establishment of the structures. Ever care should be taken not to damage or degrade the status of the natural resources base of the farm*	Holder of EA or representative	Before construction commences and maintained throughout, if and when required.	• Preventing destruction, degradation or pollution of sensitive environments. • Limiting the impact on the indigenous fauna and flora other than outlined and approved.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	during the construction phase of the mentioned or to impact negatively on the farming or production practices on the farm; *• Keep disturbance to, or removal of vegetation to the absolute minimum. Every care should be taken before, during and after the construction and future maintenance of the renewable energy structure, supporting infrastructure or access routes to protect the vegetation and veld condition against deterioration and destruction;* *• Prevent disturbance to natural drainage systems. No renewable energy structure, supporting infrastructure or access routes should be constructed on a wetland, vlei, pan, drainage line or any other water body unless duly authorised. No renewable energy structure, supporting infrastructure or access routes shall in any manner divert any run-off water from a water course to any other water course or obstruct the natural flow pattern of runoff water unless duly authorised;* *• Prevent soil erosion or degradation. No renewable energy structure, supporting infrastructure or access routes should result in soil loss as a result of erosion through the action of water or wind. It is the responsibility of the owner of the renewable energy project to ensure that suitable soil conservation works be established on the site to limited or restrict the loss of soil. Provide adequate water runoff control structures where access roads or tracks could induce increased runoff or channelling of runoff water;* *• The installation of the underground power cables should not*			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	negatively impact on the resource base of the site. During the installation no soil conservation structure should be disturbed, the soil texture should be restored – including the prevention of the placement of subsoil clay on the surface, the work area should not be wider than 5 m, it should not be directed through existing or future cultivated land nor impact negatively on existing farming infrastructure or any farming activity. • *Prevent oil and/or fuel spills from construction vehicles or equipment and apply appropriate rehabilitation measures should a spill occur."*			
Surface and groundwater pollution	• The contractor shall take all reasonable steps to prevent pollution of surface and groundwater as a result of their activities. Such pollution could result from release (accidental or otherwise) of chemicals, oils, fuels, paint, and sewage, water from excavations, construction water, water carrying soil particles or waste products. • On completion, stormwater catch pits must be closed with geotextile (bidim) or similar material to prevent sand or other contaminants from entering the system. • The contractor shall provide water and/or washing facilities at the construction camp for personnel. • In the event of any pollution entering any water body, the contractor shall inform the ECO immediately. • The contractor will be responsible for any clean-up costs involved, should pollution, erosion or sedimentation have taken	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Preventing degradation or deterioration of ground and surface water due to construction activities. • Preventing siltation into the water resource.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	place.			
Air pollution	**Air Pollution** During the construction phase, and due to the nature of the project, a small amount of smoke (from machines) and dust could be generated. Dust pollution may have an impact on operational workers. • In order to minimise the effect of dust pollution, the construction area must be kept wet as far as possible and the workers must wear the necessary safety clothing. • The applicant is referred to Section 19 of the National Water Act No. 36 of 1998 with regard to the prevention of, and remedies for, the effects of pollution. In terms of this section of the Act, the person who owns, controls, occupies or uses the land in question is responsible for taking measures to prevent pollution of water resources and property.	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Ensuring dust associated with construction activities are mitigated to limit air pollution. • Manage and prevent any degradation to the natural environment.
Noise control	• Working hours will be restricted to normal daily working hours. • The use of heavy vehicle machinery and construction activities associated with high-level noise will be limited to between 07:00 and 18:00 from Mondays to Saturdays, particularly to where residential areas or sensitive institutions are situated close to the site. • All noise and sounds generated by plant or machinery must adhere to South African Bureau of Standards (SABS) 0103 specifications for the maximum permissible noise levels for residential areas.	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Ensuring adequate noise control so that there are no noise levels above the standard. • Mitigating possible noise in the receiving environment. • Ensuring that complaints from I&APs are limited.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	• All plant and machinery to be fitted with adequate silencers. • No sound amplification equipment such as sirens, loud hailers or hooters shall be used on-site, after normal working hours, except in emergencies. • If work is to be undertaken outside of normal work hours, permission must be obtained from the local authority. Prior to commencing any such activity, the contractor is also to advise the potentially affected neighbouring residents. Dates, times and the nature of the work to be undertaken are to be provided. Notification may include letter-drops. • The acceptable noise level according to SANS 10103 Code of Practice is 45 dBA in the rural district during the day and 35 dBA at night. The applicant must comply/adhere to this requirement. • The contractor shall make adequate provisions to prevent or minimise the possible effects of air and noise pollution. Should the noise from the construction work be found to cause problems, work hours in these areas must be restricted between 07:00 and 18:00, or as otherwise agreed between the parties involved. Strict measures shall, therefore, be enforced, especially in terms of the contract specifications, to prevent any negative impacts in this regard.			
Pipe testing and cleaning	• Cleaning/flushing of pipelines and/or infrastructure shall not impair (downgrade) baseline water quality. • Materials used in the sterilisation of pipelines and/or infrastructure, viz. chlorine solutions shall be treated as hazardous substances and disposed of at an approved landfill	Holder of EA or representative	Continuously throughout the construction phase, if and	• Prevent pollution of water resources. • Ensuring no visible or measurable signs of pollution of the environment (soils,

