


ENVIRONMENTAL MANAGEMENT PLAN

INCREASE IN GROUNDWATER ABSTRACTION AT THE REMAINDER OF FARM SPONHOLZ NO.140

FEBRUARY 2023



PROJECT INFORMATION

STUDY PHASE	DRAFT
PROJECT TITLE	Increase in Groundwater Abstraction at the Remainder of Farm Sponholz No. 140
DEVELOPMENT LOCATION	The Remainder of Farm Sponholz No. 140, Stampriet, Hardap Region
COMPETENT AUTHORITY	Ministry of Agriculture, Water and Land Reform
APPROVING AUTHORITY	Ministry of Environment, Forestry and Tourism
PROPONENT	BV Investments 265 (Proprietary) Limited
ENVIRONMENTAL ASSESSMENT PRACTITIONER	<p>Urban Green cc P O Box 11929 Klein Windhoek Telephone: +264-61-300 820 Fax: +264-61-401 294 E-mail: urbangreen@iway.na Website: www.urbangreenafrica.net</p> 

EMP REVISION STATUS

Version	Date Approved	Revision Details
V1 – Original EMP		

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LIST OF ACRONYMS

BID	Background Information Document
°C	degrees Celsius
DEA	Directorate of Environmental Affairs
DSR	Draft Scoping Report
DWAF	Department of Water Affairs and Forestry
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
i.e.	Example
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMA	Environmental Management Act
EMP	Environmental Management Plan
etc.	Etcetera
FSR	Final Scoping Report
Ha	Hectare
IEO	Independent Environmental Officer

I&AP	Interested and Affected Parties
MAWLR	Ministry of Agriculture, Water and Land Reform
MET	Ministry of Environment and Tourism
MEFT	Ministry of Environment, Forestry and Tourism
No	Number
OHTL	Overhead Transmission Line
SAB	Stampriet Artesian Basin
SBWC	Stampriet Basin Water Committee
ToR	Terms of Reference

GLOSSARY

The definitions given below are for explanatory purposes only.

Activity	The physical work that a Proponent proposes to construct, operate, modify, decommission, or abandon or an activity that a Proponent proposes to undertake.
Alien Species	It refers to a non-indigenous plant, animal or micro-organism; or an indigenous plant, animal or micro-organism, translocated or intended to be translocated to a place outside its natural range of nature, that does not normally interbreed with individuals of another kind, including any subspecies cultivar, variety, geographic race, strain, hybrid or geographically separate population.
Alternatives	A possible course of action, in place of another, that would meet the same purpose and need, but which would avoid or minimize negative impacts or enhance project benefits. These can include alternative locations/sites, routes, layouts, processes, designs, schedules and/or inputs. The “no-go” alternative constitutes the ‘without project’ option and provides a benchmark against which to evaluate changes; development should result in net benefit to society and should avoid undesirable negative impacts.
Aquifer	An underground layer of water-bearing permeable rock, rock fractures or unconsolidated materials.
Artesian water	Water that is confined in an aquifer between impermeable beds and is under pressure, like water in a pipe. When a well or fracture intersects the aquifer, water rises in the opening, producing a flowing well or an artesian spring.
Assessment	The process of identifying, predicting, and evaluating the significant effects of

	activities on the environment; and the risks and consequences of activities and their alternatives and options for mitigation with a view to minimise the effects of activities on the environment.
Bund	An enclosure designed to hold at least 120% of the contents of a liquid storage vessel, tank, or drums to contain any spillage.
Cation	An atom with more protons than electrons, consequently giving it a net positive charge. For a cation to form, one or more electrons must be lost, typically pulled away by atoms with a stronger affinity for them.
Competent Authority	A body or person empowered under the local authorities act or Environmental Management Act to enforce the rule of law.
Conductance	The expression for the ease of the passing of the electrons.
Contaminated Water	Water contaminated by the Proponent's activities, e.g. polluted water or soil, and polluted runoff from irrigation areas.
Critically Endangered (IUCN)	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered (see Section V of the IUCN Red List Categories and Criteria ¹), and it is therefore considered to be facing an extremely high risk of extinction in the wild.
Cumulative Impacts	In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Emergency Situation	<p>An incident, which potentially can significantly impact on the environment, and which, could cause irreparable damage to sensitive environmental features. Typical situations entail amongst others the:</p> <ul style="list-style-type: none"> • Spill of petroleum, lubricants and biochemical products into the aquafer system. • Potential damage, erosion and slumping of unstable river embankments or drainage channels. • Potential event of impeding the continuous flow of water to downstream water user's dependant on the flow; and <p>Dangerous situation where livestock and people can be injured by any activity emanating from the activities of the project implementation.</p>

¹ Available at http://s3.amazonaws.com/iucnredlist-newcms/staging/public/attachments/3097/redlist_cats_crit_en.pdf

Endangered (IUCN)	A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered (see Section V of the IUCN Red List Categories and Criteria ²), and it is therefore considered to be facing a very high risk of extinction in the wild.
Environment	As defined in the Environmental Assessment Policy and Environmental Management Act - "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values".
Environmental Impact Assessment (EIA)	The process of examining the environmental effects of a development as prescribed by the Environmental Impact Assessment Regulations (GN. No. 30 of 2012) for activities listed as List of Activities which may not be undertaken without an Environmental Clearance Certificate from the Environmental Commissioner (GN. No. 29 of 2012).
Environmental Management Plan (EMP)	A working document on environmental and socio-economic mitigation measures, which must be implemented by several responsible parties during all the phases of the proposed project.
Erosion	The detachment, transport and deposition of soil particles by water, wind, ice and gravity.
Evaluation	The process of ascertaining the relative importance/significance of information, in light of people's values, preference and judgements in order to make a decision.
Hazardous Substance	A substance that, in the reasonable opinion of the EAP, can have a harmful effect on the environment.
Interested and Affected Party (I&AP)	Any person, group of persons or organisation interested in, or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.
Listed Activity	An activity listed in terms of section 27(2) of the Environmental Management Act and the List of Activities which may not be undertaken without an Environmental Clearance Certificate from the Environmental Commissioner (GN. No. 29 of 2012).
Mitigate	The implementation of practical measures to reduce adverse impacts.
Monitoring	Regular inspection and verification of agronomic activities, soil and groundwater for

² Available at http://s3.amazonaws.com/iucnredlist-newcms/staging/public/attachments/3097/redlist_cats_crit_en.pdf

	degree of compliance to the EMP.
No-Go Areas	Areas identified as being environmentally sensitive in some manner and demarcated on plan, and on the Site with pegs or fencing and which are out of bounds to unauthorised persons. Authorisation must be obtained prior to entry.
Proponent:	Any person who has submitted or intends to submit an application for an authorisation, as legislated by the Environmental Management Act no. 7 of 2007, to undertake an activity or activities identified as a listed activity or listed activities; or in any other notice published by the Minister or Ministry of Environment, Forestry & Tourism.
Protected	Protected under Namibian legislation.
Public	Citizens who have diverse cultural, educational, political and socio-economic characteristics. The public is not a homogeneous and unified group of people with a set of agreed common interests and aims. There is no single public. There are a number of publics, some of whom may emerge at any time during the process depending on their particular concerns and the issues involved.
Salinisation	Accumulation of water-soluble salts in soil to a level where agricultural production and ecosystem quality are negatively affected.
Scoping Process	Process of identifying: issues that will be relevant for consideration of the application; the potential environmental impacts of the proposed activity; and alternatives to the proposed activity that are feasible and reasonable.
Search and Rescue	The location and removal of specified plant species, without unnecessary damage, and their transfer to a specified location (e.g. on-site nursery).
Significant Effect/Impact	Means an impact that by its magnitude, duration, or probability of occurrence may have a notable effect on one or more aspects of the environment.
Solid Waste	All solid waste, including debris, chemical waste, wrapping materials, timber, tins and cans, drums, wire, nails, food, and domestic waste.
Species of Special Concern	Those species listed in the Endangered, Threatened, Rare, Indeterminate, or Monitoring categories of the South African Red Data Books, and/or species listed in Globally Near Threatened, Nationally Threatened or Nationally Near Threatened categories (Barnes, 1998).
Sub-artesian	Water that rises naturally in a well to a height appreciably above that of the surrounding water table, but does not flow out of the well.
Topsoil	The top 150 mm of soil (topsoil) and root material of cleared vegetation.

