Final Environmental Scoping Report

DEA&DP Ref. No. E12/2/4/2-B1/11-1006/10

Date: August 2011

Project: Cultivation of virgin soil and construction of a dam on Farm Middelburg (Vinkrivier) No 10, Portion 9, Robertson with a water-pumping scheme from the Breede River

Applicant: Van Loveren (Pty) Ltd

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GLOSSARY

BBBEE Broad Based Black Economic Empowerment
CAPE Cape Action for People and the Environment
CARA Conservation of Agricultural Resources Act
DEA Department of Environmental Affairs
DEA&DP Department of Environmental Affairs and Development Planning
EIA Environmental Impact Assessment
EIR Environmental Impact Report
HWC Heritage Western Cape
I&APs Interested and Affected Parties
NEMA National Environmental Management Act
NEMBA National Environmental Management: Biodiversity Act
NHRA National Heritage Resources Act
NSBA National Spatial Biodiversity Assessment
NWA National Water Act
SAHRA South African Heritage Resources Agency
SR Scoping Report
1. **INTRODUCTION**

Four Cousins Trust (also the owners of Van Loveren Pty Ltd), hereafter referred to as the Applicant, proposes to develop up to 370 ha of land for cultivation on Middelburg (Vinkrivier) Farm No. 10, Portion 9, Robertson, hereafter referred to as the Property. It is the Applicants intention to cultivate vineyards. In addition to the agricultural development, the Applicant proposes to construct a dam on the Property for irrigation purposes on this land and will develop associated infrastructure for a water-pumping scheme from the Breede River.

The water-pumping infrastructure is designed to deliver enough water for 1000 ha of irrigated vineyard of which the Applicant will develop a maximum of 300 - 370 ha. The dam and associated infrastructure will therefore be utilized, not only by the Applicant for the agricultural development on his Property, but also by surrounding properties. Surrounding landowners will facilitate their own water use license applications and environmental authorisations if required.

This development will significantly improve the agricultural potential and economic viability of the Property and have the potential to unlock further agricultural development (more than 600 ha) in the immediate surrounding area, an area that currently has limited agricultural potential, due mainly to the lack of water for irrigation.

The development will be located along the R60 between Worcester and Robertson (Figure 1).

![Figure 1. Location of Middelburg (Vinkrivier) Farm 10/9, Robertson and surroundings (sourced from 1:250 000 Government topo-cadastral map 3319).](image-url)
The proposed agricultural development will require the clearing of approximately 370 ha indigenous vegetation for cultivation. The construction of a large water storage (irrigation) dam on the farm Middelburg (Vinkrivier) will require the transformation of a further 34.5 ha of natural vegetation (at full capacity floor area).

Associated infrastructure will be developed for a water-pumping scheme from the Breede River, across three other farming units, towards the proposed dam site. The water-pumping scheme will consist of a pipeline and two pump stations. A submersible pump in the Breede River and a booster pump further inland. A small balancing dam (< 1 ha), will be constructed along the water scheme at the point from where a gravity line will transport water towards the Middelburg (Vinkrivier) dam site.

The Environmental Impact Assessment (EIA) Regulations 2010, promulgated in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), specifies activities that require authorization from the relevant authorities, based on the findings of an environmental assessment, before such activities commence (Government Notice (GN) No. R. 543 - 547 of 2010). The proposed Agricultural development constitutes activities listed in Schedules 1, 2 and 3 of the EIA Regulations 2010. A full Scoping and EIA Process is therefore required before environmental authorization can be considered.
1.1. **ACTIVITIES APPLIED FOR**

Table 1. Government Notice No. R. 544, 545 and 546 listed activities applied for in terms of the EIA Regulations of 2010.

<table>
<thead>
<tr>
<th>GN No.544 Activity No(s):</th>
<th>Basic Assessment Activities as per listing Notice 1 (GN No. R544)</th>
<th>Portion of the development that relates to the applicable listed activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water - (i) with an internal diameter of 0.36 metres or more; or (ii) with a peak throughput of 120 litres per second or more...</td>
<td>An underground pipeline will be constructed for the transport of water which will be pumped from the Breede River to the proposed dam site. The pipe will have an internal diameter of 0.5 m.</td>
</tr>
<tr>
<td>11</td>
<td>The construction of: (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</td>
<td>A water storage (irrigation) dam will be constructed within a small, arid drainage line that runs along the western section of the farm Middelburg (Farm 10/9, Robertson).</td>
</tr>
<tr>
<td>18</td>
<td>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from (i) a watercourse;</td>
<td>To install the submersible pump in the Breede River, a concrete structure (sump) will be constructed on the bank of the river (with submersible pumps installed). A sluice will direct water directly from the river into the sump. The underground pipeline for the transport of water from the Breede River to the proposed dam site may cross arid drainage lines. An internal distribution pipeline (maximum 300 mm diameter) will be installed on the farm Middelburg to</td>
</tr>
</tbody>
</table>
Cultivation of virgin soil and construction of a dam. Farm 10/9, Middelburg (Vinkrivier), Robertson

<table>
<thead>
<tr>
<th>GNR 546 Activity No(s):</th>
<th>Basic Assessment Activities as per Listing Notice 3 (GN No. R546)</th>
<th>Portion of the development that relates to the applicable listed activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>56</td>
<td>Phased activities for all activities listed in this Schedule, which commenced on or after the effective date of this Schedule, where any one phase of the activity may be below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold; -</td>
<td>The proposed irrigation dam on the farm Middelburg (Farm 10/9 Robertson) will be constructed in phases to ensure settling and to prevent leakage. This will entail the increase of the wall height, capacity and area up to the optimal dam size and capacity (see Activity GNR 545 No. 19).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GNR 545 Activity No(s):</th>
<th>Scoping and EIA Activities as per Listing Notice 2 (GN No. R545)</th>
<th>Portion of the development that relates to the applicable listed activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>The construction of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.</td>
<td>A 1000 kVA electricity supply point will be required to provide electricity to the pump-station.</td>
</tr>
<tr>
<td>16</td>
<td>The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more.</td>
<td>The proposed development will entail the clearing of up to approximately 370 ha of vegetation for purposes of agriculture (cultivation with vineyards or cash crops) and 34.5 ha for the redistribution of water to surrounding properties. This pipeline will cross through an ephemeral watercourse on the Property namely the Agtervinkrivier.</td>
</tr>
</tbody>
</table>

Phased activities for all activities listed in this Schedule, which commenced on or after the effective date of this Schedule, where any one phase of the activity may be below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold;

- Approximately 12 ha of the proposed area intended for cultivation (Layout Option 1) consists of Breede River & Floodplain (Breede Alluvium Fynbos) vegetation which is considered endangered.

- Approximately 80 ha of the proposed area intended for cultivation (Layout Option 1) fall within a terrestrial Critical Biodiversity Area (CBA) while approximately 30 ha have been identified as aquatic CBAs by the CAPE fine-scale biodiversity planning project.

- 12 ha of the proposed area intended for cultivation (Layout Option 1) consists of Breede River & Floodplain (Breede Alluvium Fynbos) vegetation which is considered endangered.

- Approximately 80 ha of the proposed area intended for cultivation (Layout Option 1) fall within a terrestrial Critical Biodiversity Area (CBA) while approximately 30 ha have been identified as aquatic CBAs by the CAPE fine-scale biodiversity planning project.

8 The construction of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.

- A 1000 kVA electricity supply point will be required to provide electricity to the pump-station.

- The proposed development will entail the clearing of up to approximately 370 ha of vegetation for purposes of agriculture (cultivation with vineyards or cash crops) and 34.5 ha for the redistribution of water to surrounding properties. This pipeline will cross through an ephemeral watercourse on the Property namely the Agtervinkrivier.
The construction of a dam, where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high-water mark of the dam covers an area of 10 hectares or more.

Initially, the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, will be 15 m and the dam will have a high water mark of 13.3 ha. The final wall height will be 20 m and the dam will have a total area of 34.5 ha.
1.2. SCOPE OF THE WORK TO BE UNDERTAKEN AND EIA PROCESS

OVERVIEW

Boland Environmental Consultants were appointed to conduct the EIA Process and facilitate Public Participation as required in terms of NEMA. *An application form to undertake a Scoping and EIA process has been submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) which is the identified Competent Authority for this application.*

The proposed project requires an assessment of all impacts in compliance with the EIA Regulations 2010, read with Section 24 (5) of NEMA. The scope of the study is determined with reference to the requirements of the relevant legislation and undertaken in terms of the Guideline Series on Requirements with respect to the EIA Process (various publication dates up to August 2010), issued by the DEA&DP.

The required environmental assessment process is undertaken in two phases:

- **Phase 1 – Scoping Phase**
- **Phase 2 – EIA Phase**

1.2.1. Scoping Phase

The Scoping Phase involves a description of the proposed activity, the property and the receiving environment, the identification of potential significant positive and negative impacts, the identification of opportunities and constraints, alternatives and mitigation measures which are evaluated and investigated during the EIA Phase.

A detailed Public Participation process is conducted to involve all Interested and Affected Parties (I&APs) in the EIA process and to identify any additional issues for inclusion in the assessment. All issues and concerns identified during the Scoping Phase are adequately documented in the final Scoping Report and Plan of Study for EIA submitted to the Competent Authority (DEA&DP).

1.2.2. EIA Phase

All issues that are considered to be of significance will be further investigated and assessed during the EIA Phase of this project. The EIA will involve various specialist studies and should provide an overall assessment of the biophysical, social and economic environment affected by the proposed development. A detailed assessment will be undertaken in terms of environmental criteria and the rating of significant impacts of all alternative options identified in the scoping phase. Appropriate mitigation measures will be identified and recommended for all significant impacts. These measures will be included in an Environmental Management Program (EMP) submitted together with the Environmental Impact Report (EIR) to the DEA&DP.

The EIA Phase will include a detailed Public Participation Process to ensure that all comments, issues and concerns raised by state departments and registered I&APs will be adequately documented and addressed in the EIA process.
Figure 2. The Scoping and EIA Process
1.3. RISKS AND ASSUMPTIONS

- The assumption is made that the information on which the report is based (baseline studies and project information, as well as existing information as provided by the Applicant) are true and correct.
- Figures related to the socio-economic aspects of the Robertson receiving community are derived from the most recent (2001) Census count. These figures were not adjusted to 2011. It is assumed that trends have remained reasonably constant.
- It is assumed that the botanical study will reveal specialised habitats that are likely to support rare or endangered animals. A baseline (desktop) faunal study will be conducted as part of the EIA. Should special habitats be likely to be impacted by the proposed development, a faunal specialist will be appointed to conduct a detailed faunal study of the site.

1.4. DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

Boland Environmental Consultants CC (BolandEnviro) have been appointed as the independent Environmental Assessment Practitioner (EAP) by Van Loveren PTY (LTD), to undertake the environmental process for the proposed farming development.

BOLAND ENVIRONMENTAL CONSULTANTS - COMPANY PROFILE

BolandEnviro CC was established in 2005, and operates from Worcester in the Western Cape, with a focus on the rural Boland, Cape Winelands and West Coast areas. Our multidisciplinary team focuses their expertise toward practical solutions to complex environmental applications. Our staff's in-depth industry expertise ensures the highest quality and technical defensibility of all services and products.