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	site. • Litter traps shall be installed and maintained at the outflow of all pipelines.		when required.	ground and surface water).
Erosion control and stormwater management, trenching	• The contractor must take all reasonable precautions to prevent soil erosion resulting from a diversion, restriction or increase in the flow of stormwater or water resulting from its operations and activities to the satisfaction of the ECO. Possible measures that can be considered include the following: ○ Brush cut packing ○ Mulch or chip cover ○ Straw stabilising (at the rate of one bale/m² and rotated into the top 100mm of the completed earthworks) ○ Watering ○ Planting / sodding ○ Hand seeding sowing ○ Hydroseeding ○ Soil binders and anti-erosion compounds ○ Mechanical cover or packing structures ○ Gabions & mattresses ○ Geofabric ○ Hessian cover ○ Armourflex ○ Log/pole fencing ○ Retaining walls • The contractor shall take reasonable measures to control the erosive effects of stormwater run-off.	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Limiting erosion on site. • Ensuring possible erosion is controlled and mitigated. • Ensuring that stormwater is managed on site. • Ensuring no degradation of the natural environment occurs due to erosion. • Prevent disturbance/ damage of vegetation due to erosion.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	• The contractor shall use silt screens to prevent overland flowing water from causing erosion. • Straw bales as filters that are placed across the flow of overland stormwater flows, shall be used as an erosion protection measure. • The ploughing-in of straw offers limited protection against stormwater run-off induced erosion, and shall be used as an erosion protection measure. • The contractor shall be liable for any damage to downstream property caused by the diversion of overland stormwater flows. • At all times it must be considered that an open trench will guide stormwater like a river, and the overflow point must be protected against erosion and silt deposition. • It is the responsibility of the contractor working inside any trench at any specific time to ensure that their works are protected from damage which may be caused through run-off of rainwater inside the trench. The use of sandbags, mulch bags or any other appropriate methods of slowing down the flow of water within a trench is required. • Where water is directed out of a trench by the contractor, they are responsible for the prevention of erosion at the discharge point and of preventing the movement of any silt (which may be carried in such water, or result from the erosion caused by such water) beyond the work area. • In the event of erosion damage or silt movement, the contractor is responsible for the clean-up required to reinstate the			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	conditions to normal as determined by the ECO. • The area of open ground at any time should be limited to the minimum, in order to avoid excessive risk. • The area of open trench at any time should be limited to the minimum, in order to avoid excessive risk.			
Dust control	**DUST - generated by works** • Sand stockpiles are to be covered with hessian, shade cloth or DPC plastic. • Stockpiles are to be located in sheltered areas and the usable/cut face orientated away from the direction of the prevailing wind for that season. • Excavating, handling or transporting erodible materials in high wind or when dust plumes are visible, shall be avoided. • If high winds prevail, the engineer shall decide whether water dampening measures or cessation of activities is required, and if necessary, they shall have the authority to temporarily stop some of the works until wind conditions become more favourable. **Dust – generated by roads and vehicle movement** • Vehicle speeds shall not exceed 40 km/h along gravel roads or 20 km/h on unconsolidated or non-vegetated areas. Dust plumes created by vehicle movement are to be monitored. • If access roads are generating dust beyond acceptable levels, dust suppression measures must be initiated. These include, but are not limited to the following:	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Ensuring proper dust suppression. • Limiting air pollution potential during construction activities.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	○ Reduction of travelling speeds along the road. ○ Restriction of vehicle or plant usage. ○ Application of chemical soil binders. ○ Application of a suitable sacrificial road surfacing. ○ If water is to be used for dust suppression, then only the critical areas shall be watered. The use of water carts or hand watering is preferable. Overhead sprayers shall not be permitted in windy conditions, as the evaporation loss is too high. Watering is to be supervised to prevent unnecessary water wastage, and run-off into potentially sensitive areas. Preferable watering times are early morning and late afternoon/evening. Water restrictions are to be observed if in place.			
Fire prevention and management	• No open fires or naked flames for heating or cooking shall be allowed on site. Stoves and other electrical equipment shall only be permitted in the contractor's camp and never be left unattended. ○ The contractor shall take all reasonable and active steps to avoid increasing the risk of fire through their activities on site. No fires shall be lit except at places approved by the ECO. ○ The contractor shall ensure that the basic firefighting equipment is to the satisfaction of the local officials (where applicable). ○ The contractor shall supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any	Holder of EA or representative	Continuously throughout the construction phase. If and when required.	• Prevent any open fires. • Ensuring that prevention measures are in place if any accidental fires do take place. • Ensuring that no fires are started by the contractors' workforce.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	other areas identified by the ECO with tested and approved firefighting equipment. ○ Fire and "hot work" shall be restricted to a site approved by the ECO. ○ A braai facility shall be considered at the discretion of the ECO. The area shall be away from stores containing flammable materials. All events shall be under management supervision and a fire extinguisher shall be immediately available. "Low smoke" fuels shall be used. Smoke-free zoning regulations shall be considered. ○ Fires within national parks, nature reserves and natural areas are prohibited. ○ Cooking shall be restricted to bottled gas facilities under strict control and supervision. The sensitivity of the surrounding land uses, and the occurrence of natural indigenous vegetation must be considered when assessing the risk of fires. ○ The contractor shall take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand, as well as the use of welding curtains. ○ The contractor shall identify the authorities responsible for fighting fires in the area and shall liaise with them regarding procedures in the event that a fire starts. The contractor shall ensure that his staff are aware of the fire danger at all times,			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	and of the procedure to be followed in the event of a fire. The contractor shall also ensure that all the necessary telephone numbers etc. are posted at conspicuous and relevant locations in the event of an emergency. The contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. ○ If and when a contractor is found responsible for the outbreak of a fire, he shall be liable for any associated costs.			
Water management	• The contractor shall provide water for drinking and construction purposes until such time as it is available from the local system. Water from the local system must be used carefully and sparingly, with the view of not wasting water. • Taps are to be attached to secure supports and leaking taps and hosepipes are to be repaired immediately. • Watering as dust suppression must be undertaken as a last resort. It is preferable that sand stockpiles be covered rather than watered. • Any abstraction from natural water sources such as a stream or groundwater will require a Method Statement for approval by the ECO. • An adequate supply of potable water that complies with bacteriological and chemical quality must be available at all times.	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Ensure potable water is available to workers during the construction phase. • Management of water during construction activities. • Ensuring water is only used for dust suppression as a last resort.
Waste	• A waste minimisation approach must be followed. This requires	Holder of EA or	Continuously	• Ensuring proper waste