1 BACKGROUND INFORMATION

This chapter of the EMP provides the necessary background information to the Remainder of Farm Sponholz No. 140, the proposed increase in groundwater abstraction and the irrigation development (i.e. proposed Project) and receiving environment, which is presented in much detail in the *Environmental Scoping Report for Increase in Groundwater Abstraction at the Remainder of Farm Sponholz No. 140, February 2023*.

This EMP should be read along with the *Environmental Scoping Assessment Report for Increase in Groundwater Abstraction at the Remainder of Farm Sponholz No. 140 (February 2023)*.

1.1 PROJECT OVERVIEW

The Owner of the Remainder of Farm Sponholz No. 140, is of the intention to increase water abstraction from the Stampriet Artesian Basin (SAB) near Stampriet, Hardap Region, Namibia for irrigation purposes.

The farm is generally used for livestock production (sheep and cattle) on natural vegetation. Irrigation fields to the extent of 7 ha were developed on the north eastern side of the farm in the Auob River Valley and cultivated from two boreholes (WW364 and WW31758) that have an abstraction Permit Number 10405. The permit quota is for 42 000m³/a and expired on 7 May 2021. An application for the renewal of the permit was submitted to the MAWLR, but renewal is awaited.

An increase in water abstraction of 430 000m³/a is now applied for to cultivate 100 ha olive and almond orchards.

1.1.1 Site Locality

The Remainder of Farm Sponholz No. 140 is situated approximately 30 km south, south-east of Stampriet village in the Hardap Region of Namibia. It can be reached along the C15 Main Road that runs between Stampriet and Gochas. See Appendix A for the Locality Map in the Hardap Region and Fig. 1.1 for the locality of the boreholes and proposed orchard on the farm.

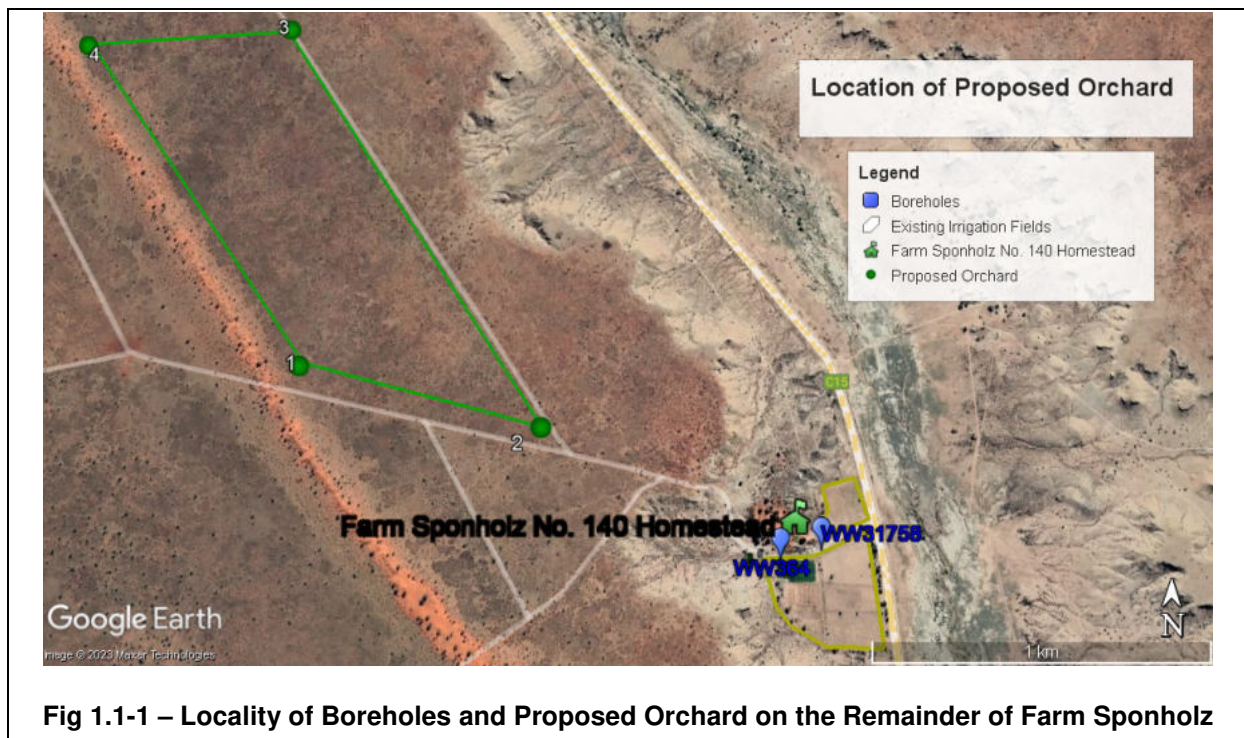


Fig 1.1-1 – Locality of Boreholes and Proposed Orchard on the Remainder of Farm Sponholz

1.1.2 Agronomic Activities

1.1.2.1 Site Preparation and Operational Methodology

The activities associated with the development of the orchards are presented in Section 4.3.3 of the *Environmental Scoping Report, February 2023*, as indicated below, which in brief entails:

- Soil preparation and fertilising, as discussed in Section 4.3.3; taking into account soil composition as described in Section 5.2.4 and possible impacts and mitigations as described in Section 7.4.4 of the mentioned report.
- Installation of drip irrigation system for watering as described in Section 4.3.2 (iv);
- Planting of tree seedlings as described in Section 4.3.3.3;
- Watering as described in Section 4.3.3.4;
- Pruning, weeding and pest control as described in Section 4.3.3.5 and 4.3.3.6;
- Harvesting as described in Section 4.3.3.7.

1.1.2.2 Operational Activities

Operational activities are presented in Section 4.3.4 of the *Environmental Scoping Report, February 2023*, and entails:

- Day-to-day site checks on trees, soil, possible pests, pumps, pipes, leakages, etc.;
- Watering and fertilising by means of the drip irrigation system;

- General Repair and Maintenance of irrigation system, boreholes, machinery and equipment;
- Weeding and pest control;
- Harvesting;
- Storage and/or transportation of produce off-site.

1.1.3 Decommissioning

Olive and almond farming is a long-term commitment. Orchards generally produce for 25 – 30 years, yielding their first crop approximately three years after planting.

It is the understanding that every Project should have a Project Life, after which rehabilitation to its natural pristine condition should take place. Decommissioning and rehabilitation will be the responsibility of the Proponent. It should be undertaken according to a Decommissioning & Rehabilitation Plan as discussed in Section 4.3.5 of the *Environmental Scoping Report, February 2023*.

1.2 THE RECEIVING ENVIRONMENT

1.2.1 The Physical Environment

The physical environment is typical of the *Southern Kalahari* biome found within the south-eastern parts of Namibia, which directly determines this particular bio-physical environment (see section 5.2 of the *Environmental Scoping Report, February 2023*).