BolandEnviro has successfully applied knowledge and experience to solve various environmental challenges including housing developments, agri-industrial packing sheds, wine cellar expansion, cultivation of virgin land / clearing of natural vegetation, construction of roads, renewable energy plants, industrial developments, upgrading of facilities, chicken broiler houses etc.

Vision and mission

BolandEnviro places a strong emphasis on professional and ethical services in environmental management. As independent environmental practitioners, we are passionate about the environment and the rural communities we serve. Our job is to safeguard the environment for future generations, and we do this through open, honest assessment of the risks and impacts of proposed development activities. We strive to advise and guide our clients to ensure that the outcome of any application is not just of benefit to them, but also to the environment and society in general.

Staff and personnel

BolandEnviro was founded by Nik Wullschleger (B.Sc. Climate and B.Sc Hons. Geology, Pr. Sci. Nat), and expanded in 2007 with the addition of Gisela Wullschleger (B.Soc.Sci & B.Com). Johlene Krige (B. Sc. Biodiversity and Ecology, M. Sc. Botany) joined the company in 2010 and Marizanne Vos (BTech Nature Conservation) in 2011. Other specialist associates include Schalk van der Merwe (M. Phil Env. Man.), Tony Barbour (M. Sc. Env.Sci.) and Charl de Villiers (BA, M. Phil Env. Man.). BolandEnviro also maintains working relationships with other professionally qualified specialists, and can provide a wide range of specialist services for Integrated Environmental Management.
Services
BolandEnviro combines experience and integrity, specialising in the field of environmental management. BolandEnviro offers pre-application consultations, full Scoping and Environmental Impact Assessments, Basic Environmental Assessments, Specialist Studies, Environmental Management Planning and Compliance and Control Monitoring. BolandEnviro, with its association with Informage CC, has access to qualified GIS operators using ArcGIS, networked with scanners and colour plotters and printers, for the production of high quality reports, maps and plans. A full list of the services offered by BolandEnviro is available at www.BolandEnviro.co.za.

Location and area of operation
BolandEnviro is based in Worcester, but is active throughout the Boland area. In the past we have run impact assessments and other projects in Worcester, Robertson, Rawsonville, De Doorns, Touws River, Montagu, Tulbagh, Saldanha Bay and Beaufort West. This rural focus means that BolandEnviro has an in-depth knowledge of environmental conditions in this area, and are experienced in dealing with the unique challenges typical to rural areas.

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Email: info@BolandEnviro.co.za
Website: www.BolandEnviro.co.za
2. PROJECT DESCRIPTION

The Applicant (Four Cousins Trust) proposes to clear approximately 370 ha land for cultivation and to construct a water storage (irrigation) dam on the Farm Middelburg (Vinkrivier) No. 10, Portion 9, Robertson, hereafter referred to as the Property. In addition, the Applicant proposes to develop a water-pumping scheme from the Breede River. The water-pumping scheme will have a design capacity to deliver irrigation water for up to a 1000 ha agricultural development in the area.

The water-pumping scheme will consist of a pipeline (underground) and two pump stations. A submersible pump in the Breede River and a booster pump further inland. A small balancing dam (< 1 ha), will be constructed along the water scheme at the point known as Jakkalsnek from where a gravity line will transport water towards the Middelburg (Vinkrivier) dam site.

Due to the lengthy processes involved in obtaining the relevant Water Use Licences that is applicable for the proposed development and the time and costs involved in the EIA Process, the Applicant is seeking environmental authorisation for the complete development proposal.

The proposed development will therefore be conducted in two phases:

A) Phase 1 (first 2-3 years utilizing existing water)
   - Clearing of 300 - 370 ha land.
   - Construction of the proposed water-pumping scheme (initially only 1 pump-set at each pump station).
   - Cultivation of winter crops (grazing/lucerne) for a period of 2 – 3 years and the successive preparation of the soil for the cultivation of vineyards during Phase 2.
   - Irrigation of winter crops (up to 322 ha) utilizing existing water scheduled to Van Loveren (Four Cousins) (Section 2.3.2.).
   - Water will be pumped directly from the Breede River through the water-pumping scheme using only a small balancing dam along the scheme on Farm 52/RE, Robertson.

B) Phase 2 (once the relevant water use licence applications are approved)
   - Construction of the proposed water storage (irrigation) dam on the Farm Middelburg (Vinkrivier), Farm 10/9, Robertson.
   - Completion of the pipeline (pumping scheme) towards the Middelburg (Vinkrivier) storage dam.
   - Additional pumps will be installed at the pump stations as the demand for water transfer increases (the scheme will be able to deliver irrigation water for 1000 ha).
   - Cultivation of vineyards on the Property, within the areas previously farmed with winter crops during Phase 1.
   - Installation of an internal distribution pipeline for the redistribution of water to adjacent properties.

Construction of the dam and vineyard cultivation with additional water will only commence once sufficient water is available and the relevant Water Use Licences have been obtained. Environmental
authorisation is thus applied for, on condition that the relevant Water Use Licences will be obtained prior to the development of Phase 2.

2.1. LOCATION AND SITE DESCRIPTION

The Property is located adjacent to the R60 between Worcester and Robertson, approximately 15 km north-west of Robertson in the Langeberg Municipal Area (Figures 1 & 3). The Property is currently undeveloped and consists entirely of natural karoo veld. There are no buildings located on the Property. Features that are present on the site include a small farm dam, a few ephemeral water courses and existing farm tracks that traverse the Property. The land in its current state is of low economic value to the Applicant. The agricultural and grazing potential is low due to the lack of sufficient water and the veld type.

The Property is located approximately 4.8 km north-east of the site from where water will be abstracted from the Breede River.

Table 2. Details for the Middelburg (Vinkrivier) property (agricultural development and dam site).

<table>
<thead>
<tr>
<th>Property location(s):</th>
<th>Robertson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm number and portion</td>
<td>Farm Middelburg (Vinkrivier), Portion 9 of Farm 10, Robertson</td>
</tr>
<tr>
<td>Property size (m²)</td>
<td>856.532 ha</td>
</tr>
<tr>
<td>Development footprint size</td>
<td>Cultivation: 300 - 370.00 ha Dam: 34.5 ha</td>
</tr>
<tr>
<td>SG21 Digit code(s)</td>
<td>C06500000000001000009</td>
</tr>
<tr>
<td>Coordinates: Latitude (S)</td>
<td>33° 44' 46.14&quot;</td>
</tr>
<tr>
<td>Longitude (E)</td>
<td>19° 43' 25.20&quot;</td>
</tr>
<tr>
<td>Street address:</td>
<td>Robertson Road (R60)</td>
</tr>
<tr>
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<td>Robertson</td>
</tr>
<tr>
<td>Closest City/Town:</td>
<td>Robertson</td>
</tr>
<tr>
<td>Distance</td>
<td>15 (km)</td>
</tr>
<tr>
<td>Zoning of Property:</td>
<td>Agriculture I</td>
</tr>
</tbody>
</table>

The water-pumping scheme will cross three properties, namely Eilandia Farm 466/3 Worcester (abstraction point), Farm 52/RE Robertson (balancing dam location - Jakkalsnek) and Farm 10/5 Robertson (see Figure 3).

Eilandia Farm 466/3, owned by Mr Boetie Cilliers, is located in the Breede Valley Municipal Area, adjacent to the Breede River. The south-eastern section of this property (bordering the river) is farmed intensively with vineyards, while the remainder of the property (almost 80 % of the total area) is undeveloped and consists of natural karoo veld. Both pump stations and the largest section of the underground pipeline will be located on this property. The pipeline will be largely installed along the boundary fences where possible.

Farms 52/RE and 10/5, owned by HR Grobbelaar Familie Trust, is located in the Langeberg Municipal Area. Both properties are undeveloped and consist of natural karoo veld. Both properties will be
Cultivation of virgin soil and construction of a dam. Farm 10/9, Middelburg (Vinkrivier), Robertson

crossed by the underground pipeline, while the Jakkalsnek balancing dam will be located, off-stream, on Farm 52/RE.

Table 3 A – C. Details of properties that will be crossed by the water-pumping scheme (pipeline).

### A. Eilandia: Portion 3 of Farm 466, Worcester (bordering the Breede River)

<table>
<thead>
<tr>
<th>Property location(s):</th>
<th>Robertson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm number and portion:</td>
<td>Farm 466/3, Worcester</td>
</tr>
<tr>
<td>Property size (m²):</td>
<td>3 819 290 m²</td>
</tr>
<tr>
<td>Development footprint size:</td>
<td>Approximately 3.9 km pipeline</td>
</tr>
<tr>
<td>SG21 Digit code(s):</td>
<td>C0850000000046600003</td>
</tr>
<tr>
<td>Coordinates:</td>
<td></td>
</tr>
<tr>
<td>Latitude (S):</td>
<td>33°</td>
</tr>
<tr>
<td>Longitude (E):</td>
<td>19°</td>
</tr>
<tr>
<td>Street address:</td>
<td>Eilandia Rd (SDR 1380)</td>
</tr>
<tr>
<td>Magisterial District or Town:</td>
<td>Worcester</td>
</tr>
<tr>
<td>Closest City/Town:</td>
<td>Robertson</td>
</tr>
<tr>
<td>Distance</td>
<td>20 (km)</td>
</tr>
<tr>
<td>Zoning of Property:</td>
<td>Agriculture I</td>
</tr>
</tbody>
</table>

### B. The Remainder of Farm 52, Robertson

<table>
<thead>
<tr>
<th>Property location(s):</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Farm number and portion:</td>
<td>Farm 52/RE, Robertson</td>
</tr>
<tr>
<td>Property size (m²):</td>
<td>5 098 575 m²</td>
</tr>
<tr>
<td>Development footprint size:</td>
<td>Approximately 0.8 km pipeline</td>
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<tr>
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</tr>
<tr>
<td>Coordinates:</td>
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<td>Latitude (S):</td>
<td>33°</td>
</tr>
<tr>
<td>Longitude (E):</td>
<td>19°</td>
</tr>
<tr>
<td>Street address:</td>
<td>Eilandia Rd (SDR 1380)</td>
</tr>
<tr>
<td>Magisterial District or Town:</td>
<td>Robertson</td>
</tr>
<tr>
<td>Closest City/Town:</td>
<td>Robertson</td>
</tr>
<tr>
<td>Distance</td>
<td>13 (km)</td>
</tr>
<tr>
<td>Zoning of Property:</td>
<td>Agriculture I</td>
</tr>
</tbody>
</table>