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
management	recycling wherever possible. All waste, therefore, to be suitably contained and removed regularly from the site in accordance with the municipal waste management procedures. Other examples shall include the use of rubble as fill, minimisation of waste concrete and the use of brush cuttings for mulching on rehabilitated areas. • The contractor shall be responsible for the establishment of a refuse control and removal system that prevents the spread of refuse within and beyond the construction sites. • The contractor shall ensure that all refuse is deposited in refuse bins. He shall supply the bins and arrange for them to be emptied on a weekly basis. Refuse bins shall be of such a design that the refuse cannot be blown out and that animals or birds are not attracted to the waste and spread it around. Refuse bins shall be watertight, wind-proof and scavenger-proof and shall be appropriately placed throughout the site. Refuse must also be protected from rain, which may cause pollutants to leach out. Refuse bins shall be placed at appropriate places throughout the site and shall be conspicuous (e.g. painted bright yellow). • Refuse shall be disposed of at an approved waste site (site and method to be agreed with the local authority). Refuse shall not be burnt or buried on or near the site. • The contractor shall provide labourers to clean up the contractor's camp and site on a weekly basis. • The contractor shall also clean the contractor's camp and site of all structures, equipment, residual litter and building materials	representative	throughout the construction phase. If and when required.	management and removal takes place. • Ensure that the site is kept free of litter and deposited in bins. • Ensuring that waste is stored in the correct manner on site before it is removed. • Ensuring legal waste removal takes place.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	at the end of the contract. • Any solid waste must be disposed of at a landfill licensed in terms of section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) or the National Environmental Management: Waste Act (Act No. 59 of 2008).			
Toilets	• The contractor shall be responsible for providing all sanitary arrangements for construction and supervisory staff on the site. A minimum of one chemical toilet shall be provided per 15 persons. Toilets provided by the contractor must be easily accessible and within a practical distance from the workers. Toilets shall be located within areas of low environmental importance. The toilets shall be of a neat construction and shall be provided with doors and locks and shall be secured to the ground to prevent them from blowing over. Toilets shall be placed outside areas susceptible to flooding. • The location for construction camps and toilets must be approved by the ECO. • The contractor shall keep the toilets in a clean, neat and hygienic condition. The contractor shall supply toilet paper at all toilets. • The contractor shall be responsible for the cleaning, maintenance, servicing and emptying of the toilets on a regular basis (by chemical contractor). No waste may be dumped in the bush or wetland. • The contractor shall ensure that the toilets are emptied before a builder's holiday or other public holidays, and the waste be	Holder of EA or representative	Continuously throughout the construction phase if and when required.	• Ensuring that appropriate sewerage management takes place to reduce the possibility of an impact on soil and groundwater resources. • Ensuring that sufficient and clean ablution facilities are provided.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	stored and disposed of at an appropriate place off-site. • The contractor shall ensure that no spillage occurs when chemical toilets are cleaned and emptied. • The contractor shall supply a contingency plan for spills from toilets. • Performing ablutions in any other area are strictly prohibited.			
Fuel and chemical management	• Fuel may be stored on-site provided the following is strictly adhered to: • All necessary approvals with respect to fuel storage and dispensing shall be obtained from the appropriate authorities. • The ECO (or as applicable) must be informed and consulted in terms of the fire regulations. • The contractor shall ensure that all liquid fuels and oils are stored in tanks with lids that are kept firmly shut and under lock and key at all times. • The contractor shall stand any equipment that may leak and does not have to be transported regularly, on watertight drip trays to catch any pollutants. The drip trays shall be of a size large enough that the equipment can be placed inside it. Drip trays shall be cleaned regularly and shall not be allowed to overflow. • All hazardous material (e.g., oils, petrol or diesel) used on site must be disposed of at an approved hazardous waste facility or via the services of a licensed waste transportation company. All certificates of disposal and weighbridge slips (if applicable) have to be signed by all relevant officials and kept as records	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Ensuring the proper use/storage/handling and management of fuel on-site. • Ensuring minimal to no impact on the natural environment. • Limiting pollution potential due to spillages and mismanagement.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	on the premises. • The contractor will be responsible for the cleaning up of any spill and associated costs. **Location** • The ECO shall be advised of the area that the contractor intends using for the storage of fuel. • The location of the fuel storage area will be determined by the ECO. • The tank shall be erected at least 3.5 meters away from buildings, boundaries and any other combustible or flammable materials. **Signs/good practice/safety precautions** • Symbolic safety signs depicting "No Smoking", "No Naked Lights" and "Danger" conforming to the requirement of SABS 1186 are to be prominently displayed in and around the fuel storage area. • No smoking shall be allowed in the vicinity of the stores. • The capacity of the tank shall be clearly displayed, and the product contained within the tank clearly identified using the emergency information system detailed in SABS 0232 part 1. • There shall be adequate firefighting equipment at the fuel storage and dispensing area or areas. • Fuel shall be kept under lock and key at all times. **Tanks** • The storage tank shall be on the premises only for as long as			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	the contract lasts. • The storage tank shall be removed on completion of the works. • All such tanks are to be designed and constructed in accordance with a recognised code. • The rated capacity of tanks shall provide sufficient capacity to permit expansion of the product contained therein by the rise in temperature during storage. **Bunds/storage areas** • Tanks shall be situated in a bunded area, the volume of which shall be at least 150% of the volume of the largest tank. The floor of bund shall be smooth and impermeably constructed of concrete or plastic sheeting with impermeable joints with a layer of sand over to prevent perishing. The bund walls shall be of concrete or formed of well-packed earth with the impermeable lining extending to the crest. The floor of the bund shall be sloped towards an oil trap or sump to enable any spilled fuel and/or fuel-soaked water to be removed. • A bacterial hydrocarbon digestion agent that is effective in water approved by the ECO shall be installed in the sump. • The tanks and bunded areas shall be covered by a roofed structure to prevent the bunded area from filling with rainwater. This structure shall be constructed in such a way, and to the approval of the ECO, to ensure that it is wind resistant. • Any water that collects in the bund shall not be allowed to stand and shall be removed within one day and taken off-site			