1.2.1.1 Climate

The Project area is located in the coldest area of the country and frost is more frequent here, while average maximum temperatures go as high as 34-35 °C.

Average annual rainfall is low between 200 - 250 mm with average annual evaporation of 2 240 – 2 380 mm/year, which leaves a water deficit of approximately 2 100 – 2 300 mm per year.

Prevailing wind is north and north, north-east.

1.2.1.2 Geology, Topography, Hydrology and Geohydrology

The Remainder of Farm Sponholz No. 140 falls within the Kalahari Group with Kalahari Sand Rock Type.

The south-eastern areas of Namibia to the east of the Weissrand are relatively flat with longitudinal sand dunes and linear inter-dune valleys that run in a north - west to south - east direction. Many of the neatly arranged linear dunes fields in various areas were formed during much drier times long ago.

A surface drainage system runs from the northwest to the southeast across the Project area. The Auob, Olifants and Nossob Rivers are ephemeral watercourses that flow only when above-average rainfall occurs. The Auob River runs along the north-eastern border of the Remainder of Farm Sponholz No. 140.

Water for irrigation will be obtained from the Stampriet Artesian Basin (SAB) through boreholes. The depth of the two boreholes that will be used to abstract groundwater are 137 m and 150 m. The age of the water is less than 40,000 years, and the water temperature is around 30 °C.

Studies of the SAB indicate that effective control and monitoring of groundwater quantity is essential to establish sustainable use of the resource. Refer to Section 5.2.2 and 5.2.3 as well as Appendix D of the *Environmental Scoping Report, February 2023*.

1.2.1.3 Soil

The north-eastern part of the farm (including the homestead and current irrigation fields) lies within alluvial soils (*Eutric Flavisols*) of the Auob River Valley. Stretching westward, the soil becomes the general soil type of the Kalahari (*Ferralic Arenosols*) which forms longitudinal dunes alternated by inter-dune valleys covered with *Arenic Calcisols*, where the orchard development is envisaged. Refer to of the *Environmental Scoping Report, February 2023* Fig. 5.2-4 to see the transitions between the three soil types.

Ferralic Arenosols are formed from wind-blown sand, with sand generally making up more than 70% of the soil. The sandy texture allows water to drain through the soil rapidly, leaving little moisture at depths to which most plant roots can reach. Few nutrients are retained in the porous sand. The loose structure of sand means that there is little run-off and water erosion, although it makes the soils susceptible to wind erosion if they are not stabilised by vegetation.

However, the orchard is planned in an interdune valley (“street”) that lies in *Arenic Calcisols*. *Calcisols* are rich in bases, such as calcium and magnesium. The surface horizon is often completely or partially de-calcified, as calcium carbonate is dissolved by rainwater and leached from the upper part of the soil to precipitated as calcite further down. Alternative wetting (by rain) and drying (by evaporation) of the soil tend to concentrate the calcium carbonate in a calcic horizon that can become indurated (cemented/petrified).

Calcisols typically have a thin surface horizon that has low porosity, as soil pores are filled with calcium and magnesium. The sparse vegetation and high temperatures result in low organic matter content. Soil faunal activity is high in these soils.

Calcisols can be productive under irrigation with good management practices for fertilization and to prevent salinisation and erosion.

1.2.2 The Biophysical Environment

The Remainder of Farm Sponholz No. 140 falls within the *Southern Kalahari* Biome on Kalahari sandveld and have open *Acacia* woodlands. Low vegetated dunes run in a north-

west to south-east direction with flat areas (“streets”) in between dunes. A more detailed description is presented in section 5.3 of the *Environmental Scoping Report, February 2022*).

Plant diversity is low with an estimate of between 50-99 species recorded. Grasses are prevalent in the “streets” between dunes, but certain grass species are adapted to also occur on the dunes where it provides soil stability. Conspicuous of the Kalahari landscape is the occurrence of *Acacia erioloba* and *Boscia albitrunca* trees and *acacia* shrubs.

It is estimated that at least 45 reptile, 3 amphibian, 47 mammal and 131 bird species are known to or expected to occur in the general area. Species most likely to be affected by habitat destruction on the proposed site are reptiles and rodents, especially burrow living animals.

1.2.3 Land Use and Infrastructure

The larger area between Stampriet and Gochas consist of freehold farm land. The Remainder of Farm Sponholz No. 140 is zoned for agricultural use. (see section 5.4 of the *Environmental Scoping Report, February 2023*).

2 THE ENVIRONMENTAL MANAGEMENT PLAN

2.1 PURPOSE OF THE EMP

The purpose of the EMP is to provide specifications for "good environmental practice" in a sensitive environment for application during agronomic activities.

As such, the EMP provides specifications that the Proponent and his staff/labourers must adhere to, to minimise adverse environmental impacts associated with the cultivation activities. The Proponent to which authorisation was granted, is ultimately responsible for overall environmental performance.

The guidelines for the execution of an EMP include the following:

- Responsibilities to be delegated for the environmental performance of the orchard development and increase in groundwater abstraction;
- Communication channels to report on environmental performance, problems and priorities;
- Monitoring schedules to identify potential negative environmental impacts associated with the proposed activities;
- Mitigation measures to avoid or minimise the identified negative environmental impacts (groundwater abstraction and pollution, soil degradation, loss of biodiversity and dust) as well as to enhance the positive impact on the environment (employment; support of local communities, conservation efforts); and
- Monitoring programme to track the plans that have been implemented and to ensure the effectiveness of the plan.

2.2 SCOPE OF THE EMP

This EMP intends to guide and manage the agronomic activities and surrounding areas as they relate to the natural environment. It describes mitigation measures and is prescriptive in identifying specific people or organisations to undertake specific tasks. This document must further be open-ended, requiring regular review and updating via the correct channels for it to effectively guide environmental management of this project.

In order to ensure a holistic approach to the management of environmental impacts during the agronomic activities, this EMP sets out the methods by which proper environmental controls are to be implemented by the Proponent and all other parties involved, and monitored by the Stampriet Basin Water Committee (SBWC) and the Ministry of Agriculture, Water and Land Reform (MAWLR).

The provisions of this EMP are binding on the Proponent until the end of project life. Any third party appointed by the Proponent in terms of the design, construction and operation of the project must comply with the conditions of this EMP.

The EMP is a dynamic document subject to similar influences and changes as are created by variations to the provisions of the project specification. Any substantial changes shall require the approval from the Stampriet Basin Water Committee and the Ministry of Agriculture, Water and Land Reform.

2.3 FORMAT OF THE EMP

The EMP consists of four parts:

- **Chapter 1** gives **Background** information on the proposed Project and the receiving environment;
- **Chapter 2** contains a brief **Description** of the EMP, i.e. purpose, scope, format and amendments;
- **Chapter 3** deals with **Compliance Monitoring** stipulating the general requirements, responsibilities of the different role players, financing of environmental control, dispute resolution, and requirements for monitoring; and
- **Chapter 4** details with the **Environmental Specifications** that set out the environmental objectives and targets with which the Proponent must comply.