### C. Portion 5 of Farm 10, Robertson

<table>
<thead>
<tr>
<th>Property location(s):</th>
<th>Robertson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm number and portion:</td>
<td>Farm 10/5, Robertson</td>
</tr>
<tr>
<td>Property size (m²):</td>
<td>2 349 753 m²</td>
</tr>
<tr>
<td>Development footprint size:</td>
<td>Approximately 0.9 km pipeline</td>
</tr>
<tr>
<td>SG21 Digit code(s):</td>
<td>C065000000001000005</td>
</tr>
<tr>
<td>Coordinates:</td>
<td></td>
</tr>
<tr>
<td>Latitude (S):</td>
<td>33°</td>
</tr>
<tr>
<td>Longitude (E):</td>
<td>19°</td>
</tr>
<tr>
<td>Street address:</td>
<td>Robertson Rd (R60)</td>
</tr>
<tr>
<td>Magisterial District or Town:</td>
<td>Robertson</td>
</tr>
<tr>
<td>Closest City/Town:</td>
<td>Robertson</td>
</tr>
<tr>
<td>Distance</td>
<td>15 (km)</td>
</tr>
<tr>
<td>Zoning of Property:</td>
<td>Agriculture I</td>
</tr>
</tbody>
</table>
Cultivation of virgin soil and construction of a dam. Farm 10/9, Middelburg (Vinkrivier), Robertson

Figure 3. Locality map of Farm 10/9, Robertson and the surrounding area. The properties which will be crossed by the water-pumping scheme, the water abstraction point at the Breede River and two proposed dam sites are also shown (1:50 000 Government topo-cadastral maps 3319 DA, DB, DC and DD).
2.2. INFRASTRUCTURE

Infrastructure associated with this project include the following:

- Water storage (irrigation) dam on the farm Middelburg (Vinkrivier) (Farm 10/9 Robertson)
- Small balancing dam at Jakkalsnek site (Farm 52/RE)
- Submersible pumps in the Breede River (Farm 466/3)
- Booster pumps contained in a pump house (Farm 466/3)
- Pipeline (crossing Farm 466/3, 52/RE & 10/5)
- Power line (from existing line towards pump stations)

2.2.1. Roads

Existing access and internal roads will be utilised by the proposed development. The proposed pipeline development will cross underneath the R60 provincial road. The provisional location where the pipeline will cross underneath the R60 and the railway line is likely to be moved a few meters towards the west (closer to Worcester). Once specified, a confirmation letter from the Provincial Roads Department will be included in the EIA Report.

2.2.2. Buildings

A pump house will be constructed on the farm Eilandia, Farm 466/3, which will contain centrifugal pump and motor sets (booster pumps). The pump house will consist of a building of approximately 10 meter x 5 meter which will be located adjacent to worker housing on the farm Eilandia (466/3). The pump house will have a similar building style and appearance as the workers housing.

2.2.3. Irrigation dam

A storage dam will be constructed on the farm Middelburg (Vinkrivier) for irrigation purposes on this land and adjacent properties (Figure 3 & 8 – layout plan). The proposed dam will be constructed in phases to ensure settling, safety and to prevent leakage (see Appendix C 1 – Technical Report: Dam Planning, Model A, B and C). Soil material excavated from the dam basin will be used for the construction of the dam wall.

Three models are proposed for the dam phased planning:

A. The dam will have an initial wall height of 15 m, as measured from the outside toe of the wall to the highest part of the wall (Model A). Model A will comprise a full-capacity area of 13 ha and a total capacity of 472 000 m$^3$.

B. Model B will have an initial wall height of 15m and will be increased by 2 meters (total height = 17 m). The dam will have a full-capacity area of 21 ha and a total capacity of 809 000 m$^3$.

C. Model C, the Applicants preferred dam size, will have an initial wall height of 15 m, and will be increased by a further 3 meters (total height = 20 m). The dam will then have a full-capacity area of 34.5 ha and a total capacity of 1 630 000 m$^3$.

A fourth model with a wall height of 22 m was proposed should the demand for higher water capacity increase in future (not considered in this application). The resulting dam would have a total capacity of 2 430 000 m$^3$ covering an area of 45.3 ha at full capacity.
A pump house of ± 10 meter x 5 meter will be constructed inland, 1.2 km north-east of the river pump.

B) Booster pump

A pump house of ± 10 meter x 5 meter will be constructed inland, 1.2 km north-east of the river pump.

3 x 200 kW centrifugal / booster pumps) to provide the designed pumping volume and rate (± 1000 ha irrigated land). The two additional pump sets will be installed once the demand for water transfer increases and when water has been allocated.
2.2.6. Pipeline

A buried pipeline will be constructed to transport the water, pumped from the Breede River, towards the farm Middelburg (Vinkrivier) for irrigation during Phase 1 and towards the Middelburg (Vinkrivier) water storage dam during Phase 2 (see Figure 7 & 8 - layout plans). The pipeline will cross three properties between the Breede River and the dam site: Eilandia Farm 466/3 Worcester (abstraction point from Breede River), Farm 52/RE Robertson and Farm 10/5 Robertson (Section 2.1 – Table 3). The pipeline will be 6.9 km in length consisting of a rising main ("styglyn") up to the hills to the north of
the pumping-station on Farm 52/RE Robertson and a gravity-line towards the farm Middelburg (Vinkrivier).

A 500 mm PVC rising main will be installed underground from the submersible pump for 1500 m towards an existing earth dam. The earth dam will allow water which is pumped from the river to settle to reduce the accumulation of sand into the centrifugal / booster pump system. An underground pipe (500 mm PVC) of 300 meter will feed water from the existing earth dam towards the pump house (centrifugal pumps). The centrifugal pumps will feed an underground rising main (500 mm PVC) of 3100 meter towards the proposed Jakkalsnek balancing dam (4451 m²). This dam will aid as a pressure release sump from where a gravity line will proceed from a suction float with an underground 400 mm PVC pipeline for 2000 meter, underneath the R60 road, towards the areas that will be irrigated during Phase 1. See Appendix C 3 – Technical Information: Water-pumping Scheme.

The provisional point (Figure 7) where the pipeline will cross underneath the R60 and the railway line is likely to be moved a few meters towards the west (closer to Worcester). Once specified, a confirmation letter from the Provincial Roads Department will be included in the EIA Report (Appendix C4).

The final section of the gravity line towards the Middelburg (Vinkrivier) irrigation dam will be completed during Phase 2 of the development (once the relevant water use licence for the irrigation dam has been obtained and the dam can be constructed). A distribution pipeline (maximum 300 mm diameter) will also be installed on the farm Middelburg (Vinkrivier) to transport water to adjacent properties. This pipeline will cross through an ephemeral watercourse on the Property.

Table 4. Location of pump station and balancing dam for the proposed water-pumping scheme.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Location S</th>
<th>Location E</th>
</tr>
</thead>
<tbody>
<tr>
<td>River pump</td>
<td>33° 46’ 55.29’</td>
<td>19° 40’ 12.54’</td>
</tr>
<tr>
<td>Existing earth dam</td>
<td>33° 46’ 23.32’</td>
<td>19° 40’ 52.67’</td>
</tr>
<tr>
<td>Booster pump house</td>
<td>33° 46’ 32.74’</td>
<td>19° 40’ 50.57’</td>
</tr>
<tr>
<td>Jakkalsnek balancing dam</td>
<td>33° 45’ 48.86’</td>
<td>19° 42’ 37.23’</td>
</tr>
</tbody>
</table>

### 2.2.7. Power line

Electricity will be provided by the Langeberg Municipality. For Phase 1 of the proposed development, the existing 11 kV overhead power lines (situated close to the pumps) will be upgraded for approximately 1000 meters. A new 11 kV line will be constructed from the existing overhead line, along the boundary fence of Farm 466/3 (Eilandia), towards the pump stations for a maximum of 1000 meters (Appendix C 5 – confirmation from Municipality). An underground cable will provide electricity to the pumps.

The existing 11 kV power line will be upgraded and a 1000 kVA electricity supply point will be provided by the Langeberg Municipality for Phase 2 of the development at the Applicants cost.
Figure 7. Layout plan for the proposed water-pumping scheme from the Breede River, across Farms 466/3 (Eilandia), 52/RE and 10/5, towards the farm Middelburg (Vinkrivier). This layout is applicable to Phase 1 of the development.
Figure 8. Layout plan for the proposed water-pumping scheme from the Breede River, across Farms 466/3 (Eilandia), 52/RE and 10/5, towards the irrigation dam on Middelburg (Vinkrivier). This layout includes Phase 2 of the development.
2.3. SERVICE PROVISION

2.3.1. Power
Electricity will be provided by the Langeberg Municipality (section 2.2.7 and Appendix C 5).

2.3.2. Water
The Applicant is currently applying for the clearing of 300-370 ha indigenous vegetation for cultivation. Although water is currently available for only 150 ha vineyards (surplus of Van Loveren scheduled water), the Applicant is seeking environmental authorisation to clear the entire 300-370 ha for cultivation at this stage and to construct the proposed irrigation dam on the Property. Clearing of the entire area is required in order to prepare the soil for future vineyard propagation. The site preparation will involve farming of winter grain for 2-3 years and will utilize existing scheduled water which is sufficient for up to 322 ha of grazing/lucerne.

Construction of the dam and vineyard cultivation will only commence once sufficient water is available and the relevant Water Use Licences have been obtained. Environmental authorisation is thus applied for, on condition that the relevant Water Use Licences will be obtained prior to the development of Phase 2.

A) Source
Water will be abstracted from the Breede River. Van Loveren (Pty) Ltd (also the owners of Four Cousins Trust) has a total of 3 177 980 m$^3$/a scheduled water from the Breede River. According to the Applicant, currently 2 145 000 m$^3$/a is used on their existing cultivated areas. The surplus of approximately 1 million m$^3$/a should therefore be available for additional development. In order for the Applicant to utilize the above mentioned surplus for irrigation on the Property (Middelburg (Vinkrivier), Farm 10/9, Robertson), a transfer of water rights is required. An application for the temporary transfer of 1 000 000 m$^3$/a for the proposed development was approved by the Central Breede River Water Users Association (Appendix C6 – Transfer of Water Rights).

B) Availability Phase 1
The surplus of approximately 1 million m$^3$ of water is sufficient for the cultivation of up to 322 ha winter crop (Appendix C7 – Irrigation requirement for winter crops (grazing/lucerne)). Existing water will therefore be utilized for Phase 1 of the proposed agricultural development.

C) Availability Phase 2
The Applicant will apply for additional water rights for Phase 2. The Applicant has sufficient water for the cultivation of 150 ha vineyards for Phase 2 of the development (utilizing existing water allocation). The remainder of the arable areas will be cultivated with vineyards as more water is allocated to the Property. Application for additional water will involve a future BBBEE component of the development.

D) Dam
The development of the dam on the farm Middelburg (Vinkrivier) will require a Water Use Licence for the storage of water. The Applicant is currently in the process of applying for a water use licence.
Cultivation of virgin soil and construction of a dam. Farm 10/9, Middelburg (Vinkrivier), Robertson

The small balancing dam at the Jakkalsnek site will not require a water use licence.

E) Surrounding properties
Surrounding landowners anticipating to benefit from this project (dam and water-pumping scheme) will be responsible for the submission of their own water use license applications and environmental authorisations if required. Landowners requiring additional water rights will need to comply with the criteria set by the Department of Water Affairs for Broad Based Black Economic Empowerment (BBBEE) thus securing additional water from the Greater Brandvlei Government Water Scheme.