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	to a disposal site approved by the ECO, and the bacterial hydrocarbon digestion agent shall be replenished. **Empty containers** • Only empty and externally clean tanks shall be stored on the bare ground. All empty and externally dirty tanks shall be sealed and stored on an area where the ground has been protected. **Filling/dispensing methods** • Any electrical or petrol-driven pump shall be equipped and positioned so as not to cause any danger of ignition of the product. • If fuel is dispensed from 200-litre drums, the proper dispensing equipment shall be used. The drum shall not be tipped in order to dispense fuel. The dispensing mechanism of the fuel storage tank shall be stored in a waterproof container when not in use. • Adequate precautions shall be provided to prevent spillage during the filling of a tank and the dispensing of its contents.			
Litter and oil traps	• Refuse screens and oil traps shall be installed at run-off concentration points from large parking facilities, wash bays, stormwater outlets, inlets to detention ponds, workshop forecourt drainage points, ablution and eating areas. These facilities shall be serviced and monitored at the discretion of the ECO.	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Ensuring that water resources are not polluted by litter and oil. • Limiting pollution potential due to spillages and mismanagement.
Contaminated	**General** • The ECO's approval will be required prior to the discharge of	Holder of EA or	Continuously throughout the	• Managing the disposal of contaminated water.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
water	contaminated water to the municipal sewer system. • The contractor shall prevent discharge of any pollutants, such as cement, concrete, lime, chemicals and fuels into any water sources. • Water from kitchens, showers, laboratories, sinks, etc. shall be discharged into a conservancy tank for removal from the site. • Run-off from fuel depots/workshops/truck washing areas and concrete swills shall be directed into a conservancy tank and disposed of at a site approved by the ECO and local authority. • The contaminated water, contaminated run-off, or effluent released into a water body requires analysis in terms of the National Water Act. Contaminated water must not be released into the environment without authorisation from the relevant authority. **Washing areas** • Wash areas shall be placed and constructed in such a manner that it ensures that the surrounding areas, which include groundwater, are not polluted. • A Method Statement shall be required for all wash areas where hydrocarbons, hazardous materials and pollutants are expected to be used. This includes, but is not limited to, vehicle washing, workshop wash bays, paint wash and cleaning. • Wash areas for domestic use shall ensure that the disposal of contaminated "grey" water is sanctioned by the ECO.	representative	construction phase if and when required.	• Mitigating and managing the storage of contaminated water until it can be disposed. • Preventing the contamination of water or to reduce the impact on the soil and groundwater resources.
Traffic,	• The movement of any vehicles and/or personnel outside of the	Holder of EA or	Continuously	• Ensuring proper vehicle

