Schanskraal Sporting Estate Scoping and Environmental Impact Reporting Process

Draft Environmental Impact Assessment Report

Report Prepared for

Ranor Karoo Farm Holdings cc

SRK Report Number 424086/2

NCDENC Reference Number: NC/EIA/PIX/UBU/RIC1/2011

Report Prepared by

srk consulting

March 2015

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Profile and Expertise of EAPs

SRK Consulting (South Africa) Pty Ltd (SRK) has been appointed by Ranor Karoo Farm Holdings cc (Ranor) as the independent consultants to undertake the Environmental Impact Assessment (EIA) process required in terms of the National Environmental Management Act 107 of 1998 (NEMA).

SRK Consulting comprises over 1 600 professional staff worldwide, offering expertise in a wide range of environmental and engineering disciplines. SRK's Cape Town environmental department has a distinguished track record of managing large environmental and engineering projects and has been practisng in the Western Cape since 1979. SRK has rigorous quality assurance standards and is ISO 9001 accredited.

As required by NEMA, the qualifications and experience of the key individual practitioners responsible for this project are detailed below.

Project Director: Christopher Dalgliesh, BBusSc (Hons), MPhil (EnvSci)
Certified with the Interim Board for Environmental Assessment Practitioners South Africa (CEAPSA)
Chris Dalgliesh is a Partner at SRK Consulting and the Head of the Environmental Department in Cape Town. He has over 20 years of experience as an environmental consultant working on a broad range of EIA, auditing, environmental planning and management, public consultation and environmental management system projects. Chris's experience includes managing and co-ordinating major EIAs throughout Southern Africa and South America in the mining, energy, land-use planning and development, water and waste management, and industrial sectors.

Project Consultant: Matthew Law, MCom Environmental Economics
Certified with the Interim Board for Environmental Assessment Practitioners South Africa (CEAPSA)
Matthew has been practicing as an Environmental Management Consultant since 2007. Matthew has significant experience in Environmental Impact Assessment (throughout Southern Africa), the drafting of Environmental Management Plans and as an Environmental Control Officer. Matthew has managed a variety of projects.

Statement of SRK Independence

Neither SRK nor any of the authors of this Report have any material present or contingent interest in the outcome of this Report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of SRK.

SRK has no beneficial interest in the outcome of the assessment which is capable of affecting its independence.

Disclaimer

The opinions expressed in this report have been based on the information supplied to SRK by Ranor Karoo Farm Holdings cc (Ranor). SRK has exercised all due care in reviewing the supplied information, but conclusions from the review are reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

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Acronyms and Abbreviations

ADWF	Average Dry Weather Flow
amsl	Above mean sea level
DEA	(National) Department of Environmental Affairs
DWA	Department of Water Affairs
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Programme
GN	Government Notice
GVA-R	Regional Gross Value Added
ha	Hectares
IAPs	Interested and Affected Parties
IEM	Integrated Environmental Management
km	Kilometres
km^2	Square kilometres
mm/a	Millimetres per annum
NCDENC	Northern Cape Department of the Environment and Nature Conservation
NEMA	National Environmental Management Act 107 of 1998 as amended
NEM:WA	National Environmental Management: Waste Act 59 of 2008
NHRA	National Heritage Resources Act 25 of 1999
NWA	National Water Act 36 of 1998
PWWF	Peak Wet Weather Flow
Ranor	Ranor Karoo Farm Holdings cc
S&EIR	Scoping and Environmental Impact Reporting
SAHRA	South African National Heritage Resources Agency
SANBI	South African National Botanical Institute
SCC	Species of Conservation Concern
SRK	SRK Consulting (South Africa) (Pty) Ltd
VAC	Visual Absorption Capacity
WML	Waste Management Licence