2.3.3. Solid waste
A limited amount of solid waste typical of a grazing farm (Phase 1) or vineyard farming operation (Phase 2) may be produced. This type of waste will include empty containers, fertilizer bags, paper, etc. No form of hazardous waste or effluent will be produced on site.

Any solid waste that might be produced will be disposed of on site or transported to the Municipal Landfill Site to the Applicants own cost.

2.3.4. Effluent
Apart from agricultural return flows (irrigation), the proposed development is not expected to produce any effluent.

2.4. PROCESSING/STORAGE FACILITIES

The proposed development does not require any processing or storage facilities. Phase 1 of the farming development will be utilized for grazing on the Property, while wine grapes will be produced during Phase 2. Farming products (wine grapes) will be delivered to wine cellars in the surrounding area (Robertson Wine Valley) for processing. According to the Applicant, the Rooiberg Wine Cellar has sufficient capacity to accept and process the harvest.

2.5. SITE ACCESS

The proposed development will be accessed from the R60 (road between Worcester and Robertson). A railway line that runs parallel to the R60 is crossed to access the site.

2.6. PHYSICAL SIZE OF THE ACTIVITY

The Property, Farm Middelburg (Vinkrivier) 10/9 Robertson is 8 565 320 m$^2$ (856.532 ha) in extent.

A) Agricultural development:
The proposed agricultural development will comprise an area of 300 - 370 ha (depending on which alternative gets authorised).

- Phase 1: Cultivation of winter crops (total area).
• Phase 2: Up to 370 ha vineyard for Layout Alternative 1 and Up to 300 ha vineyard for Layout Alternative 2. An area of 150 ha will initially be cultivated with vineyards utilizing existing water allocation. The remainder of the arable areas will be cultivated with vineyards once more water is allocated to the Property.

B) Irrigation dam:
The water storage (irrigation) dam on farm Middelburg (Vinkrivier) will initially be built at a smaller scale to ensure settling and to prevent leakage. The final dam size will comprise an area of 34.5 ha.

C) Water-pumping scheme:
The pipe-line will be a total of 6.9 km in length from the Breede River to the farm Middelburg (Vinkrivier). During Phase 2 the final section will be completed towards the irrigation dam (approximately 2 km to be included).

The Jakkalsnek balancing dam will comprise an area of less than 1 ha (4451 m$^2$).

D) Power line:
A new 11 kV line will be constructed for a maximum of 1 km for Phase 1. This power line will be upgraded and a 1000kVA electricity supply point will be installed.
3. RECEIVING ENVIRONMENT

3.1. LAND USE

The Property is currently zoned for agricultural use (Agriculture I). The Property has a low agricultural potential due to the lack of water. Grazing potential is also low due to a low carrying capacity and high level of tick infestation. The proposed development will significantly improve the agricultural potential of the Property and the surrounding area.

Surrounding land use consists mainly of extensive agriculture (with low agricultural potential due to limited water resources).

A lime factory (Cape Lime) and associated lime quarry occur close to the Property. Intensive agricultural activities occur (approximately 3.5 km to the east) along the Noree River, the Vink River (approximately 7 km to the south-east) and in the Eilandia area along the Breede River (approximately 5 km to the south-west).

The Rooiberg Wine Cellar is situated approximately 3.5 km towards the south-east.

3.2. LANDSCAPE, HYDROLOGY AND GEOLOGY

3.2.1. Landscape

The Property is located within an open valley, approximately 6 km south of the Langeberg Mountains and 5 km north-east of the Breede River. The Aasvoëlberge and Rooiberg are prominent landscape features located between the Property and Eilandia which is located adjacent to the Breede River towards the south (Figure 9).

The southern and eastern area of the Property consists of a flat, open valley. A small west-east trending ridge separates the flat plain in the south from an open valley towards the middle section of the Property. The northern areas of the Property become hillier with a higher lying valley in the north-western corner (proposed dam site) (Figure 10).

3.2.2. Hydrology

The perennial Breede River is located approximately 5 km south-west of the Property, separated by the NE-SW trending Aasvoëlberge and Rooiberg ridges (Figure 9). The Noree River is located approximately 3.5 km to the east (Figure 10). Two ephemeral streams, namely the Agtervinkrivier and Buitenstekloof, flow across the eastern section of the Property. These water courses feed into the Vinkrivier south-east of the Property (Figures 9 & 10).
Figure 9. Location of Middelburg (Vinkrivier) Farm 10/9, Robertson and the most significant landscape features (sourced from 1:250 000 Government topo-cadastral map 3319).
Figure 10. Satellite image (Google Earth Image 2010) showing the boundary of the farm Middelburg (green) and surroundings. Immediate landscape features and the lime factory are also shown.
3.2.3.  Geology and Soils

The geology of the Property consists of Karoo Supergroup Sediments, namely the glacial tillite deposits of the Dwyka Group and shale and sandstones of the Ecca Group. The soils weathered from these formations are deep, red, apedal and loamy to loamy-sandy with a high clay and sodium content (Wooldridge 2005; Mucina & Rutherford 2006).

![Geological Map](image)

Figure 11. Extract from the 1:250 000 Geological Series map 3319 showing the dominant geological formation found on the Property (red polygon). Pt: dark-grey to grey-black shale, mudstone and siltstone, Pwa: grey, micaceous and feldspathic sandstone; siltstone and dark shale and Q: Quaternary alluvial deposits.

3.3.  CLIMATE

The Property is located in an area known as the Robertson Karoo, which is a semi-arid region with mainly winter-rainfall. Maximum precipitation occurs in August with another slight precipitation peak in June. Mean annual precipitation (MAP) is 125–350 mm, with most of the region receiving about 300 mm. The low precipitation of this region is ascribed to the rain-shadow effect due to the high surrounding mountain ranges. Mean annual temperature (MAT) is above 16 °C. Summer temperatures are high in January and vary from 30–40 °C. Occasional north-western berg winds may intensify the heat. Winter nights might experience light frost – 7 days a year on average (Mucina & Rutherford, 2006).
3.4. BIODIVERSITY

3.4.1. Flora

According to the NSBA 2004 data, the largest section (northern section) of the subject land consists of Robertson Karoo vegetation which is considered “Least Threatened”, while the southern section, along the R60 consists of Breede Alluvium Renosterveld, which is considered “Endangered”. The more recent CAPE Fine-Scale Biodiversity Planning Project (FSP) classified the vegetation of almost the entire property as Worcester Renosterveld Karoo (previously known as Robertson Karoo) which is “Least Threatened”, with a small section, along the Agtervinkrivier and Buitenstekloof ephemeral watercourses, recognised as Breede River and Flood Plain vegetation which is “Endangered” (Figure 12).

According to the CAPE Fine-Scale Plan Critical Biodiversity Areas Map the south-eastern corner of the Property falls within a terrestrial Critical Biodiversity Area (CBA) (Figure 13). Although the vegetation type is not considered endangered, this section forms part of a larger natural corridor that is identified to meet biodiversity thresholds. Development is usually not recommended within these areas. The areas along and immediately adjacent to the Agtervinkrivier and Buitenstekloof stream, which is classified as Breede River and Flood Plain vegetation, are also recognised as aquatic CBAs (identified as arid seeps) (Figure 13). Other ecological support areas (buffer areas) are identified along areas which correspond to small, arid drainage lines across the property (Figure 13). It is recommended that ecological processes be maintained within such areas.

A site visit was conducted on the 12th of April 2011. The vegetation type on the site was confirmed as Worcester Renosterveld Karoo vegetation for the largest part of the Property and corresponds to the large, homogenous area above the small west-east trending ridge identified on Figure 10. The open valley below this ridge, and around the ephemeral streams, predominantly consist of Worcester Renosterveld Karoo elements, but differ from the areas above the ridge by a dominance in some areas of Gannabos (Salt bush, *Salsola aphylla*), which is often dominant in silty, clay soils. This open valley is homogenous across the entire area with a higher salt content along the eastern section (around the ephemeral streams), where *Sarcocornia* species are also evident. There are no distinct aquatic elements evident along the areas classified as Breede River and Flood Plain vegetation in Figure 12. Vegetation along these ephemeral streams consist of dense shrubs, i.e. *Rhus* sp., *Lycium oxycarpum* (Wolwedoring) and *Soetdoring* (*Acacia karoo*). A detailed Botanical Impact Assessment will be conducted during the EIA Phase.

3.4.2. Fauna

The subject land is in a fairly pristine condition and comprises a large area of natural habitat. A number of reptiles and small mammals will occur naturally on the subject land. Mammals that are commonly found in the Robertson Karoo region include amongst others, Small Grey Mongoose (*Galerella pulverulenta*), Scrub Hare (*Lepus saxatilis*), Cape Porcupine (*Hystrix africaeaustralis*), Cape Grysbok (*Raphicerus melanotis*) and Caracal (*Felis caracal*). Notable reptiles may include Angulate Tortoise/Ploegskaarskilpad (*Chersina angulata*), Leopard Tortoise (*Stigmochelys pardalis*) and Parrot Beaked Padloper (*Homopus areolatus*).

The habitat in the target area is fairly homogenous and comprises an open valley without any rocky outcrops (specialised habitats) that would have been impacted by the proposed development.
Tortoise shells, mice, aardvark holes and dear droppings were recorded during the site visit. Large areas of natural habitat on the Property (hills towards the northern section) and the surrounding area will remain intact.

Figure 12. Extract from CAPE Fine-Scale Plan Integrated Vegetation Layer for the Upper Breede River Valley (Langeberg Municipality) showing vegetation types present. The Property is indicated as a red polygon.

Figure 13. Extract from CAPE Fine-Scale Plan Critical Biodiversity Areas Map showing aquatic CBA (dark blue) and terrestrial CBA (green), ecological support areas (oesa) (light blue), other natural areas and areas where no natural vegetation remain. The Property is indicated as a red polygon.
3.5. HISTORICAL AND CULTURAL ASPECTS

There are no buildings currently located on the Property and no buildings of cultural significance within the immediate surrounding area. Built features within the immediate surrounding area include the lime quarry (Cape Lime) directly adjacent to the eastern side of the Property, a newly built farm house on the foot of Rooiberg and the Rooiberg Wine Cellar, approximately 3.5 km towards the south-east.

No new buildings will be constructed on the Property. The proposed agricultural development will change the character of the Property and a Heritage Impact Assessment will be conducted as part of the EIA Phase and will be submitted to Heritage Western Cape (HWC) in terms of Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999).

3.6. SOCIO-ECONOMIC CHARACTERISTICS

The farm Middelburg (Farm 10, No. 9, Robertson) forms part of the rural area of the Langeberg Municipality (previously Breede River Winelands Municipality). The Langeberg Municipality encompasses an area of 3334 km². The rural areas have a population of approximately 35 000. These inhabitants are mostly farm employees, sparsely distributed throughout this area. Robertson is the closest urban settlement to the development site (15 km), and constitutes the receiving environment.

The following figures are derived from the most recent (2001) Census count for the Robertson receiving community. It is assumed that trends have remained reasonably constant.

According to 2001 Census data, the Robertson community consisted of 18 335 people in 2001 – representing 22.5% of the total population of the Langeberg Municipal Area.