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
vehicles and access roads	designated working areas shall not be permitted without the written authorisation of the ECO. • If and when the contractor does not exercise sufficient control to restrict all work to the area within the marker boundaries, then these shall be replaced on the instruction of the ECO by fencing. The relevant additional costs shall be borne by the contractor. • Dust control measures such as dampening with water shall be implemented where necessary, as indicated by the ECO. • Access and haul roads shall be maintained by the contractor. • Maintenance includes adequate drainage and side drains, dust control and restriction of edge use. • All temporary access routes shall be rehabilitated at the end of the contract to the satisfaction of the ECO. • All public roads shall be kept clear of mud and sand. Mud and sand that has been deposited through construction activities shall be cleared regularly. • Any materials used for layer works shall be approved by the engineer/ECO prior to the activity commencing. • Damage to the existing access roads as a result of construction activities shall be repaired to the satisfaction of the engineer/ECO/EO, using material similar to that originally used. The cost of the repairs shall be borne by the contractor. • Traffic safety measures shall be considered to the satisfaction of the engineer/ECO in determining entry/exit onto public roads. • All users of haul roads shall not exceed 45 km/h (cars)/ 15 km/h	representative	throughout the construction phase. If and when required.	movement on-site and surrounding areas. • Ensuring that no vehicles area allowed in no-go areas. • Management of potential damage to existing roads during construction. • Traffic management to ensure safety on roads. • Ensuring that erosion is limited and managed on site. • Pedestrian safety.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome

	(trucks). Note that the standard specification places a site speed limit of 45 km/h for all vehicles.
	• Appropriate traffic warning signs shall be erected and maintained.
	• Attention shall be paid to minimising disruption of the flow of traffic and reducing the danger to other road users and pedestrians.
	• Method statements are required for the following:
	  ○ Traffic safety measures with regard to entry and exit on public roads and the control of construction traffic.
	  ○ The proposed route for new access roads, tracks, or haul roads, the proposed construction of new roads, the method of upgrading existing roads, and the proposed methods of rehabilitation on completion.			

Stockpiling of materials	• The contractor shall temporarily stockpile topsoil materials in such a way that the spread of materials is minimised, and thus the impact on the natural vegetation. The stockpiles must be placed within areas demarcated for this purpose. The ECO shall approve stockpile areas.	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Ensuring the safe stockpiling of topsoil, so that it can be re-used at a later stage. • Limiting erosion and siltation potential due to run-off. • Maximise the re-use of material. • Reduce or minimise the impact on vegetation. • Minimise the impact area.
Topsoil	• As topsoil is a valuable resource, it should be stripped from all	Holder of EA or	Before	• Ensuring that topsoil is stored

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
stripping	construction areas before work commences. This topsoil should be stockpiled for use in rehabilitation and landscaping and must not be contaminated with other building materials. • The vegetation to be removed together with the top 20cm of topsoil is to be stockpiled for use during the rehabilitation phase. This topsoil is to be stockpiled in the designated topsoil stockpile areas, to be agreed by the ECO. • The relatively sensitive nature of most soils on the property means that earthmoving operations and topsoil stockpiling should be carried out with consideration of the nature of the soils, since rutting and compaction damage can occur.	representative	construction commences.	correctly to be re-used during construction and landscaping. • Limiting erosion and siltation potential due to run-off. • Reduce or minimise the impact on vegetation. • Minimise the impact area.
Heritage remains	• Should any heritage remains be exposed during excavations or any other actions on the site, these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape, Heritage Western Cape (HWC). Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from Heritage Western Cape. Heritage remains include: meteorites, archaeological and/or palaeontological remains (including fossil shells and trace fossils); coins: indigenous and/or colonial ceramics; any articles of value or antiquity: marine shell heaps; stone artefacts and bone remains; structures and other built features with heritage significance; rock art and rock engravings and/or graves or unmarked human burials including grave goods and/or associated burial material. • A qualified archaeologist and/or palaeontologist must be	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• To ensure the proper management of heritage remains.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	contracted where necessary (at the expense of the holder) to remove any heritage remains.			
Contingency planning	• In the event of a spill or leak of product into the ground and/or watercourses (e.g. that of hazardous substances used for the construction phase), such incidents must be reported (within 14 days) to all the relevant authorities including the Directorate: Pollution Management in accordance with Section 30(10) of the National Environmental Management Act No. 107 of 1998 (NEMA) and Section 20 (3) of the National Water Act No.36 of 1998 (NWA), that pertains to the control of emergency incidents and the remediation of the affected area. All necessary documentation must be completed and submitted within the prescribed timeframes. • Containment, clean-up, and remediation must commence immediately.	Holder of EA or representative	Continuously throughout the construction phase, if and when required.	• Ensuring that the contractor on site is prepared in the event of a spill or incident. • Management tools and emergency contacts should be available in the event of a spillage or incident.
Outdoor advertising	• All outdoor advertising associated with this activity, whether on or off the property concerned, must comply with the applicable local authority by-law for control of outdoor advertising or in the absence of local legislative controls, must comply with the South African Manual for Outdoor Advertising Control.	Holder of EA or representative	Continuously throughout the construction phase. If and when required.	• Ensure advertising complies with relevant local authority by-law for control of outdoor advertising or the South African Manual for Outdoor Advertising Control.
Energy efficiency & waste minimization	The following design measures will be considered for energy and water-saving measures: • Household waste to be separated and re-cycled (glass, paper,	Holder of EA or representative	Continuously throughout the construction phase. If and	• Ensuring that energy and water-saving mechanisms are implemented.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
measures	green/garden waste).		when applicable and required.	
Construction site break down and closure: Removal of equipment and rehabilitation	• All structures comprising the construction camp are to be removed from the site. • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. • All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be top soiled and rehabilitated.	Holder of EA or representative	Once construction concludes.	To ensure proper decommissioning of the camp site and rehabilitation of the site after the equipment is removed.
Construction site break down and closure: Associated infrastructure	• Surfaces are to be checked for waste products from activities such as concreting or asphalting and cleared in a manner approved by the ECO. • All surfaces hardened due to construction activities are to be ripped and imported material thereon removed. • All rubble is to be removed from the site to an approved disposal site as approved by the engineer. Burying of construction rubble on site is prohibited. • The site is to be cleared of all litter. • Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the engineer. • All residual stockpiles must be removed to spoil or spread on site as directed by the ECO. • All leftover building materials must be returned to the depot or	Holder of EA or representative	Once construction concludes.	To ensure proper decommissioning of the camp site and rehabilitation of the site after the associated infrastructure is removed.