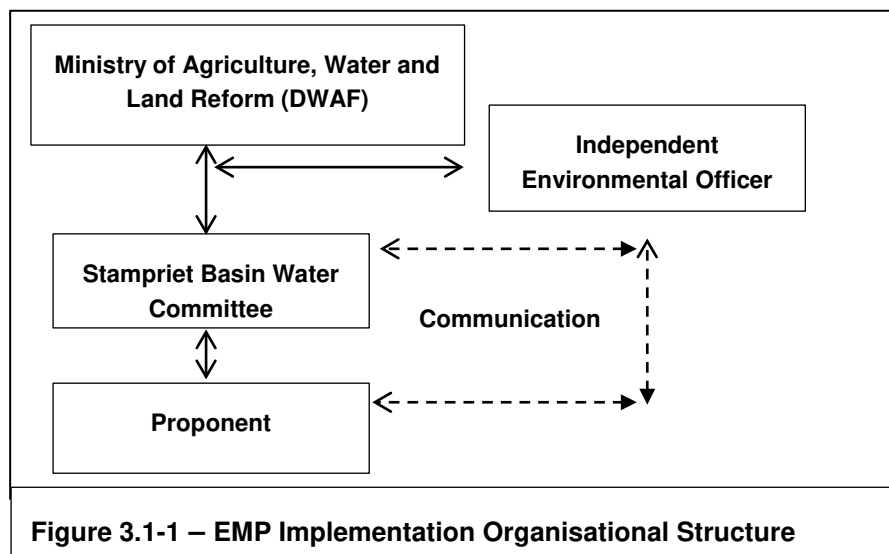
2.4 AMENDMENTS TO THE EMP

Any party involved with the Project can suggest changes to the EMP. Approved changes will be recorded and drafted into this existing EMP in the form of an appendix or amendment. This should be clearly stipulated in the EMP to avoid confusion.

3 ADMINISTRATION AND REGULATION OF ENVIRONMENTAL OBLIGATIONS (COMPLIANCE MONITORING)

3.1 MANAGEMENT STRUCTURE

Details of the management structure are presented below. All official communication and reporting lines including instructions, directives and information shall be channelled according to the organisational structure presented below.



3.2 ROLES AND RESPONSIBILITIES

The implementation of this EMP requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental and groundwater management.

3.2.1 Ministry of Agriculture, Water and Land Reform (MAWLR)

Within the Ministry of Agriculture, Water and Land Reform is the Department of Water Affairs and Forestry (DWAFL) that has a Geohydrology Division. The DWAFL is responsible for all water resource development projects in the country, including irrigation planning and development.

Groundwater extraction in Namibia is controlled through a permit system. The MAWLR must issue a licence before any drilling work may be carried out and all boreholes have to be licensed for purposes of supervision by DWAFL to obtain information about actual quantity of water extracted by permit holders.

It will be the responsibility of the MAWLR to:

- Consult with the SBWC about new applications for water development in SAB;

- Monitor water usage and levels through Abstraction Return Forms; and
- Give technical advice on the development of boreholes under artesian conditions.

The MAWLR have the right to:

- Withdraw, amend or replace any condition of the Water Abstraction Permit after reasonable notice to the permit holder.
- Inspect the sources and installations at all reasonable times to determine whether the permit conditions are adhered to.
- Seal the boreholes until the conditions are complied with, should the permit holder not comply with the permit conditions.

3.2.2 Stampriet Basin Water Committee (SBWC)

The existing laws and regulations are enforced by both the permit system and the activities of local Water Basin Management Committees. Aquifers in the Stampriet Artesian Basin (SAB) are persistently used where water occurrence and water quality are favourable. In view of concerns about possible over-extraction of water in the SAB, the Stampriet Basin Water Committee (SBWC) was formed to assist the DWAF in monitoring water utilization in the basin.

The SBWC shall have the responsibility to ensure that the Proponent's responsibilities towards groundwater management of the SAB are executed in compliance with the EMP and/or any other documentation proposed by the MAWLR.

It will be the responsibility of the SBWC to:

- Monitor groundwater levels and groundwater quality on a seasonal basis and verify that the MAWRD regulations pertaining to groundwater management are adhered to;
- Act if specifications are not followed;
- Communicate environmental issues to the MAWLR; and
- Provide input into the IEO's on-going internal review of the EMP.

The SBWC must further provide information about:

- the extraction of water;
- the management of water resources;
- the illegal drilling of boreholes;
- leakage of boreholes; and
- any wasteful use of water.

3.2.3 Proponent (BV Investment 265 (Pty) Ltd)

The Proponent is ultimately responsible for the implementation of the EMP and the financial cost of all environmental control measures. The Proponent must ensure that any person acting on their behalf complies with the conditions/specifications contained in this EMP. The

Proponent is also responsible to liaise with the Ministry of Agriculture, Water and Land Reform (MAWLR), the Stampriet Basin Water Committee (SBWC) and an Independent Environmental Officer (IEO).

The Proponent shall address any problems pertaining to the groundwater at the request of the MAWLR and/or the SBWC.

3.2.4 Independent Environmental Officer (IEO)

An Independent Environmental Officer (IEO) must be appointed and will be responsible to:

- Monitor, review and verify the Proponent's compliance with the EMP;
- Advise the MAWLR and SBWC on environmental issues within the Project area;
- Recommend additional environmental protection measures should this become necessary;
- Involve specialists to advise on environmental management issues if any emerge;
- Keep a photographic record of possible changes from an environmental perspective;
- Keep a register of complaints and dealing with any community issues or concerns;
- Report any incidents to the MAWLR and SBWC that may or have caused damage to the SAB or which is in breach of the EMP.
- Prepare an environmental audit report for renewal of Environmental Clearance Certificate (ECC).

The IEO must have:

- a good working knowledge of all relevant environmental policies, legislation, guidelines and standards;
- the ability to conduct inspections and audits and to produce thorough and informative reports;
- the ability to manage public communication and complaints;
- the ability to think holistically about the structure, functioning and performance of environmental systems; and
- proven competence in the application of the following integrated environmental management tools:
 - Environmental Impact Assessments.
 - Environmental Management Plans.
 - Environmental Auditing.
 - Mitigation and optimisation of impacts.
 - Monitoring and evaluation of impacts.

3.3 DISPUTES AND DISAGREEMENTS

Any disputes or disagreements between role players (regarding groundwater and/or environmental management) will be referred to the Directorate of Environmental Affairs (Ministry of Environment and Tourism). If no resolution on the matter is possible it must be presented to an outside party agreed by all parties involved.

3.4 EMP MONITORING RESPONSIBILITIES

The day-to-day monitoring and verification that the EMP is being adhered to shall be undertaken by the Proponent.

The SBWC must monitor groundwater levels and groundwater quality on a seasonal basis and verify that the MAWRD regulations pertaining to groundwater management are adhered to.

The MAWRD will be able to monitor water usage and levels through the Abstraction Return Forms that is submitted on a quarterly basis.

The IEO shall visit and inspect the site at agreed upon intervals to ensure that correct operational procedures are being implemented and that the Proponent is complying with the environmental specifications of the EMP.

The IEO shall address any queries to the SBWC. If the queries cannot be resolved at this level, they shall be referred to the MAWRD, if necessary.

Any non-compliance with the agreed procedures of the EMP is a transgression of the various statutes and laws that define how the groundwater is managed. Non-conformance identified during monitoring must be recorded. Non-conformance reports will describe, in detail, the cause, nature and effects of any environmental non-conformance by the Proponent and could stand as evidence should legal action be required. If possible, photographs should also be included as evidence to substantiate the report.

This report will also suggest mitigation measures to correct the non-conformance (if necessary) and contemplate revisions to any of the strategies used in the agronomic activities. The non-conformance shall be documented and reported as part of the Monitoring Report.

3.5 POST-HARVEST ENVIRONMENTAL AUDIT

A post-harvest environmental audit must be carried out to fulfil conditions of this EMP.