In summary, the Robertson direct receiving community displayed a clear differentiation in socio-economic profiles with regard to the White and Black population groups – with the latter predominantly constituted by the Coloured population group. The Black group represents almost 80% of the town’s population. Afrikaans is by far the most dominant language in the community as a whole, followed by isiXhosa and English – the latter two together constituting around 7% of first language speakers.

The White population group may be described as predominantly lower to middle middle-income, with relatively low poverty rates, fair education rates and a relatively low unemployment rate. The largest portion of employed household heads are active in the tertiary sector. Household sizes are at around 2.43 people per household.

In contrast, the Black group may be described as predominantly lower-income. An estimated 32.5% of households had no formal income or earned less than the poverty datum of R800/ month. Education rates are higher than for the Langeberg Municipal Area, but lower than Provincial averages. Unemployment rates compare favourably with Provincial and National estimated averages, but the
rate of 11.5% is still significant, and may hide seasonal unemployment, as is often the case in areas in the Western Cape where intensive agriculture play a major role in the local economy. Significantly, 20.5% of the group were employed in the agricultural sector.

4. NEED AND DESIRABILITY

4.1. NEED

A) Unlocking the agricultural potential of the Property:
The Property, Farm No. 10/9, Robertson, is more than 850 ha in extent and currently of very little economic value should it not be developed for agriculture. In order to increase the economic value of this property, there is a need to improve the agricultural potential. The proposed cultivation, storage dam and associated water-pumping scheme will significantly increase the agricultural potential.

B) Providing water to neighbouring properties:
The proposed development has the potential to facilitate the development of additional land. While the Applicant is applying for up to 370 ha for cultivation an additional ±600 ha could be cultivated using the full capacity of the water-pumping scheme and storage dam.

Properties close to the proposed development (Agter-Vinkrivierv Area) have scheduled water from the Breede River. The water, however, is not used due to the lack of infrastructure. The proposed water-pumping scheme and large storage dam will be able to deliver water to surrounding properties.

C) Economic viability of the dam and water-pumping scheme development:
The proposed water-pumping scheme could contribute significantly to local economic development in the area. The water-pumping scheme (dam, pipeline and pump-station) will cost approximately R18 million. The development costs are to be carried entirely by the Applicant (Van Loveren (PTY) LTD). In order for the proposed water-scheme to be feasible and economically viable, there is a need to develop an area of at least 300 ha for cultivation with vineyards. It would not be feasible to develop the scheme for a smaller area.

D) Employment opportunities:
The establishment costs of vineyard is R150 000 per ha, of which R30 000 is direct labour cost. The establishment of new vineyards will require 300 days of person labour per hectare. The first phase of the farming development (150 ha) will produce 45 000 person days of temporary employment opportunities for the establishment of new vineyards (R4 500 000). A person works approximately 230 days per year. The establishment of vineyards will therefore provide 45 000/230 = 196 work opportunities should all vineyards of Phase 1 be established during the first year. Should the vineyards be established over a period of five years, approximately 40 temporary employment opportunities will be created. Farm labourers will be paid R100 per day.

The proposed dam, pipeline and pumping-station development will cost approximately R 18 million of which 5% (R 900 000) is ascribed to labour costs. At a rate of R200/day per labourer, the
development of the dam, pipeline and water-pumping scheme will provide 4500 person days of temporary employment opportunities during the Construction Phase.

The annual labour costs per ha of vineyards is R 9 000 per ha. At R 100 per day, 90 person days of labour are required for each hectare of vineyards. The first phase of the farming development (150 ha) will produce 13 500 person days of employment opportunities during the Operational Phase (R 1 350 000). At 230 days of which a person work on average per year, 59 permanent employment opportunities will be created during the Operational Phase of Phase 1 (150 ha) of the farming development.

4.2. DESIRABILITY

A) Spatial Development Frameworks and Integrated Development Plans:
The Western Cape Spatial Development Framework (SDF) states that the potential of agricultural land usually depends on whether there is water available for irrigation. Land that has no potential without irrigation can change to high potential when water for irrigation is secured. The limiting factor on agricultural expansion is thus water availability and not necessarily land. The proposed development and associated infrastructure will have the capacity to facilitate the development of 1000 ha irrigated cultivation within an area which currently has very little potential.

The Langeberg Municipality Spatial Development Framework prioritises intensive farming.

• Promotion of intensive agricultural activities and agri-business;

The Langeberg Municipality identified local economic development as a key strategic objective in the Integrated Development Plan (IDP). The proposed development anticipates supporting the development of up to 1000 ha of agricultural land under irrigation (of which 300 - 370 ha is applied for by the Applicant). This will significantly increase the economic value of the relevant properties, will create a significant number of permanent employment opportunities and will contribute positively to local economic development in the area.

B) Market:
According to the Applicant, the Rooiberg Wine Cellar, located 3.5 km to the south-east of the Property, has the spare capacity to process additional 4000 tonnes of wine grape, thus securing the market. The Rooiberg Wine Cellar is currently processing approximately 8000 tonnes.

C) Water issues:
The proposed land clearing activities and subsequent cultivation is desirable since the Applicant already has sufficient water available for the cultivation of winter crops for the total area or the cultivation of 150 ha vineyards (surplus of scheduled water of Van Loveren Pty (Ltd) to be temporarily transferred to the Property – see Appendix C 6 – Transfer of Water Rights). The Applicant will apply for additional water for Phase 2 of the development for the propagation of permanent crops (vineyards) on the total arable area.

Phase 1 of the proposed development is desirable as it will provide an initial farming opportunity (income and employment opportunities) and will prepare the site for the long term vineyard development while the relevant water use licence applications are pending.
One of the Key Performance Areas identified in the Langeberg Municipality IDP is land reform to facilitate black economic empowerment. In order for the Applicant to acquire additional water rights on the Property for Phase 2 as well as to obtain a Water Use Licence for the irrigation dam, the Applicant will need to comply with the criteria set by the Department of Water Affairs for Broad Based Black Economic Empowerment (BBBEE) thus securing additional water from the Greater Brandvlei Government Water Scheme. In addition, neighbouring properties that wish to benefit from the proposed scheme will require their own water use license applications, which will facilitate further BBBEE projects.

D) Land use:
The proposed sites for land clearing are currently not utilized for agricultural or any purpose by the Applicant. The Property is currently of low economic value should it not be developed. The agricultural potential of the Property is currently limited to extensive small stock grazing. This activity has a much lower profit / yield in comparison to the proposed intensive vineyards.

The development will contribute to local economic development, will provide a significant amount of additional employment opportunities and will not result in unacceptable opportunity costs.

Almost the entire area targeted for vegetation clearing consists of a vegetation type which is considered Least Threatened (Worcester Renosterveld Karoo).

E) Surrounding land use:
Intensive agricultural activities are evident less than 5 km away. The proposed development is in line with the surrounding land use and will not detract from the areas sense of place. The proposed development will not generate significant noise, odours or waste. No storage or processing activities will take place on the Property. The proposed development is desirable as it will unlock future agricultural development within the area.

5. ALTERNATIVES

The Applicant's preferred Alternative is to develop a total area of 370 ha under cultivation and to construct dam with a total area of 34.5 ha and a capacity of 1 630 000 m³ (Model C) on the Property, with a water-pumping scheme from the Breede river with the capacity to deliver water for up to 1000 ha irrigated land. The farming development will be conducted in two phases: Phase 1 (320 ha winter grain) and Phase 2 (vineyards). The proposed dam will be constructed in phases to ensure settling and to prevent leakage (Model A – 13.3 ha, Model B – 20.6 ha and Model C – 34.5 ha).
5.1. DAM

Although two potential sites were identified by the engineers that are possible for the construction of a water storage (irrigation) dam for the proposed agricultural development on the farm Middelburg (Vinkrivier) and surroundings (Figure 14), only one site proved to be feasible and reasonable for the proposed development.

A) Jakkalsnek Site (not desirable)

Initially the Jakkalsnek site (now the location of the proposed small balancing dam on the Farm 52/RE) was considered for the large water storage dam.

B) Middelburg (Vinkrivier) dam site (desirable)

The dam site is located within the north-western corner of the Property, Farm No. 10, Portion 9, Middelburg (Vinkrivier). This is the reasonable site alternative considered for the construction of a water storage (irrigation) dam for the proposed agricultural development on the farm Middelburg (Vinkrivier) and surroundings.

Although the Middelburg dam site requires approximately 2 km additional pipeline from the Breede River towards the dam site compared to the Jakkalsnek site, the Jakkalsnek site is less desirable for a storage dam of the same capacity. This dam site is currently not being considered for the proposed irrigation dam for the following reasons, and will therefore not be comparatively assessed as an alternative site:

• There is currently not a sufficient access road to the Jakkalsnek dam site. A new access road would be required for the construction of the proposed dam.
• The gradient of the site is much steeper than the Middelburg farm site and would require a dam wall of 30 meters high (compared to a maximum wall height of 20 m on Middelburg).
• There is insufficient building material located within the dam basin to build the dam wall. Material will need to be transported from an alternative site, which may result in further expense and/or environmental impact.
• Due to the higher wall height and building material required, construction of the proposed storage dam on the Jakkalsnek site will be more expensive (approximately R 8 million compared to R 5.5 million) than on the Middelburg site.
• The dam site is located above the R60 road and railway line and may result in a risk should the dam fail. In contrast the Middelburg site is located below the R60 and railway line. Downstream water courses will lead any flood water safely towards the Vink River.
• The Jakkalsnek site is located on a property which is not owned by the Applicant. This will involve additional costs and legal complexity.
• The Middelburg site is located closer to the areas on the Property and surrounding properties towards the north of the Property that will require water for irrigation.

The currently proposed dam site on the farm Middelburg (Vinkrivier) is located within an area that comprise Worcester Renosterveld Karoo vegetation which is considered “Least Threatened” and does not fall within any “Critical Biodiversity Areas (CBAs)”. From an environmental, social, economic and safety perspective, the Middelburg site is more desirable than the Jakkalsnek site. There are no other feasible sites on the farm Middelburg (Vinkrivier) that can be considered for the dam site.


5.2. WATER-PUMPING SCHEME

5.2.1. Design and layout
The proposed design and layout for the water-pumping scheme as described under Section 2 above is the most feasible considered for the proposed development. The designed route of the pipeline is based on the cost to develop (shortest route) and the electricity required for pumping water over higher topography. The pipeline will run across the lowest section of the “Rooiberg-Aasvoëlberge” hills. All other routes would be steeper and/or longer. An alternative water-pumping scheme design was initially considered (Figure 15).

A) Alternative water-pumping scheme (not desirable)
An alternative water-pumping scheme was originally considered for the proposed development (see Appendix C 9 – Alternative Water-Pumping Scheme). This design would require only one pump station and a pipeline directly towards the Middelburg dam site with a concrete structure acting as a pressure-release sump.

The design for the pumping-station was based on a dry well with a submerged pump inlet design (flooded suction). The pumps would extract water from a suction-well which is linked with the Breede River by a 200 m long 1050 mm diameter class 100 D concrete pipe. An underground rising main would transfer and discharge water directly into a pressure-release sump (concrete structure) in the
hills towards the north of Eilandia, from where a gravity line would take water directly to the Middelburg dam site.