Glossary

Aquifer	An underground body of water.
Baseline	Information gathered at the beginning of a study which describes the environment prior to development of a project and against which predicted changes (impacts) are measured.
Consultation	A process for the exchange of views, concerns and proposals about a proposed project through meaningful discussions and the open sharing of information.
Ecology	The study of the interrelationships of organisms with and within their environment
Ecosystem	The interconnected assemblage of all species populations that occupy a given area and the physical environment with which they interact.
Endemic / Endemism	Found only within the study area / tendency of being found only in the study area
Environment	The external circumstances, conditions and objects that affect the existence and development of an individual, organism or group. These circumstances include biophysical, social, economic, historical and cultural aspects.
Environmental Impact Assessment	A process of evaluating the environmental and socio-economic consequences of a proposed course of action or project.
Environmental Impact Assessment Report	The report produced to relay the information gathered and assessments undertaken during the Environmental Impact Assessment.
Environmental Management Programme	A description of the means by which (the environmental specification for) achieving environmental objectives and targets during all stages of a specific proposed activity.
Fauna	The collective animals of a given region.
Flora	The collective plants growing in a geographic area.
Geohydrology	(The study of) groundwater
Heritage Resources	Refers to something, e.g. a building, an area, a ritual, etc. that forms part of a community's cultural legacy or tradition and is passed down from preceding generations.
Herpetofauna	Amphibians and reptiles of an area.
Hydrology	(The study of) surface water flow.
Integrated Environmental Management	The practice of incorporating environmental management into all stages of a project's life cycle, namely planning, design, implementation, management and review.
Mitigation measures	Design or management measures that are intended to minimise or enhance an impact, depending on the desired effect. These measures are ideally incorporated into a design at an early stage.
Perennial river	A river that flows year-round
Red Data List	Species of plants and animals that because of their rarity and/or level of endemism are included on a Red Data List (usually compiled by the IUCN) which provides an indication of their threat of extinction and recommendations for their protection.

Scoping	A procedure to consult with stakeholders to determine issues and concerns and for determining the extent of and approach to an EIA and EMP (one of the phases in an EIA and EMP). This process results in the development of a scope of work for the EIA, EMP and specialist studies.
Specialist study	A study into a particular aspect of the environment, undertaken by an expert in that discipline.
Stakeholders	All parties affected by and/or able to influence a project, often those in a position of authority and/or representing others.

1 Introduction

1.1 Background and Introduction

Ranor Karoo Farm Holdings cc (Ranor) owns three farms extending over 13 000 hectares (ha) and collectively known as Schanskraal Farm: Farm No. 121 Elands Kloof, Farm No. 122 Ruigte Valey and Farm No. 11 Windy Ridge.

Ranor proposes to subdivide and rezone a portion of Elands Kloof Farm (remainder of Farm 121) to develop the Schanskraal Sporting Estate, intended to be a low density residential estate and sporting facility that offers a host of outdoor sporting activities on the premises.

Schanskraal Farm is located in the Ubuntu Local Municipality, itself located in the Pixley ka Seme District Municipality in the Northern Cape Province, approximately 60 km south-east of Richmond. The farm lies on the northern flank of the Sneeuberg Mountain Range. The eastern and southern farm boundaries lie on the provincial border with the Eastern Cape (see Figure 1-1).

SRK Consulting (South Africa) Pty Ltd (SRK) was appointed by Ranor to undertake the Scoping and Environmental Impact Reporting (S&EIR) process, which is required in terms of the National Environmental Management Act 107 of 1998, as amended (NEMA), the Environmental Impact Assessment (EIA) Regulations, 2010 (promulgated in terms of NEMA) and the National Environmental Management: Waste Act 59 of 2008 (NEM:WA).

1.2 Purpose of the Report

In terms of relevant legislation, the Schanskraal Development (the Project) may not commence prior to obtaining a suite of authorisations (see Section 2). This report has been compiled in support of these applications. The EIA Report documents the steps undertaken during the Impact Assessment Phase to assess the significance of potential impacts and determine measures to mitigate the negative impacts and enhance the benefits (or positive impacts) of the proposed project. The report presents the findings of the Impact Assessment Phase and the public participation that forms part of the process.

The EIA Report is accompanied by an Environmental Management Programme (EMP), which documents the management and monitoring measures that need to be implemented during the design, construction and operation phases of the project to ensure that impacts are appropriately mitigated and benefits enhanced.