3.6 NON-COMPLIANCE

The IEO/SBWC shall issue the Proponent a notice of non-compliance whenever transgressions are observed. The Proponent shall act immediately when such notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the Project Site pertaining to the environment

shall be recorded by the IEO in a dedicated register and the response noted with the date and action taken.

The Proponent is deemed not to have complied with the EMP if, inter alia:

- There is evidence of contravention of the EMP specifications within the boundaries of the Project Site and/or SAB;
- Environmental damage ensues due to negligence;
- Groundwater abstraction take place outside the defined boundaries of the Project Site; and/or from boreholes without permits;
- The Proponent fails to comply with corrective or other instructions issued by the IEO and/or SBWC within a specific time;
- The Proponent fails to respond adequately to complaints from the community or other water users.

Failure by any labourer of the Proponent to show adequate consideration to the environmental aspects of the contract shall be considered sufficient cause for the Proponent to have that employee removed from the site. The IEO may, through the Proponent, also order the removal of equipment that is causing continual environmental damage.

It is recommended that the Proponent institute penalties for the following violations and any others determined during work as detailed below:

- Littering on site.
- Lighting of illegal fires on site.
- Hazardous chemical/oil spill and/or dumping in non-approved sites and persistent or un-repaired fuel and oil leaks.
- Any persons, vehicles or equipment found within the designated “no-go” areas.
- Excess dust emanating from site.
- Any vehicles being driven more than designated speed limits.
- Any vehicles driven off demarcated tracks.
- Damage to sensitive environments.
- Unauthorised removal and/or damage to fauna, flora or cultural or heritage objects on site.
- Possession or use of intoxicating substances on site.
- Urination and defecation anywhere except at designated facilities.

Where environmental damage is caused or a pollution incident, and/or failure to comply with any of the environmental specifications contained in the EMP, the Proponent shall be liable.

3.7 ENVIRONMENTAL COMPLETION STATEMENT

An Environmental Completion Statement will be prepared by the IEO for submission to the Department of Environmental Affairs indicating compliance with the EMP and conditions. This statement will be prepared for the renewal of the ECC.

3.8 EMERGENCY PREPAREDNESS

The Proponent shall compile and maintain environmental emergency procedures to ensure that there will be an appropriate response to unexpected or accidental actions or incidents that will cause groundwater or environmental impacts. Such activities may include, inter alia:

- Accidental spillage of hazardous substances.
- Accidental fires.
- Accidental discharges to land.
- Accidental exposure of employees to hazardous substances.
- Specific environmental and ecosystem effects from accidental releases or incidents.

These plans shall include:

- Emergency organisation (manpower) and responsibilities, accountability, and liability.
- A list of key personnel and contact details.
- Details of emergency services available (e.g. the fire department, spill clean-up services, etc.).
- Actions to be taken in the event of different types of emergencies.
- Incident recording, progress reporting and remediation measures required to be implemented.
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

3.9 ENVIRONMENTAL AWARENESS TRAINING

The Proponent shall ensure that employees (permanent or temporary) are adequately trained about the implementation of the EMP, as well as regarding environmental legal requirements and obligations.

The purpose of this environmental training is to provide a general explanation of sustainable environmental practises, but also to explain the content of the EMP, the relevance thereof and how it will be implemented through monitoring. The environmental specifications as per Chapter 4 of this EMP should clearly be explained to all the employees, as well as non-compliance to it and related penalties.

The environmental training shall, as a minimum, include the following:

- The mitigation measures required to be implemented when carrying out their work activities.
- Environmental legal requirements and obligations.
- Details regarding flora/faunal species of special concern and protected species, and the procedures to be followed should these be encountered during cultivation.
- Details regarding archaeological and/or historical sites which may be unearthed during ploughing/tillage and the procedures to be followed should these be encountered.
- The importance of not littering.
- The importance of using supplied toilet facilities.
- The need to use water sparingly.
- Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible.

4 ENVIRONMENTAL SPECIFICATIONS

4.1 SCOPE

These specifications cover the requirements for responsible groundwater and environment management. Reference is made to the *Environmental Scoping Report for Increase in Groundwater Abstraction at the Remainder of Farm Sponholz No. 140, February 2023* for background information on the receiving environment, possible impacts and mitigation measures.

4.2 SITE PREPARATION AND CULTIVATION METHODOLOGY

Refer to the *Environmental Scoping Report, February 2023* Section 4.3.3 for information on site preparation and cultivation methods, Section 5.2.4 for the soil in which it will be undertaken and 7.4.4 for possible impacts and mitigation measures.

4.2.1 Implementation of agronomic farm management technology

New agronomic farm management technology (such as CropX) should be implemented right from the onset of irrigation development. These systems gather data on soil composition, soil moisture and climatic conditions to help farmers monitor the health of irrigation fields and crops and can prevent run-off water that might pollute groundwater.

4.2.2 Soil Preparation

- Soil samples should be taken and analysed before planting.
- A soil feeding programme should then be compiled based on the soil contents and development phases of the trees.
- Deep ripping is required to break up the cement-like hardpan.
- Use tined tillage instruments to prevent and alleviate compaction.

4.2.3 Fertilising

- Add organic mulches such as kraal manure, decomposed wood, sawdust, etc. to the orchard.
- Work agricultural lime into the soil before planting.
- Apply fertilisers in small increments throughout the growing season, since over-fertilisation can lead to leaching of chemicals into the groundwater environment.
- Apply fertilisers in small doses with irrigation water as close to the plant roots as possible.
- Avoid ammonium-based fertilisers to limit acidification.

- Do not overuse agrochemicals, since it disrupts soil biotic communities and their breakdown negatively affects the ecosystem services provided by soil.

4.2.4 Planting

- Plant drought resistant tree species (i.e. olive trees) that can contribute to food security in the country.

4.3 OPERATIONAL ACTIVITIES

Operational activities are discussed in Section 4.3.4 of the *Environmental Scoping Report, February 2023*, as per the cultivation methodology described in Section 4.3.3.

4.3.1 Water Management

Refer to the *Environmental Scoping Report* Section 5.2.2 and 5.2.3 as well as 7.4.2 and 7.4.3 for information on groundwater, possible impacts and mitigation measures.

4.3.1.1 Groundwater Levels

Groundwater over abstraction can be defined as abstracting more than the natural inflow/recharge to the aquifer, thus groundwater outflow is greater than groundwater inflow. Over-abstraction may lead to deepening of water levels which may cause a reduction of the pressure in the aquifer.

- Improvement in groundwater management and monitoring of the SAB must be implemented by the MAWLR, whereby water levels, abstraction volumes and - rates are measured and recorded monthly. For this the Stampriet Basin Water Committee must be re-appointed and activated by the Competent Authority.
- A groundwater monitoring program on the Project Site must be implemented by the Proponent, whereby water levels and abstraction volumes and rates are measured and recorded;
- All water abstracted must pass through a water meter of which the Proponent must bear the costs for supply, installation and maintenance.
- Abstraction Return Forms must be submitted to the MAWLR on a quarterly basis before the 10th day of the following quarter (March, June, September, December of each year).
- Water levels of each borehole must be recorded once every three months at a time before the pumps are switched on (rest water levels).
- Rest water levels must be included in the Abstraction Return Forms to the MAWLR.
- The MAWLR must be informed if a new water meter installation is made so that an inspection can be conducted if necessary to make sure the meter is to the satisfaction of the MAWLR.

- Manage demand and abstraction and reduce abstraction if over abstraction becomes evident.
- Orchard development should be undertaken with olive trees as cultivar.
- The Proponent must undertake a phased approach to the orchard development and increased groundwater abstraction.
- Implement water conservation measures.