Activity	Proposed impact management action and procedures/mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	removed from the site. • The contractor must repair any damage that the construction works have caused to neighbouring properties, specifically, but not limited to, damage caused by poor stormwater management.			

10 *Proposed Impact Management Actions for Post-Construction*

Activity	Proposed impact management action and Procedures / Mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
General	• All applicable measures as indicated under the Construction EMPr must be implemented. • In terms of Section 35 (2) of the National Environmental Management: Air Quality Act No. 39 of 2004, the occupier of the premises must take all reasonable steps to prevent the emission of any offensive odour caused by any activity on such premises. • Fugitive dust emission abatement on existing farm roads shall be achieved by applying chemical stabilizers to the road surfaces. • Fugitive dust emission abatement is to be achieved at all road surfaces/existing farm roads.	Holder of EA or representative.	If and when applicable and required.	• Management of general aspects of the facility. • Complaints from neighbouring property owners or I&APs. • No visual sign of vermin and flies.
Emergency Preparedness Plan	• The emergency preparedness plan must be ready for implementation, at all times, should an emergency situation arise.	Holder of EA or representative.	Continuously post construction.	• To ensure preparedness for emergencies.
Alien Vegetation	• Effective measures should be implemented for the eradication and long-term control of alien vegetation within the site and immediate surrounding areas.	Holder of EA or representative.	Maintained throughout the project lifetime.	• No exotic plants used for rehabilitation. • Area successfully rehabilitated. • No alien plants visible. • Preventing destruction, degradation or pollution of sensitive environments.
Fauna	• No faunal species must be harmed by workers during any	Holder of EA or	Continuously post	• No measurable or visible signs of

Activity	Proposed impact management action and Procedures / Mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	routine maintenance.	representative.	construction. If and when applicable and required.	harmed faunal species.
Water Use Management	• No abstraction or any use of surface water or groundwater shall be done without prior authorisation from the Department of Water and Sanitation, unless it is a Schedule 1 Use or an Existing Lawful Use if water is taken from a water resource. • All the requirements of the National Water Act. 1998 (Act 36 of 1998) regarding water use and pollution management must be adhered to at all times. • No pollution of surface water or ground water resources shall occur due to activities on the property.	Holder of EA or representative.	Continuously post construction. If and when applicable and required.	• Limiting environmental degradation or pollution as a result of ignorance or accidents. • Preventing destruction, degradation or pollution of sensitive environments.
Dust and Noise Management	• It is not expected that dust and exhaust emissions will be generated in large quantities during the operational phase of the proposed development and shall therefore not be a significant nuisance. • The Department of Environmental Affairs has gazetted dust regulations. The applicant must comply with the NEM: AQA National Dust Control Regulations (GN No. R. 827) of 01 November 2013. • Noise generated from the operation of the facility must conform to the Western Cape Noise Control Regulations of 2013 (P.N. 200/2013). o These regulations prohibit a person from conducting	Holder of EA or representative.	Continuously post construction. If and when applicable and required.	• Ensuring proper dust suppression and control of noise generated. • Minimizing the potential dust and noise impacts post construction. • Ensuring that complaints from I&APs are limited.

Activity	Proposed impact management action and Procedures / Mitigation measures to achieve it	Responsible person for implementation	Implementation timeframe and frequency	Outcome
	any activity in such a way as to give rise to dust in such quantities and concentrations so that the dust, or dust fall, has a detrimental effect on the environment including health.			

11 Appendices

11.1 Appendix A: Environmental Authorisation

11.2 Appendix B: Tracking Table

Required	Received		Date	Comment
	Yes	No		
Methodology statement				
Site establishment plan				
Letter re contents of EMPr				
Letter re awareness training				

11.3 Appendix C: Schedule of Fines

SCHEDULE OF FINES FOR ENVIRONMENTAL DAMAGE OR EMPr TRANSGRESSIONS

(Based on City of Cape Town: Standard Environmental Specifications – Ver. 5 (03/2002))

Note: The maximum fine for any environmental damage will never be less than the cost of applicable environmental rehabilitation.