More specifically, the objectives of this EIA Report are to:

- Inform the stakeholders about the proposed project and the S&EIR (also referred to as EIA) process followed;
- Obtain contributions from stakeholders (including the applicant, consultants, relevant authorities and the public) and ensure that all issues, concerns and queries raised are fully documented and addressed;
- Assess in detail the potential environmental and socio-economic impacts of the project;
- Identify environmental and social mitigation measures to address the impacts assessed; and
- Produce an EIA Report that will assist NCDENC to decide whether (and under what conditions) to authorise the proposed development.

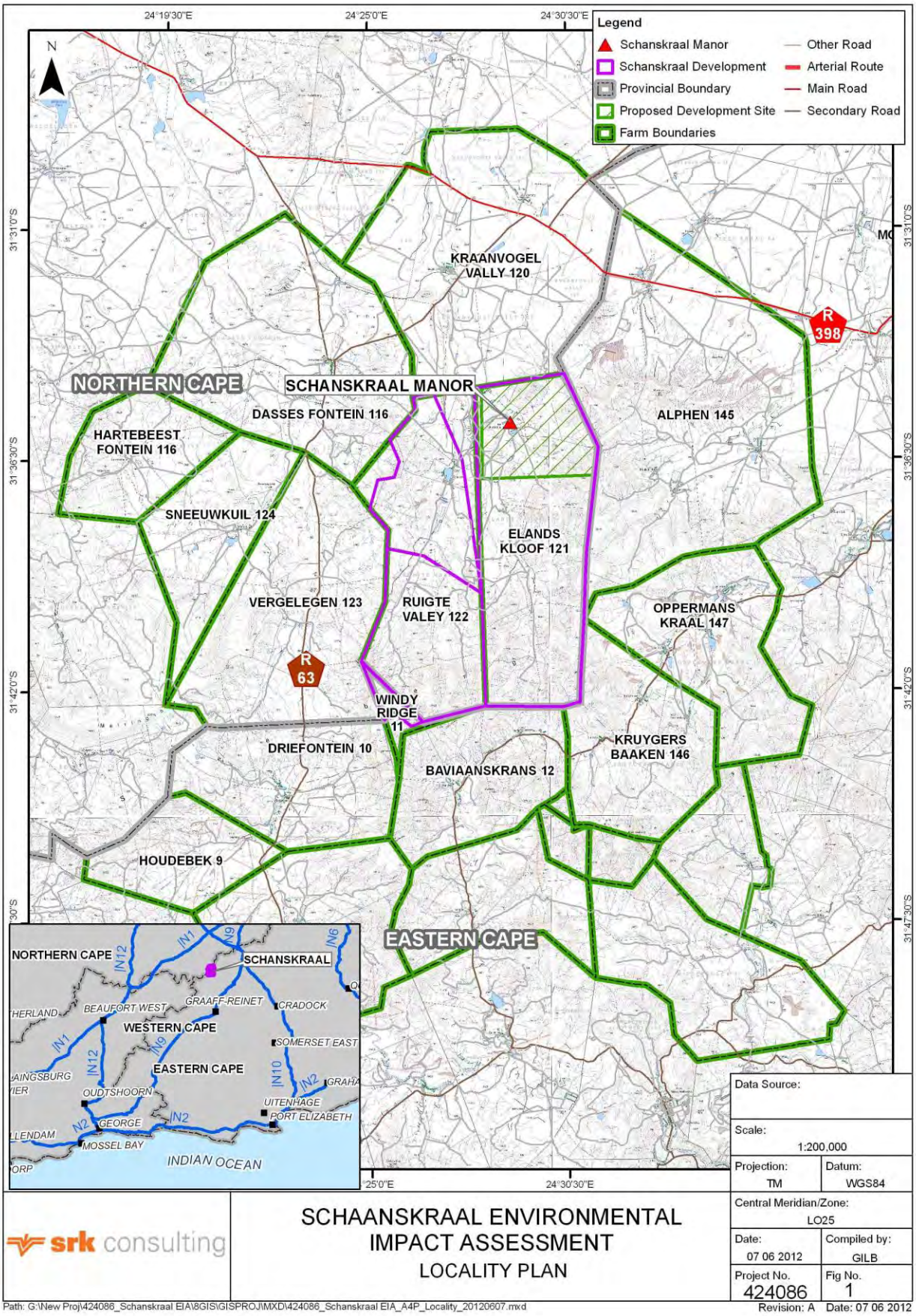


Figure 1-1: Schanskraal Farm location map

1.3 Structure of this Report

This report discusses relevant environmental legislation and its application to this project, outlines the S&EIR process, presents a detailed project description and environmental baseline, details the stakeholder engagement process followed and assesses the potential impacts of the project before concluding the report with a set of pertinent findings and key recommendations. The report consists of the following sections:

Section 1: Introduction

Provides an introduction and background to the proposed project and outlines the purpose of this document and the assumptions and limitation applicable to the study.

Section 2: Governance Framework and Environmental Process

Provides a brief summary and interpretation of the relevant legislation as well as pertinent strategic planning documents, and outlines the approach to the environmental process.

Section 3: Project Description

Describes the location and current status of the site and provides a brief summary of the surrounding land uses as well as background to, motivation, desirability and need for, and description of, the proposed project.

Section 4: Description of the Affected Environment

Describes the biophysical and socio-economic characteristics of the affected environment against which potential project impacts are assessed.

Section 5: Stakeholder Engagement

Details the stakeholder engagement approach and summarises stakeholder comments that informed the impact assessment.

Section 6: Environmental Impact Assessment

Describes the specialist studies undertaken and assesses the potential impacts of the project utilising SRK's proven impact assessment methodology.