This alternative water-pumping scheme proved not to be feasible for the following reasons:

- Water would have to be pumped across a higher section of the hills towards the north of pump station.
- The single pump station and the pipeline design would require larger pumps, a higher pump rate and larger pipe pressure classes in order to be able to pump water that height.
- The infrastructure will thus be far more expensive.
- More electricity will be required for pumping.
- The entire pipeline (up to the Middelburg dam site) will need to be completed before it can be utilized for water transfer.

B) Preferred water-pumping scheme (desirable)

The preferred water-pumping scheme will consist of a pipeline (underground) and two pump stations. A submersible pump in the Breede River and a booster pump further inland (Appendix C 3 – Technical Information: Water- pumping Scheme). Water will be pumped by submersible pumps into an existing farm dam from where the booster pumps will pump water towards a small balancing dam (< 1 ha), that will be constructed along the water scheme at the point known as Jakkalsnek (alternative dam site). From here a gravity line will first transport water towards the Middelburg (Vinkrivier) farm and later towards the Middelburg dam site (Phase 2).

The preferred water-pumping scheme design is currently the only alternative considered for the proposed development for the following reasons:

- The main pump station (centrifugal/booster pumps) do not pump directly from the river. The submersible pumps will feed water into an existing dam which will allow for the water to settle and prevent sand from entering into the centrifugal pump system.
- The Jakkalnek balancing dam will be a small earth dam (no concrete structures are required in the hills towards the north of Eilandia). A small earth dam on Farm 52/RE in stead of a concrete structure will have less environmental impact. Additionally this dam can be utilized by wildlife.
- The small Jakkalsnek balancing dam does not require a water use licence. This small dam can therefore act as a balancing dam from where an initial smaller gravity line can transport for irrigation towards Middelburg (Vinkrivier) during Phase 1. The Jakkalsnek dam and water-pumping scheme can therefore be utilized while the relevant Water Use Licence Applications for the Middelburg water storage dam are pending.
- Lower construction costs involved in the pipeline (lower pipe pressure classes required)
- Lower pump rate required
- Less electricity required
- The pipe line can be constructed in two phases (lower costs involved during Phase 1)

5.2.2. Scale

The scale of the pipeline is designed to allow for a potential water-pumping scheme of up to 1000 ha irrigation. One of the main aims of the water-pumping scheme is to unlock future agricultural development within the Agter Vinkrivier area, currently limited by the lack of irrigation water.
In order for the water-pumping scheme and associated infrastructure to be cost effective and practical, the project is planned to facilitate the cultivation of an area of 1000 ha. A larger scheme will be too costly while a smaller scheme will be less efficient.

Figure 15. Alternative design and layouts considered for the proposed water-pumping scheme development. The alternative (not desirable) design is indicated in red, while the preferred design is induced in blue.

5.3. FARMING DEVELOPMENT

5.3.1. Site
The proposed site (Farm Middelburg/Vinkrivier No.10/9, Robertson) is the only site intended for the farming development (cultivation of vineyards).

The site is most desirable as it is located on the property of the proposed irrigation dam.

The purchasing of the undeveloped property, the development of a dam and water-pumping scheme and the establishment of new vineyards is economically more attractive than purchasing a farm that is already developed (the latter could cost as much as R200 000 – R250 000 per ha). Additionally, the development on the proposed site will benefit the surrounding area.
5.3.2. Scale
The proposed water-pumping scheme and associated agricultural development will significantly contribute to local economic development in the area. The water-pumping scheme (dam, pipeline and pump-station) will cost approximately R18 million of which the development costs are carried entirely by the Applicant (Van Loveren (PTY) LTD). In order for the proposed water-pumping scheme development to be feasible and economically viable, the Applicant need to develop an area of 300 ha (preferably 300-400 ha) for cultivation.

5.3.3. Layout
Two alternative layouts alternatives are proposed for the cultivation of virgin soil on the farm Middelburg (Vinkrivier). All water courses and rocky outcrops will be excluded from the proposed agricultural development.

A) Preferred layout:
The preferred layout alternative (Figure 16) seeks to develop all the potential areas based on their soil potential and locality for gravity fed irrigation.

This layout was derived from a map compiled by the Department of Agriculture which identified areas for cultivation (Appendix C 8 - Department of Agriculture Map, Application to plough in terms of CARA). The areas identified for cultivation include the open valley along the R60 (southern section of the Property) and flat areas above the small ridge towards the middle section of the Property. This alternative allows for irrigation by gravity from the storage dam. The dam will be located in the north-western corner while the remainder of the Property, including the hills in the northern part of the Property, will remain natural.

B) Alternative layout:
The alternative layout (Figure 17) excludes the areas that fall within an aquatic or terrestrial CBA. The 80 – 100 ha excluded by the CBAs is made up to some extent by including 40 ha around the dam site. This layout is least desirable for the Applicant as most of the areas that potentially have the deepest and most fertile soils are excluded from the proposed development. In addition, this layout will result in higher irrigation costs as electricity will be required for pumping water to the 40 ha near the dam.
Figure 16. **Layout 1: Preferred Layout** – Total of approximately 370 ha under cultivation. The approximate size of each of the different land parcels intended for cultivation are shown. Detailed layout plans with accurate areas will be compiled as part of the EIA Phase.

Figure 17. **Layout 2: Alternative Layout** – Total of approximately 300 ha under cultivation. The approximate size of each of the different land parcels intended for cultivation are shown. Detailed layout plans with accurate areas will be compiled as part of the EIA Phase.
5.4. NO-GO ALTERNATIVE

The no-go alternative is the option of not developing the Property. This alternative implies that no natural vegetation will be cleared for the purpose of cultivation and the proposed dam or water-pumping scheme will not be developed. The agricultural potential of the Property and the immediate surrounding sites (Agter Vinkrivier area) will remain low as a result of limited water resources.

6. LEGAL REQUIREMENTS

The current assessment is being undertaken in terms of the National Environmental Management Act (Act 107 of 1998), to be read with section 24 (5): NEMA EIA Regulations 2010. However, the provisions of various other Acts must also be considered within this EIA.

The legislation that is relevant to this study is briefly outlined below. These environmental requirements are not intended to be definitive or exhaustive but serve to highlight key environmental legislation and responsibilities only.

6.1. THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

The Constitution of the Republic of South Africa (Act 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measure are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

6.2. NATIONAL ENVIRONMENTAL MANAGEMENT ACT

The National Environmental Management Act (Act 107 of 1998) (NEMA) makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorization from the relevant authorities based on the findings of an environmental assessment. NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA). These powers are delegated in the Western Cape to the Department of Environmental Affairs and Development Planning (DEA&DP).

According to the regulations of Section 24(5) of NEMA, authorisation is required for the following for the proposed development on Farm Middelburg (Vinkrivier) No. 10/9 Robertson:

- Government Notice R544 of 2010, listed activities as amended by R660:
  Activity No: 9, 11, 18 & 56
- Government Notice R545 of 2010, listed activities as amended by R660:
  Activity No: 8, 16 & 19
- Government Notice R546 of 2010, listed activities as amended by R660:
  Activity No: 12 & 13

Refer to Section 1.1 for a description of each of the activities applied for.

The environmental scoping and EIA processes are being undertaken in distinct phases, refer to Figure 2. This Report forms part of the Scoping Phase.
6.3. CONSERVATION OF AGRICULTURAL RESOURCES ACT
The purpose of the Conservation of Agricultural Resources Act (CARA) (Act 43 of 1983) is to provide for control over the utilization of the natural agricultural resources in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants.

A separate application for the cultivation of virgin soil was submitted to the Department of Agriculture: Resource Conservation.

6.4. NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT
The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA) is part of a suite of legislation falling under NEMA, which includes the Protected Areas Act, the Air Quality Bill and the Coastal Zone Bill.

Chapter 4 of NEMBA deals with threatened and protected ecosystems and species and related threatened processes and restricted activities. The need to protect listed ecosystems is addressed (Section 54). Section 73 deals with Duty of Care relating to invasive species, while Section 76(2) calls for development of invasive species monitoring, control and eradication plans by all organs of state in all spheres of government, as part of environmental management plans required in terms of Section 11 of NEMA.

6.5. NATIONAL HERITAGE RESOURCES ACT
The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). South African National Heritage Resources Agency (SAHRA) is the enforcing authority and in the Western Cape, SAHRA have, in most cases, delegated this authority to Heritage Western Cape (HWC).

In terms of Section 38 of the National Heritage Resources Act, SAHRA and/or HWC will require a Heritage Impact Assessment (HIA) where certain categories of development are proposed. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is found to be adequate, a separate HIA is not required.

The National Heritage Resources Act requires relevant authorities to be notified regarding this proposed development, as the following activity is relevant:

- any development or other activity which will change the character of a site exceeding 5 000 m² in extent;

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible resources authority. Nor may anyone destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority, in terms of Section 36 (3). In terms of Section 35 (4), no person may
destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority.

6.6. NATIONAL WATER ACT

The National Water Act (NWA), Act 36 of 1998 has the purpose to ensure that South Africa’s water resources are protected, used, developed, conserved, managed and controlled in ways which inter alia (b) promotes equitable access to water, (c) redress for past racial discrimination, (e) facilitates social and economic development, (g) protects aquatic and associated ecosystems and their biological diversity, (h) reduces and prevents pollution and degradation of water resources and (k) manages floods and droughts.

Chapter 4 of the NWA describes the entitlement to water use, (2) whereby a person may continue with an existing lawful water use, (3) a person may use water in terms of a general authorisation or license (4).

In terms of section 21, the water uses that are recognised for purposes of the National Water Act include the following:
(a) taking water from a water resource;
(b) storing water;
(c) impeding or diverting the flow of water in a watercourse;
(d) engaging in a stream flow reduction activity contemplated in section 36;
(e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
(f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
(g) disposing of waste in a manner which may detrimentally impact on a water resource;
(h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
(i) altering the bed, banks, course or characteristics of a watercourse;
(j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
(k) using water for recreational purposes.

6.7. GUIDELINES AND CONSERVATION PLANS

There are a number of guideline documents and conservation plans that must inform the work of both the environmental practitioner and the various specialists. The principles contained in these documents will be incorporated into the various aspects of the study.
Policies and Guidelines considered during this environmental assessment process include:

<table>
<thead>
<tr>
<th>POLICY/ GUIDELINES</th>
<th>ADMINISTERING AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Langeberg Municipality Spatial Development Framework (review 2010)</td>
<td>Langeberg Municipality</td>
</tr>
<tr>
<td>Census 2001 Community Profiles interactive DVD</td>
<td>Statistics South Africa</td>
</tr>
</tbody>
</table>

7. PUBLIC PARTICIPATION PROCESS

The Public Participation Process (PPP) during the Scoping Phase of this environmental process was conducted in order to inform Interested and Affected Parties (I&APs) of the proposed project and to identify issues, comments and concerns as raised by I&APs. The PPP aims to promote open channels of communication between the project team and I&APs. All views and concerns are documented and considered during the evaluation of potential impacts and risks associated with the project.