EMPr TRANSGRESSION OR RESULTANT ENVIRONMENTAL DAMAGE	MIN. FINE	MAX. FINE
Failure to comply with prescriptions regarding appointment of an ESO and monitoring of EMPr compliance.	R500	R2000
Failure to comply with prescriptions regarding environmental awareness training.	R500	R5000
Failure to comply with prescriptions regarding method statements.	R500	R5000
Failure to report environmental damage or EMPr transgressions to the ESO.	R500	R1000
Failure to carry out instructions of the ESO regarding the environment or the EMPr.	R500	R1000
Failure to comply with prescriptions posting of emergency numbers.	R500	R5000
Failure to comply with prescriptions regarding a complaint register.	R500	R1000
Failure to comply with prescriptions regarding information boards.	R500	R1000
Failure to comply with prescriptions regarding site demarcation and enforcement of 'no go' areas.	R500	R5000
Failure to comply with prescriptions regarding site clearing.	R500	R5000
Failure to comply with prescriptions for supervision for loading and off-loading of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for securing of loads to ensure safe passage of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for the storage of imported materials within a designated contractor's yard.	R500	R1000
Failure to comply with prescribed administration, storage or handling of hazardous substances.	R500	R1000
Failure to comply with prescriptions regarding equipment maintenance and storage.	R500	R1000
Failure to comply with fuel storage, refuelling, or clean-up prescriptions.	R500	R1000
Failure to comply with prescriptions regarding procedures for emergencies (spillages and fires).	R1000	R5000
Failure to comply with prescriptions regarding construction camp.	R500	R5000
Failure to comply with prescriptions for the use of ablution facilities.	R500	R1000
Failure to comply with prescriptions regarding water provision.	R500	R1000

For each subsequent similar offence committed by the same individual, the fine shall be doubled in value to a maximum value of R50,000.

11.4 Appendix D: Method Statement Proforma

METHOD STATEMENT PROFORMA

METHOD STATEMENT FOR THE:

This method statement is to be completed by the contractor (in consultation with the Resident Engineer and EO) at least 5 working days prior to the proposed commencement date of the said work and represents a binding agreement to the method statement by all site contractors and sub-contractors involved in the work for which the method statement is submitted.

DATE OF SUBMISSION:

LEAD CONTRACTOR:

OTHER CONTRACTORS AND/OR SUB-CONTRACTORS:

Describe in detail what work is to be undertaken?

Describe in detail where on the site the works are to be undertaken and the extent? Provide a sketch plan and grid block reference.

Lead supervisor/foreman name and contact details:

Number of personnel:

Construction activities:

Plant and machinery to be used:

Other:

What environmental impacts are anticipated and what precautions are proposed to prevent these impacts? (Refer to the relevant sections of the EMPr for guidance and provide general site camp layout).

Toilet facilities:

Litter:

Security:

Plant/machinery (operation, servicing, management, storage, refuelling, etc.).

Emergencies and fire:

Hazardous materials (handling, management, storage):

Have all personnel involved been through an environmental induction course?

Petrochemical spill remediation and containment measures:

Other:

DECLARATION BY PARTIES

Contractor:

I understand the contents of the method statement and the scope of the works required of me. I further understand that the method statement may be amended on application to the above signatories and that the Environmental Officer will audit my compliance with the contents of this method statement.

Print Name

Date

Signed

Environmental Officer (EO):

The work described in this method statement, if carried out according to the methodology described, is satisfactory mitigation to prevent avoidable environmental harm.

Print Name

Date

Signed

Resident Engineer:

The work described in this method statement, if carried out according to the methodology described, is satisfactory mitigation to prevent avoidable environmental harm.

Print Name

Date

Signed

11.5 Appendix E: Method Statement Control Sheet

METHOD STATEMENT CONTROL SHEET

(This control sheet is to be attached to all methods statements)

CONTRACT NO: _____

MS Number:

THIS SECTION TO BE COMPLETED BY THE CONTRACTOR/METHOD STATEMENT AUTHOR ONLY

TITLE:
DESCRIPTION:
SUBMITTED BY:

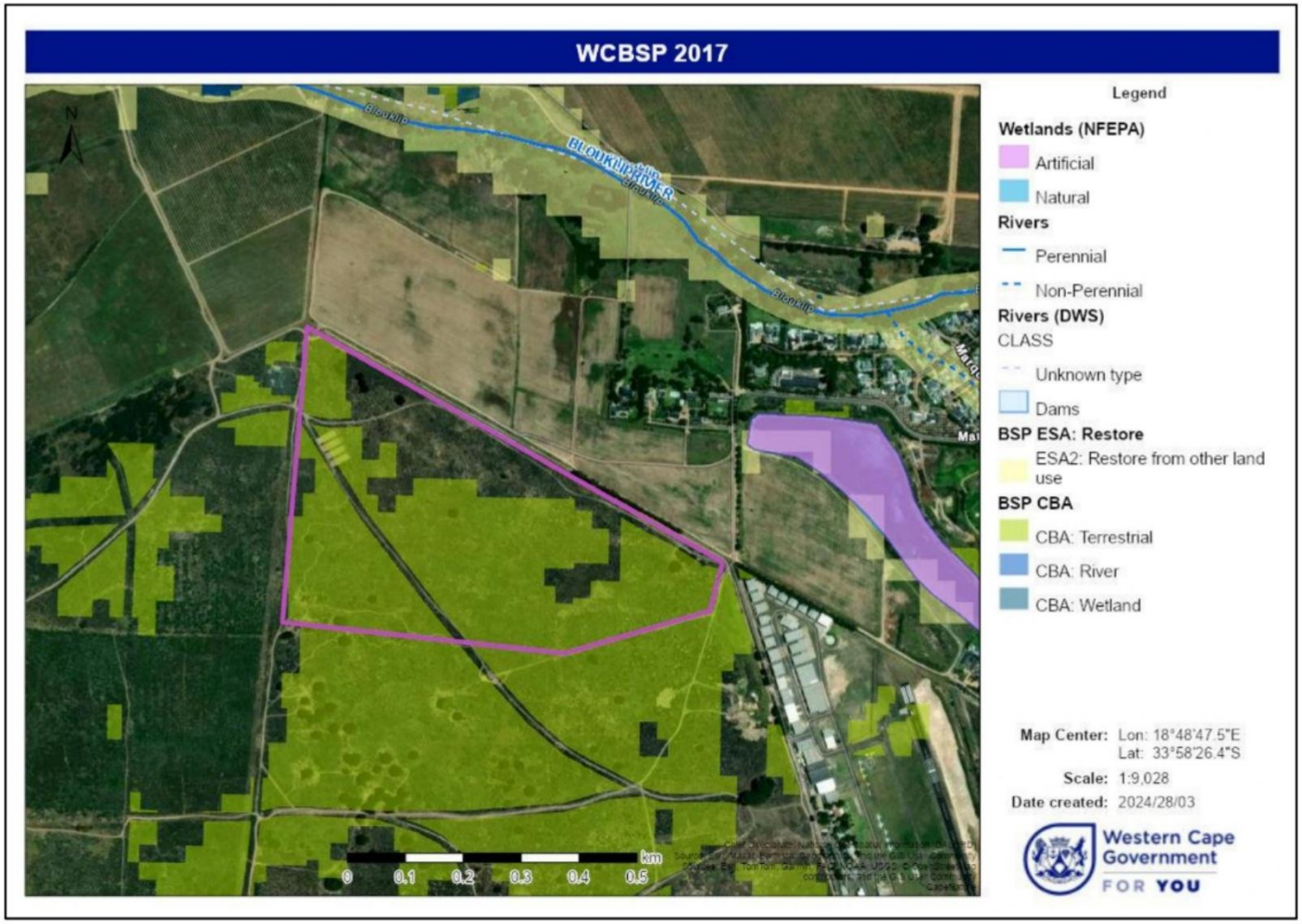
Date requested by: _____Date submitted: _____