4.3.1.2 Groundwater Pollution

As pollution products migrate through the soil, small amounts thereof can be retained by soil particles, known as residual saturation, which can potentially reside in the soil for years and act as a continuing source of contamination.

Environmental waste protection protocols must be implemented to ensure that no environmental harm is caused and that appropriate action is taken in any event of a point source and/or diffuse discharges occurring.

Iron bacteria that tends to clog some of the screened sections in the boreholes seem to be present localised within the soil as well as the groundwater.

- The boreholes to be used for irrigation must be sealed-off properly, be rehabilitated or replaced and test pumped after rehabilitation/replacement.
- Monitor boreholes to be used for irrigation purposes.

To limit the potential for spills or leaks from operational machinery and its resultant potential impact on the groundwater quality, the following mitigation measures should be implemented:

- All reasonable measures must be taken to prevent spillage and leakage of materials likely to pollute the aquifer(s).
- If a fuel storage tank(s) are kept on site, the tanks, piping, fittings and connections must be located within a bunded area.
- All hazardous substances should be stored in specially designed and constructed areas/containers/tanks as per applicable legislation. (Hazardous Substances Ordinance No. 14 of 1974, as amended)
- If a spill (especially of hydro-carbons) occurs, the contaminated soil must be removed immediately and disposed of at an appropriate disposal site. Polluted soil must be remediated where possible.
- There should always be a supply of absorbent material (e.g. chemcap, spill-sorb, drizzat pads, enrettech and peat moss) readily available to neutralise and where possible be designed to encapsulate minor spillage.
- When trucks, machinery or equipment are serviced, drip trays shall be used to collect the waste oil and other lubricants to avoid incidental spillage.

- Drip trays shall be inspected and emptied regularly and monitored during rain events to ensure that they do not overflow.
- Where practical, the Proponent shall ensure that equipment is covered so that rainwater is excluded from the drip trays.
- All static plants (stationary >6 months) shall be located within a bunded area.
- Proper training of personnel in responsible handling of hazardous substances and action in the event of spillage is necessary.
- Implement an Emergency Preparedness and Response Plan for unforeseen situations during the daily operations.
- Proper training of personnel in Emergency Preparedness and Response Plan.

To limit the potential for waste generation and its resultant potential impact on the water quality, the following mitigation measures should be implemented:

- Appropriate measures should be taken for the transportation, handling, storage and disposal of ALL waste and hazardous material.
- Adapt irrigation practises (including fertilisation, herbicides and pesticides use) to reduce application of potential pollutants.
- Reduce volumes / intensity of irrigation water to minimise leaching of pollutants.

4.3.1.3 Irrigation

Drip irrigation systems can save water and nutrients by allowing water to drip slowly to the plant roots. It is discussed in Section 4.3.2 (iv) and 4.4.3 of the *Environmental Scoping Report, February 2023*. The following mitigation measures must be implemented:

- Appropriate amount of water-use must be determined for irrigation to prevent plant withering or unnecessary run-off water.
- Irrigation should be done at appropriate times during the day/night when least evaporation will take place.
- Slow down overland flow and enhance infiltration of water into the soil.
- Water and fertilisers must be applied as close to the plant roots as possible.
- Small applications of fertilisers must be spaced out through the growing season.
- Day to day leakage checks must be done.
- There should be no tolerance towards water wastage.
- Electricity from NamPower can be supplemented by solar energy to reduce cost.

4.3.2 Site Checks

Day-to-day site checks must include, but not be limited to:

- Pump operations;

- Check for leaks;
- Check for water run-off, sedimentation or water wastage;
- Inspect cultivar and soil condition;
- Look for signs of insects, pests or diseases;
- Look for signs of damage by mammals and birds.

4.3.3 Weeding and Pest Control

- A strip of 1 m wide on both sides of the trees, within the planting row, should be cleared of weeds. In an organic farming system, a relatively thick layer of mulch could be placed within the tree row. This mulch will assist in suppressing weed growth and it will also stimulate the trees to develop tiny, secondary roots, which is beneficial for nutrient uptake.
- Implement a Pest Monitoring System and Integrated Pest Management that blends all available management techniques using chemical and non-chemical into one strategy.
- Apply herbicides/pesticides through the drip irrigation system as far as possible.
- Use pesticides only when pest damage exceeds an economic threshold.
- Use bio-degradable and environmentally acceptable chemicals as far as possible.
- Use herbicides/pesticides with low toxicity outside target groups, with short half-lives and high levels of absorption.
- Do not apply herbicides/pesticides on windy days to prevent overspray into adjacent indigenous habitats.

4.3.4 Erosion and Sedimentation Control

- Leave natural vegetation cover intact as far as possible. A strip of 1 m wide on both sides of the trees, within the planting row, should be cleared of weeds/vegetation. The vegetation in the working row should remain, but should be kept short.
- Anti-erosion compounds shall consist of an organic material to bind soil particles together and shall be a proven capable to suppress dust and erosion.
- Any erosion channels that might develop during irrigation activities shall be backfilled and compacted and the areas restored. Stabilisation of cleared areas to prevent and control erosion shall be actively managed.
- Wind erosion can also be minimised by retaining natural vegetation cover, planting windbreaks or using mulches to break wind speed at ground level.

4.3.5 Harvesting

- Harvesting of fruit from trees should maintain the vegetation cover and this process will not cause land lying bare between harvest and subsequent planting.

- Do not remove crop residues, but return residues to the soil to maintain the soil organic matter content for soil protection.

4.3.6 Storage and Transportation of produce off-site

- Produce must be stored in an appropriate manner to stay dry and uncontaminated.
- Measures must be undertaken to ensure that produce loads are properly covered and safe for transportation.
- Drivers should have valid driver's licenses with ample experience on proper road usage and manners on-site as well as when making use of public roads.
- Drivers must adhere to speed limits.
- Trucks need to be in a road worthy condition and maintained in a perfect working condition.

4.3.7 Repair and Maintenance

- Regular maintenance of the drip irrigation is required to prevent leaks, water clogging or wastage.
- Clear sprinkler blockages.
- Major repair and maintenance should be undertaken by a professional agent.
- Regular monitoring and borehole maintenance is required.
- The sand trap should be emptied on a regular basis.

4.3.8 Protection of Indigenous Flora

Refer to the *Environmental Scoping Report, February 2023* Section 5.3.1 and 7.4.1 for information on Flora, possible impacts and mitigation measures.

- Where possible avoid the removal and/or damaging of protected flora potentially occurring in the general area – e.g. *Acacia erioloba*, *Boscia albitrunca*, etc.
- If protected species must be removed, obtain a permit from MEFT.
- Replace damaged/removed tree species in suitable conditions.
- Remove all invasive alien species on site – e.g. *Prosopis spp.* This would not only indicate environmental commitment, but actively contribute to a better ecology and watershed management.
- Avoid introducing ornamental plants should landscaping be attempted, especially potential invasive alien species, but rather use localised indigenous species, which would also require less maintenance and water.
- Do not drive randomly throughout the area (could cause damage to unique flora, cause accidental fires or erosion related problems) and make use of existing tracks/roads as much as possible.

- Ensure that adequate firefighting equipment (e.g. fire beaters; extinguishers, etc.) is available.
- Implement dust control when excessive dust is caused.

4.3.9 Protection of Indigenous Fauna

Refer to the *Environmental Scoping Report, February 2023* Section 5.3.2 and 7.4.1 for information on Fauna, possible impacts and mitigation measures.