Public Participation Process to date:

- The addresses of all neighbouring properties of Farm 10/9, Robertson were obtained from the Breede Valley Municipality and Langeberg Municipality records office and entered into an I&APs database.
- An advert describing the proposed development, expected activities to be triggered, the public participation process and including an invitation to register and comment, was placed in English and Afrikaans in the local newspaper, the Breede Gazette, on the 10th of May 2011.
- An A1 sized site notice, in English and Afrikaans, describing the proposed development, expected activities to be triggered, public participation process, and inviting comment, was erected at the proposed site on the 10th of May 2011.
- Notices describing the proposed development, expected activities to be triggered, the public participation process and including an invitation to comment, were sent to the neighbouring properties of Farm 10/9, Robertson and potential I&APs on the 10th of May 2011.
- All the notices also advertised the Public Meeting which was held on the 24th of May 2011.
Registered letters and copies (digital or hard copy) of the draft Scoping Report were sent to the following commenting authorities:
- Langeberg Municipality
- Cape Winelands District Municipality
- Municipal Ward Councilor
- Director of Sustainable Resource Management, Department of Agriculture Western Cape
- Director: LandCare, Department of Agriculture – Western Cape
- CapeNature (Scientific Services & Langeberg Conservation Services)
- Rooiberg Conservancy
- Heritage Western Cape
- Breede Overberg Catchment Management Agency (BOCMA) (DWA delegated authority)
- Central Breede River Water Users Association
- Transnet Ltd

Copies of the draft Scoping Report were available for public view at the Robertson Public Library, the BolandEnviro offices in Worcester and on the website www.BolandEnviro.co.za/project documents for the duration of the commenting period.

An Open Day (Public Meeting) was held on Tuesday the 24th of May 2011 at the Cape Lime factory which is located adjacent to (SE) the Property (R60 between Worcester and Robertson).

The comment period (40 days) commenced on the 10th of May 2011 until the 18th of June 2011.

Comments on the draft Scoping Report were received from CapeNature, the Langeberg Municipality, Heritage Western Cape, the Western Cape Department of Agriculture and Mr. Bruce Gilson (resident and farmer in the area).

All written comments and responses received from the public and authorities during the review of the draft Scoping Report were considered and included into the Final Scoping Report and Plan of Study. The Final Scoping Report is circulated for a further 21 days to commenting authorities and registered I&APs (25 August – 14 September 2011) before submission to the DEA&DP.

Once the Final Scoping Report and Plan of Study for EIA have been approved, the EIA Phase will proceed. All project documents in relation with the EIA Phase (draft EIA Report, Specialists Reports, etc.) will be submitted for review to commenting authorities and registered I&APs.

Details and proofs of the Public Participation Process are included in Appendix E.
8. ENVIRONMENTAL ISSUES

8.1. VEGETATION

The vegetation type is confirmed as Robertson Karoo (otherwise known as Worcester Renosterveld Karoo) which is least threatened for almost the entire subject area, with a small section, along the two arid seeps namely the Agtervinkrivier and Buitenstekloof ephemeral streams, recognised as Breede River and Flood Plain vegetation which is endangered. As the watercourses are excluded from the farming development (Figures 16 and 17), the impacts to this vegetation type will be nominal.

Extensive areas of natural Robertson Karoo vegetation surround the Property, and the development is unlikely to have a significant impact on the loss of the vegetation type or connectivity should adequate buffer areas along water courses be maintained.

The proposed development entails the clearing of an extensive area of natural habitat and may impact on localised plant species. A detailed botanical impact assessment will be conducted during the EIA Phase.

8.2. FAUNA

The proposed development entails the clearing of an extensive area of natural habitat and may impact on localised animal species.

The target areas comprise open valleys, while watercourses, ridges and kopjes, which are normally seen as special faunal habitat, will be excluded from the agricultural development. Large areas of natural habitat will still be available to fauna in the immediate surrounding areas.

8.3. ECOLOGICAL PROCESSES / CONNECTIVITY

The south-eastern corner of the Property falls within a terrestrial Critical Biodiversity Area (CBA). CBA Maps are derived from systematic biodiversity planning methods and identify the most efficient network of sites that are required to ensure the continued persistence of biodiversity pattern (e.g. species, habitats, vegetation types and ecosystems) and process (e.g. plants/animal migration, fire, pollination). The development will therefore result in the reduction of a larger continuous natural corridor that was identified to meet biodiversity thresholds.

Two ephemeral water courses, Agtervinkrivier and Buitenstekloof stream, as well as some additional arid drainage lines traverse the Property. The areas along and immediately adjacent to the two ephemeral streams (Agtervinkrivier and Buitenstekloof), which is classified as Breede River and Flood Plain vegetation, are also recognised as aquatic CBAs (identified as arid seeps). The additional drainage lines are recognised by systematic biodiversity planning methods as “Other Ecological Support Areas”. These areas support ecological processes and may act as corridors for plant and animal movement.

8.4. STORM WATER

Natural drainage lines traverse the Property. Development within such drainage lines may impact on natural storm water flow. The proposed development entails the clearing of a large area of natural
vegetation. Removal of vegetation cover will impact on natural storm water retention and large areas may be exposed to additional run-off during soil preparation for the establishment of vineyards.

8.5. SOIL EROSION

Cleared areas will be exposed to erosion during soil preparation and establishment of vineyards. Adequate erosion measures must be implemented during the agricultural development to protect topsoil.

Areas along the proposed pipeline will be subjected to soil erosion. Erosion may be induced by disturbances during the installation of the buried pipe i.e. the use of heavy machinery and earthworks along the slopes/hills between the Property and the pump-stations (Eilandia area).

The river pump (submersible pumps) will be installed within a concrete structure on the river bank which is directly linked to the river by a sluice. River works during the installation of the pump-station may impact on the river bank and subsequently cause erosion of the riverbank.

8.6. WATER RESOURCES

The proposed dam and water-pumping scheme development will have a maximum capacity to irrigate 1000 ha land. The proposed agricultural development by the Applicant as well as further development in the surrounding area will require water from the Breede River (Greater Brandvlei Government Water Scheme).

With a standard allocation of 7 450 m³/ha under the Greater Brandvlei Government Water Scheme, the following water will be required for different areas (Appendix C 9 - Technical Report: Alternative Water-Pumping Scheme):

<table>
<thead>
<tr>
<th>Option</th>
<th>Cultivated area</th>
<th>Volume water</th>
<th>Scheduled water</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>200 ha</td>
<td>1 420 112 m³</td>
<td>195 ha</td>
</tr>
<tr>
<td>b.</td>
<td>400 ha</td>
<td>2 840 223 m³</td>
<td>385 ha</td>
</tr>
<tr>
<td>c.</td>
<td>415 ha</td>
<td>2 946 731 m³</td>
<td>400 ha</td>
</tr>
<tr>
<td>d.</td>
<td>500 ha</td>
<td>3 550 279 m³</td>
<td>480 ha</td>
</tr>
<tr>
<td>e.</td>
<td>1000 ha</td>
<td>7 100 558 m³</td>
<td>955 ha</td>
</tr>
</tbody>
</table>

The Applicant secured 150 ha scheduled water already, which is to be temporary transferred from the properties owned by Van Loveren. This is sufficient for the cultivation of up to 320 ha winter grain (Appendix C 7).

8.7. VISUAL IMPACT

Clearing of the land and earthworks to prepare the land for the establishment of vineyards will have a short term visual impact from the R60. There are no household dwellings in the immediate surrounding area. The vineyard development is in line with land use of the surrounding area towards Robertson (Robertson Wine Valley) and will not detract from the sense of place of the local region. Vineyards are evident approximately 3.5 km towards the east, along the Noree River (Rooiberg Winery) and the Vink River (approximately 7 km towards the south-east).
There will be a limited visual impact during the construction of the dam wall (approximately 1.5 kilometers inland from the R60). The dam wall (300 m long and 20 m high) will be visible from the road. The earthen wall will be constructed using material from the dam basin. It will be recommended to use soil from the A-horizon to cover the face of the dam wall. This should result in re-growth of natural vegetation. The dam basin will not be easily visible from the road (behind hills).

8.8. DUST
Dust will be generated during soil preparation. If unmitigated this may impact visibility on the R60. It is recommended that earthworks should not be conducted during extreme windy conditions.

Dust from earthworks around the dam (behind hills) and dam wall (located at least 1.5 kilometers inland from the R60) is not expected to impact on visibility on the R60.

Significant amounts of dust may smother surrounding vegetation.

8.9. NOISE
There will not be a significant noise impact as the proposed development (dam and proposed vineyard development) will take place within an area that currently comprise undeveloped farmland.

The pump-station and initial section of the pipeline will be installed on developed agricultural areas (Eilandia).

8.10. HERITAGE RESOURCES
There are no buildings currently located on the Property and no buildings of cultural significance within the immediate surrounding area. Built features within the immediate surrounding area include the lime quarry (Cape Lime) directly adjacent to the eastern side of the Property, a newly built farmhouse on the foot of Rooiberg and the Rooiberg Wine Cellar approximately 3.5 km towards the south-east.

The project may impact on archaeological remains. An Archaeological Impact Assessment will be conducted during the EIA Phase. In addition a Palaeontological Impact Assessment will be conducted as requested by HWC.

The development should not significantly impact on the aesthetical appearance (sense of place) of the area. An earthen dam wall (up to 300 meters long and 20 m high) will however be visible from the R60. The dam wall will be located at least 1.5 kilometers inland from the R60.

8.11. SOCIO-ECONOMIC
The Applicant asserts that the proposed development will have an over-all positive socio-economic impact. In particular it is expected that a significant amount of employment opportunities (construction and operational phases) will be created while unlocking the agricultural potential of the Agter-Vinkrivier area. The development is also expected to contribute to local economic development in the area in particular the viability of the wineries in the surrounding area where grapes can be processed.
9. PLAN OF STUDY FOR EIA

9.1. TASKS TO BE UNDERTAKEN

The following is a list of tasks to be performed as part of the EIA Process. Should the process be modified significantly, changes will be copied to DEA&DP.

Table 5. Tasks to be undertaken as part of the EIA Process.

<table>
<thead>
<tr>
<th>EIA PROCESS</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receive approval of the Plan of Study for EIA</td>
<td>October 2011</td>
</tr>
<tr>
<td>Undertake specialist studies.</td>
<td>September 2011 – November 2011</td>
</tr>
<tr>
<td>Advertise and release draft EIR for public comment (40 days)</td>
<td>December 2011 – January 2011, depending on additional specialist requirements from DEA&amp;DP</td>
</tr>
<tr>
<td>Receive responses to the draft EIR.</td>
<td>End January 2011</td>
</tr>
<tr>
<td>Preparation of a FINAL EIR for comment / submission to DEA&amp;DP.</td>
<td>February 2010</td>
</tr>
</tbody>
</table>

9.2. METHODOLOGY TO BE FOLLOWED DURING EIA

Full copies of the draft Environmental Impact Report (EIR) will be placed at the Robertson Public Library, kept at the BolandEnviro office in Worcester and on the website www.BolandEnviro.co.za. Interested and affected parties will be notified of the draft EIR by means of advertisements in the Breede Gazette and placed on local community notice boards. In addition to the advertisements, registered I&APs and commenting authorities will be notified and copies of the draft EIR will be posted to them. The draft EIR will be made available for a 40-day comment period.