Date response required by: _____Date work start: _____

REVIEW SCHEDULE		
Date	**Authority**	**Comments**

DISTRIBUTION AND AUTHORISATION			
	APPLICANT	**EO**	**CONTRACTOR**
Name			
Signature			
Date			

11.6 Appendix F: Superimposed Project Map



11.7 Appendix G: EAP Curriculum Vitae

GroenbergEnviro (Pty) Ltd
PO Box 1058
Wellington 7654

Phone: Not Available
Cell: 0791117378
Fax: 0864767139
E-mail: mische@groenbergenviro.co.za

Mische Molife

Nationality	South African	
Date of birth	14 May 1990	
Qualifications	B.Sc. Degree (Biodiversity and Conservation Biology)	University of the Western Cape - 2012
Special courses	Training Course: Environmental Impact Assessment ("EIA") Administration Administered by the University of Pretoria Coordinated by the National Government: The Department of Environmental Affairs Course Period: February 2014	
Professional membership	IAIAsa (5972) EAPASA (2020-1410)	
Career	**2017 - current** **2013 - 2016**	Environmental Consultant - GroenbergEnviro (Pty) Ltd - Wellington Environmental Officer – Department of Environmental Affairs and Development Planning
Current position	Environmental Consultant at GroenbergEnviro (Pty) Ltd (GBE). As a private consultant, at GBE I provide consultancy services in Environmental Management, Public Participation and Project Management.	
Professional experience	Currently a consultant in environmental studies and management. This include producing various Basic Assessment, Scoping and Environmental Impact Reports, Environmental Management Plans, Maintenance Management Plans, Water use licenses and as an Environmental Control Officer for developments. Previously an environmental officer at the Department of Environmental Affairs and Development Management. Job Description: To administer, implement and enforce statutory obligations in respect of Environmental Impact Management under the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"). Job Function: The administration and implementation of the relevant environmental legislation and the provision of comments and advice with respect to environmental matters.	
Publications/ Contracts (A full list is available on request)	• Projects in process o Annandale Mixed Use Development o Erf 17336, Fish Hoek Housing Development o Leeurivier 24G o Kanu Development o Kleinmond Golf Club 24G o Middelrivier Balancing Dam o N1 Gateway Development (Amendment) o Nuwepos Dam o Pat Barnard • Projects completed o Baldie and Sons Storage Facility o Bosplaas Dam (ALG) S24G o Chatsworth Primary School o De Hoop Nature Reserve (Potberg) - road upgrade and maintenance o Enkanini S24G o Firlands (Strand) Shaded Storage Development o Glen Oak Dam Expansion o Gousblomkraal Dam Expansion o Island Lake Resort Development o Klip Dam, Spier o Kloovenburg Dam Expansion o Korteshoven Agricultural Development o Long Acres Agricultural Development o Lucky Star Hout Bay AEL Renewal Public Participation Process o Moerasrivier Chicken Houses, Eastern Cape o Philippi Industrial Development o Pearly Beach o P.P.C. (De Hoek, Riebeeck, Saldanha) AEL Renewal Public Participation Process o PlatKloof Dam Expansion o Southern Cape Fish Meal AEL Renewal Public Participation Process o Spier Vineyard o Sgb-Smit Power Matla AEL Renewal o Saldanha Bulk (Portion 3 of Farm 188), Mineral Storage S24G o Saldanha Primary School o Silver Oak Agricultural Development	