- Select storage site and other temporary lay over sites for fertilisers and produce with care to avoid unnecessary damage to habitat.
- Select the same site for all of the above to make the footprint of damage as small as possible.
- Provide proper ablution for workers to avoid faecal pollution around irrigation fields.
- Initiate a suitable and appropriate refuse removal policy as littering could result in certain animals becoming accustomed to humans and associated activity and result in typical problem animal scenarios – e.g. baboon, black-backed jackal, crows, etc.
- Do not drive randomly throughout the area (could cause mortalities to vertebrate fauna).
- Avoid off-road driving at night as this increases mortalities of nocturnal species.
- Avoid and/or limit the use of lights during nocturnal exploration activities as this could influence and/or affect various nocturnal species – e.g. bats and owls, etc. Use focused lighting for least effect.
- Prevent the killing of species viewed as dangerous – e.g. various snakes.
- Prevent the setting of snares for ungulates (i.e. poaching), collection of veld foods (e.g. tortoises, chameleon, etc.) and or any form of illegal hunting activities.
- Implement and maintain off-road track discipline with maximum speed limits (e.g. 40km/h) as this would result in fewer faunal mortalities and limit dust pollution.

4.3.10 Protection of Archaeological and Paleontological Remains

Archaeological sites are protected by the National Heritage Act No 27 of 2004. Generally, it is an offence to disturb, destroy or remove from its original site any archaeological material, or excavate any such site without permission.

- Caution should be exercised if archaeological/heritage remains are discovered during ploughing, tillage or planting.
- The labourers should receive training with respect to the identification of archaeological/heritage remains and the procedures to follow should such remains be discovered during construction.

- If an archaeological site or remains (i.e. fossils, coins, articles of value or antiquity) is discovered during any activity, the work is to be halted and the “chance finds” procedure are to be followed.
- The “chance finds” procedure covers the actions to be taken from the discovery of a heritage site or item, to its investigation and assessment by a trained archaeologist or other appropriately qualified person. This process involves the following:
 - Procedure:

Action by person identifying archaeological or heritage material

 - a) If any possible object of value is found, operating machinery or equipment must stop work
 - b) Identify the site with flag tape
 - c) Determine GPS position if possible
 - d) Report findings to an archaeologist
 - Responsibility:

Operator	To exercise due caution if archaeological remains are found
Foreman	To secure site and advise management timeously
Proponent	To determine safe working boundary and request inspection
Archaeologist	To inspect, identify, advise management, and recover remains

4.3.11 Health and Safety

On-site safety of all personnel is the responsibility of the Proponent and should be adhered to in accordance with the requirements of the Labour Act (No 11 of 2007) and the Public Health Act (No. 36 of 1919).

- Ensure that all labourers and personnel are trained depending on the nature of their work.
- Provide for a first aid kit and trained person to apply first aid when necessary.
- Restrict unauthorised access to the irrigation fields.
- Clearly demarcate dangerous areas and no-go areas on site.
- The Proponent must comply with all applicable occupational health and safety requirements.
- The workforce should be provided with necessary Personal Protective Equipment.

4.3.12 Emergency Procedures

The Proponent’s procedures for the following emergencies shall include:

(i) *Fire*

- The Proponent shall inform all relevant parties of a fire as soon as one starts and shall not wait until it can no longer be controlled.
- The Proponent shall ensure that his employees are aware of the procedure to be followed in the event of a fire.

(ii) *Accidental Leaks and Spillages*

- The Proponent shall ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks.
- The Proponent shall ensure that the necessary materials (e.g. chemcap, spill-sorb, drizzat pads, enretech and peat moss) and equipment for dealing with spills and leaks are always available on Site.
- The source of the spillage shall be isolated. The Proponent shall contain the spillage using sand berms, sandbags, pre-made booms, saw dust or absorbent materials. Treatment and remediation of the spill areas shall be undertaken.

4.4 MATERIALS

4.4.1 Hazardous Substances

- If petroleum, chemicals, harmful and hazardous waste needs to be stored, it must be kept in an enclosed and bunded area at the homestead area.
- The waste shall be disposed of at the nearest Hazardous Waste Disposal Site.

4.4.2 Handling, Use and Storage of Pesticides and Herbicides

- During transport materials shall be appropriately secured to ensure safe passage between destinations.
- Loads shall have appropriate cover to prevent them spilling during transit.
- The Proponent shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials.
- All pesticides and herbicides shall be stored within the warehouse.

4.5 DECOMMISSIONING

Decommissioning and rehabilitation will be the responsibility of the Proponent. It should be undertaken according to a Decommissioning & Rehabilitation Plan in consultation with a IEO to advise on how to go about restoring the area to its pristine condition. It will involve:

- Lease or sale of farm buildings to prospective farmers; or
- Demolishing and removal of all temporary and permanent structures;

- Sale of equipment which are not obsolete;
- Disposal/sale of any scrap material;
- Appropriately dispose or level any unwanted heap of material left at the site;
- Preparation of disturbed areas;
- Search and relocate local indigenous vegetation onto the site;
- Rehabilitation to *Southern Kalahari* vegetation; and
- Rehabilitation monitoring.

4.6 MITIGATION MEASURES AND PROPOSED MANAGEMENT PROGRAMME

The table below outlines those specific mitigation measures required to fulfil the recommendations. The responsibility for these measures is included in Column IV.

Issue	Objective	Mitigation Measure	Responsibility	Compliance Notes
SITE PREPARATION				
Soil	To break down / perforate the calcic or pectrocalcic horizontal layer in the soil.	Deep ripping is required	Proponent	
	To prevent / alleviate compaction	Use tined tillage instruments	Proponent	
	To prepare soil for cultivation taking into consideration the constraints associated with the soil composition.	Take soil samples and do soil analysis to determine feeding programme.	Proponent	
		Add organic matter to the orchard by placing a relatively thick layer of mulch within the tree row.		
		Work agricultural lime into the soil before planting.		
		Avoid ammonium-based fertilisers to limit acidification.		
		Apply fertilisers in small doses with irrigation water as close to the plant roots as possible		
		Do not overuse agrochemicals		
	To prevent erosion and sedimentation	Stabilise cleared areas.	Proponent	
		Backfill and compact erosion channels if any develop		

CULTIVATION ACTIVITIES				
Groundwater	To maintain sustainable groundwater levels in the SAB.	Install water meter.	Proponent MAWLR	
		Implemented a groundwater monitoring program for rest water levels and abstraction volumes and rates.	Proponent SBWC	
		Submit Abstraction Return Forms to the MAWLR on the 10 th day of March, June, September and December of each year.	Proponent MAWLR	
		Manage demand and abstraction and reduce abstraction if over abstraction becomes evident.	Proponent SBWC	
		Implement water conservation measures.	Proponent	
		Apply irrigation as discussed in Section 4.3.1.3.		
	To prevent groundwater pollution	Seal-off, rehabilitate and test pump the boreholes to be used for irrigation.	Proponent SBWC	
		Monitor groundwater quality at boreholes.	Proponent SBWC	

	To limit the potential for spills or leaks from operational machinery	Keep any fuel storage tank(s) within a bunded area.	Proponent IEO	
		Store hazardous substances in cemented areas or containers.		
		Prevent spillage or leakage of materials likely to cause pollution.		
		Remove contaminated soil immediately after a spill and dispose of at an appropriate disposal site.		
		Keep absorbent material readily available to neutralise and where possible encapsulate minor spillage.		
		Use drip trays to collect waste oil and lubricants when trucks, machinery or equipment are serviced.		
		Inspect & monitor drip trays regularly, especially during rain events.		
		Cover equipment so that rainwater is excluded from drip trays if possible.		
	All static plants (stationary >6 months) must be parked within a bunded area.			