Correspondence with I&APs will be via registered and normal post, fax, telephone, email and newspaper advertisements. All reports will be in English, with advertisements, notification letters and Executive Summaries in English and Afrikaans.

At the end of the comment period, the EIR will be revised in response to feedback received from I&APs. All comments received and responses to the comments will be incorporated into the final EIR which will be available for a further 21 days commenting period before submission to DEA&DP for a decision.

9.3. CRITERIA FOR SPECIALIST ASSESSMENT OF IMPACTS

Based on the issues raised by I&APs and the project team, specialist studies will be undertaken to provide information to address concerns and assess the impacts of the proposed development on the environment. The specialists are provided with set criteria for undertaking their assessments, to allow for comparative assessment of all issues. These criteria are detailed in the Terms of Reference to
each specialist. These criteria are based on the EIA Regulations, published by the Department of Environmental Affairs and Tourism (April 1998) in terms of the National Environmental Management Act (NEMA) Act 107 of 1998.

These criteria include:

- **Nature of the impact**
  This is an appraisal of the type of effect the construction, operation and maintenance of a development would have on the affected environment. This description should include what is to be affected and how.

- **Extent of the impact**
  Describe whether the impact will be: local extending only as far as the development site area; or limited to the site and its immediate surroundings; or will have an impact on the region, or will have an impact on a national scale or across international borders.

- **Duration of the impact**
  The specialist should indicate whether the lifespan of the impact would be short term (0-5 years), medium term (5-15 years), long terms (16-30 years) or permanent.

- **Intensity**
  The specialist should establish whether the impact is destructive or benign and should be qualified as low, medium or high. The specialist study must attempt to quantify the magnitude of the impacts and outline the rationale used.

- **Probability of occurrence**
  The specialist should describe the probability of the impact actually occurring and should be described as improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of any prevention measures).

The impacts should also be assessed in terms of the following aspects:

- **Status of the impact**
  The specialist should determine whether the impacts are negative, positive or neutral (“cost – benefit” analysis). The impacts are to be assessed in terms of their effect on the project and the environment. For example, an impact that is positive for the proposed development may be negative for the environment. It is important that this distinction is made in the analysis.

- **Cumulative impact**
  Consideration must be given to the extent of any cumulative impact that may occur due to the proposed development. Such impacts must be evaluated with an assessment of similar developments already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact.

- **Degree of confidence in predictions**
  The specialist should state what degree of confidence (low, medium or high) is there in the predictions based on the available information and level of knowledge and expertise.

Based on a synthesis of the information contained in the above-described procedure, the specialist is required to assess the potential impacts in terms of the following significance criteria:

- **No significance**: the impacts do not influence the proposed development and/or environment in any way.
• **Low significance**: the impacts will have a minor influence on the proposed development and/or environment. These impacts require some attention to modification of the project design where possible, or alternative mitigation.

• **Moderate significance**: the impacts will have a moderate influence on the proposed development and/or environment. The impact can be ameliorated by a modification in the project design or implementation of effective mitigation measures.

• **High significance**: the impacts will have a major influence on the proposed development and/or environment.

### 9.4. BRIEFS FOR SPECIALIST STUDIES TO BE UNDERTAKEN AS PART OF THE EIA

#### 9.4.1. Heritage Impact Assessment (Archaeological)

In terms of the National Heritage Resources Act (Act No. 25 of 1999), a Heritage Impact Assessment (HIA) consisting of a specialist archaeological study and a specialist palaeontological study is required for this proposal.

- An Archaeological Impact Assessment will be conducted by the Agency for Cultural Resource Management (ACRM) – Jonathan Kaplan and submitted to Heritage Western Cape as part of the EIA.

Proposed Terms of Reference for the Scoping and AIA are to:

1. Determine whether there are likely to be any significant archaeological resources that may be impacted by the proposed development;

2. To identify and map archaeological resources that may be impacted by the proposed development;

3. To assess the sensitivity and conservation significance of archaeological resources affected by the proposed development;

4. To assess the significance of any impacts resulting from the proposed development, and

5. To identify measures to protect and maintain any valuable archaeological sites that may impacted by the proposed development.

#### 9.4.2. Heritage Impact Assessment (Palaeontological)

In terms of the National Heritage Resources Act (Act No. 25 of 1999), a Heritage Impact Assessment (HIA) consisting of a specialist archaeological study and a specialist palaeontological study is required for this proposal.
• A combined desktop and field-based Palaeontological Impact Assessment will be conducted by Nature Viva cc – Dr John E. Almond and submitted to Heritage Western Cape as part of the EIA.

The Scope of Work include:

Phase 1 – preparation
Preparation of the study on fossil heritage of study area is based on:
• analysis of stratigraphy, age and depositional setting of fossil-bearing units
• review of all relevant palaeontological and geological literature, including geological maps, previous palaeontological impact reports
• location and examination of any fossil collections from study area (e.g. museums)
• data on proposed development provided by the developer (e.g. location of footprint, depth and volume of bedrock excavation envisaged)

Phase 2 – report & feedback
The palaeontological impact report includes:
• outline of relevant legislation
• illustrated, fully-referenced review of palaeontological heritage within study area
• identification and ranking of highlights and sensitivities to development of fossil heritage within study area
• specific recommendations for further palaeontological mitigation (if any)
• recommendations and suggestions regarding fossil heritage management on site, including conservation measures as well as promotion of local fossil heritage (e.g. for public education, schools)
• outline of experience of heritage practitioner and statement of independence

9.4.3. Botanical/Ecological Assessment
A botanical assessment will be conducted by our botanical specialist.

The terms of reference for this will include the following:
• The broad ecological characteristics of the site and its surrounds will be described in terms of any mapped spatial components of ecological processes and/or patchiness, patch size, relative isolation of patches, connectivity, corridors, disturbance regimes, ecotones, buffering, viability, etc.
• In terms of biodiversity pattern, the following will be identified or described:
  Community and ecosystem level
  • The main vegetation type, its aerial extent and interaction with neighbouring types, soils or topography.
  • The types of plant communities that occur in the vicinity of the site.
  • Threatened or vulnerable ecosystems.
  Species level
  • Red Data Book (RDB) species.
  • The viability of, and estimated population size of the RDB species that are present.
• The likelihood of other RDB species, or species of conservation concern, occurring in the vicinity.

**Other pattern issues**

• Any significant landscape features or rare or important vegetation associations such as seasonal wetlands, alluvium, seeps, quartz patches in the vicinity.
• The extent of alien plant cover of the site, and whether the infestation is the result of prior soil disturbance such as ploughing or quarrying.
• The condition of the site in terms of current or previous land uses.

• In terms of biodiversity **process**, the following will be identified or described:
  • The key ecological “drivers” of ecosystems on the site and in the vicinity.
  • Any mapped spatial component of an ecological process that may occur at the site or in its vicinity.
  • Any possible changes in key processes.

This report will clearly indicate any constraints that would need to be taken into account in considering the development proposals further, as well as indications of important constraints on the Subject Land.

The report will include the following:

• The significance of the potential impact of the proposed project, alternatives and related activities – with and without mitigation – on biodiversity pattern and process at the site, landscape and regional scales.

• The following will be indicated on a topographical map or orthomap:
  • The area that would be impacted by the proposed development.
  • The location of vegetation and spatial components of ecological processes that should not be developed or otherwise transformed.
  • Areas that must remain intact as corridors or ecological “stepping stones” to maintain ecosystem functioning, including fires in fire-prone systems.

• Recommended actions that should be taken to prevent or, if prevention is not feasible, to mitigate impacts and restore disturbed vegetation or ecological processes.

• Limitations and assumptions, particularly in relation to seasonality.

• Biodiversity considerations, which could be used to inform socio-economic aspects of the proposed project.

**9.4.4. Faunal Assessment**

A specialist faunal study will not be conducted at this stage. The botanical/ecological assessment will follow a habitat based approach and will include a preliminary desktop faunal assessment. Should any habitats that are likely to support rare or endangered animals be recognized, a faunal specialist will be consulted to investigate the site.

**9.4.5. Soil Potential Study**

A soil potential study will be conducted by ACICC (Agricultural Consultants International cc) – Mr. F. Roux (Soil Scientist/Viticulturist).

The scope of the soil potential study include:
1. A soil survey (100m x 100m grid)
2. Soil map
3. Soil report

The soil report will include the following:
- Soil map including soil codes and potential for fruit/vineyard cultivation
- Description of soils and soil potential
- List of soil samples
- Recommendations for soil preparation and any specific actions that may be required
- General recommendations in terms of drainage

9.5. PROJECT TEAM

Table 6. EIA project team.

<table>
<thead>
<tr>
<th>EAP: Boland Environmental Consultants</th>
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</thead>
<tbody>
<tr>
<td>Director</td>
</tr>
<tr>
<td>Project practitioner</td>
</tr>
<tr>
<td>Specialists</td>
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<tr>
<td>Archaeological</td>
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<tr>
<td>Palaeontological</td>
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<tr>
<td>Botanical/Ecological</td>
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<tr>
<td>Soil</td>
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</tbody>
</table>

9.6. AUTHORITY CONSULTATION

The relevant authority (DEA&DP) will be contacted during the following stages of the EIA Process:
- Accepting the Plan of Study for EIA
- Submission of Draft EIR
- Submission of Final EIR
- Issuing of the Environmental Authorisation

10. CONCLUSIONS

This Scoping Report, being undertaken in terms of NEMA (Act 107 of 1998), summarises the environmental process undertaken to date, it provides a description of the proposed activity, the property and the receiving environment. It summarizes environmental issues related to the proposed development, potential significant positive and negative impacts, the identification of alternatives and recommendations which need to be evaluated and investigated during the EIA phase.

As a result of the above, the need for the following specialist studies, were identified:
- Heritage Impact Assessment (Archaeological)
- Heritage Impact Assessment (Palaeontological)
• Botanical/Ecological Assessment
• Soil Survey

The significance of the impacts associated with the alternatives proposed will be assessed in these specialist studies, as part of the EIA. Once the specialist studies have been completed, they will be summarised in an Environmental Impact Report (EIR), which integrates the findings of the assessment phase of the EIA. Mitigation measures will be separated into construction and operational phases. Specific management and monitoring requirements/guidelines will also be provided and these requirements/guidelines will be used as conditions for the Environmental Decision, (should it be granted), and subsequent Construction and Operational Environmental Management Programmes.

Based on the significance of the issues raised during the ongoing Public Participation Process and Scoping Phase, it is evident that an Environmental Impact Assessment (EIA) is required. It is therefore recommended that approval for the commencement of an EIA for the proposed development be granted. Should the Plan of Study be accepted, the significant issues raised in the process to date will be addressed and the specialist studies noted in this report, will be undertaken.