		Properly train personnel in responsible handling of hazardous substances and action in the event of spillage.		
		Implement an Emergency Preparedness and Response Plan for unforeseen situations.		
Loss of Biodiversity	To limit environmental impacts on natural Southern Kalahari biome associated with monoculture crops.	Implement a Pest Monitoring System and Integrated Pest Management that blends all available management techniques using chemical and non-chemical into one strategy.	Proponent IEO	
		Apply herbicides/pesticides through the drip system as far as possible.		
		Use pesticides only when pest damage exceeds an economic threshold.		
		Use bio-degradable and environmentally acceptable chemicals as far as possible.		
		Use herbicides/pesticides with low toxicity outside target groups, with short half-lives and high levels of absorption.		
		Do not apply herbicides/pesticides on windy days to prevent overspray into		

		adjacent indigenous habitats.		
		Use cover crops to reduce wind erosion during fallow periods and implement dust control through the centre pivot irrigation system.		
		Avoid ploughing if the soil is dry or in windy conditions		
	To limit environmental impacts on natural Southern Kalahari biome associated with increased agronomic and human activities.	Do not remove or damage protected flora e.g. Camelthorn, Shepherd trees and prevent unnecessary damage to habitat.	Proponent IEO	
		Remove invasive alien species e.g. <i>Prosopis</i> trees.		
		Prevent unnecessary killing of species viewed as dangerous – e.g. various snakes.		
		Make use of existing tracks/roads as much as possible and implement track discipline with maximum speed limits.		
		Avoid and/or limit the use of lights during nocturnal exploration activities		
		Ensure that adequate firefighting		

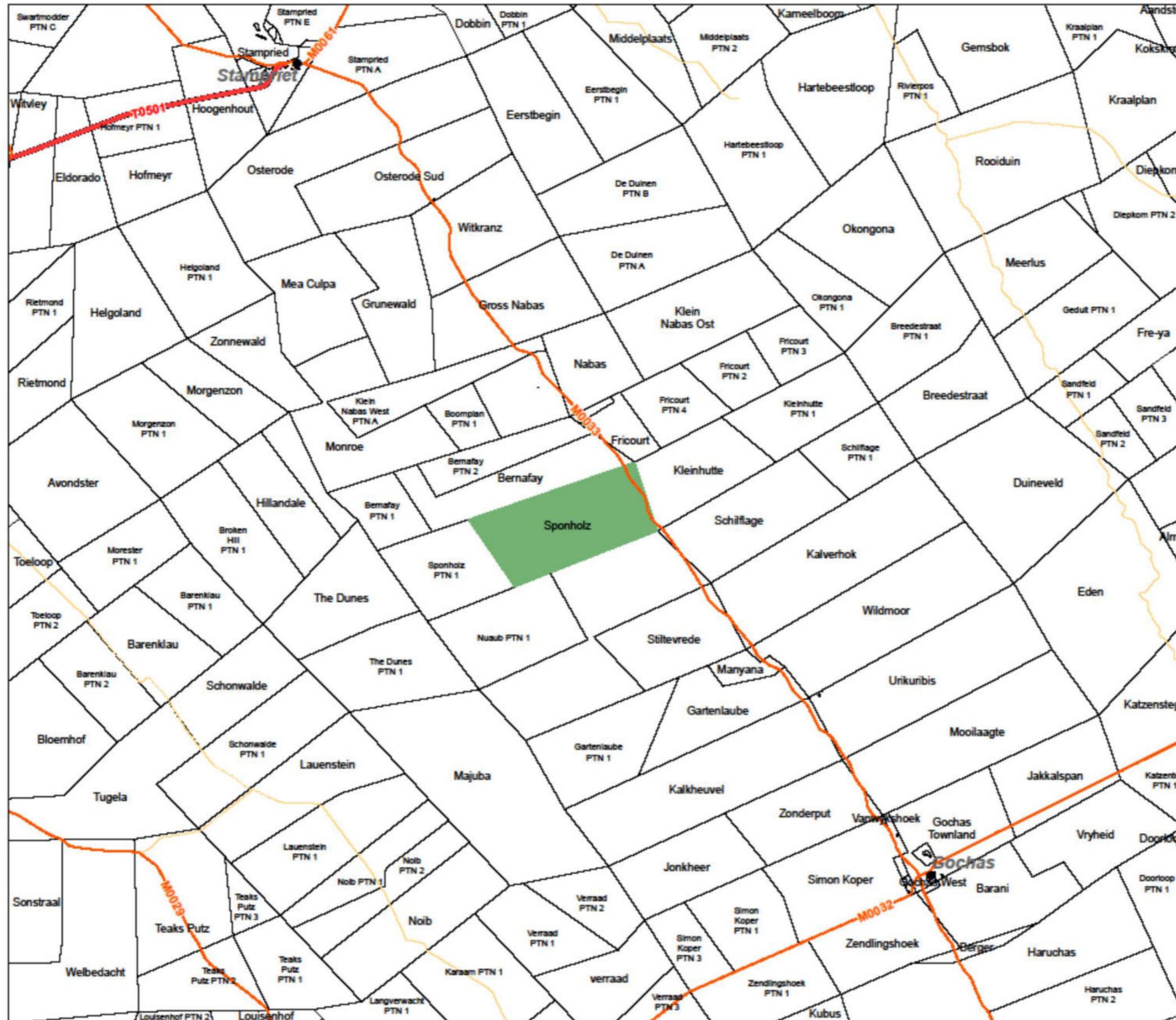
		equipment is available.		
		Provide proper ablution for workers to avoid faecal pollution around irrigation fields.		
		Initiate a suitable and appropriate refuse removal system.		
Archaeological or Palaeontological Remains	To prevent disturbance / damage to possible sites of importance.	Be aware that possible sites of importance exist.	Proponent	
		Training of personnel to carry out the Chance Find Procedures.		
Health and Safety	To ensure a safe work environment for employees.	The Proponent must comply with all applicable occupational health and safety requirements.	Proponent	
		The workforce should be provided with necessary Personal Protective Equipment		
		Provide for a first aid kit and trained person to apply first aid when necessary.		
		Ensure that all labourers and personnel are trained depending on the nature of their work.		

		Ensure all labourers are familiar with Emergency Procedures.		
		Restrict unauthorised access to the irrigation fields		
Dust	Ensure dust does not cause nuisance to the environment.	Implement dust control if/when necessary.	Proponent	
		Leave natural vegetation cover like grasses intact between rows to help reduce wind erosion.		
		Avoid ploughing if the soil is dry or in windy conditions.		
		Planting must occur shortly after ploughing.		
Decommissioning				
Land	To make agricultural land available for future land use.	Lease or sale of farm and farm buildings, equipment and/or scrap metal.	Proponent	
Rehabilitation	To rehabilitate irrigation fields to their original pristine condition.	Demolishing or removal of all temporary structures.		
		Plough disturbed areas and sow indigenous grasses.		

		Search and relocate local indigenous flora shrub and tree species.	Proponent IEO	
		Natural fauna will move back to natural habitat.		

APPENDIXES

LOCALITY MAP



Sponholz No.140/REM Hardap



- Legend**
- Towns
 - Main Roads
 - Sponholz No.140/REM
 - Trunk Roads
 - District Roads
 - Farm Portions

Locality Map

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DRAWING NO: Sponholzhans LocalityMap	August 2022
SCALE: 1:250,000	

Locality Map of the Remainder of Farm Sponholz No. 140