Section 7: Conclusions and Recommendations

Provides an Environmental Impact Statement (EIS), summarises the key findings and recommendations in the EIA Report and outlines further opportunities for stakeholder engagement.

1.4 Content of Report

The EIA Regulations, 2010 (Government Notice (GN) 543, Chapter 3, Part 3, Section 31) prescribe the required content in an EIA Report. These requirements and the sections of this EIA Report in which they are addressed, are summarised in Table 1-1.

Table 1-1: Content of EIA Report as per EIA Regulations, 2010

GN 543, S31 Ref.:	Item	Section Ref.:
(2) (a) (i)	Details of the EAP who prepared the report	p. ii
(2) (a) (ii)	The expertise of the EAP to carry out an environmental impact assessment	p. ii
(2) (b)	A detailed description of the proposed activity	3.4
(2) (c)	A description of the property on which the activity is to be undertaken and the location of the activity on the property	3.1
(2) (d)	A description of the environment that may be affected by the activity and how the physical, biological, social, economic and cultural environment may affected	4
(2) (e)	Details of the public participation process conducted, including:	5
(2) (e) (i)	Steps undertaken in accordance with the plan of study	5.3
(2) (e) (ii)	A list of registered IAPs	App D
(2) (e) (iii)	Summary of received comments and response by EAP	5.2.6, Table 5-3
(2) (e) (iv)	Copies of received comments	App E
(2) (f)	A description of the need and desirability of the proposed activity	3.6
(2) (g)	A description of identified alternatives (including advantages and disadvantages of each alternative)	3.3
(2) (h)	Methodology used in determining impact significance	6.1.4
(2) (i)	A description and comparative assessment of all identified alternatives	6.3 – 6.8
(2) (j)	A summary of the specialist findings and recommendations	6.3 – 6.8
(2) (k)	A description of environmental issues, assessment of the significance of each issue and indication of the extent to which this could be mitigated	6.3 – 6.8
(2) (l)	An assessment of each identified potentially significant impact, including:	6.3 – 6.8
(2) (l) (i)	Cumulative impacts	6.9
(2) (l) (ii)	Nature of the impact	6.3 – 6.8
(2) (l) (iii)	Extent and duration of the impact	6.3 – 6.8
(2) (l) (iv)	Probability of the impact occurring	6.3 – 6.8
(2) (l) (v)	Degree to which the impact can be reversed	6.3 – 6.8
(2) (l) (vi)	Degree to which the impact may cause irreplaceable loss of resources	6.3 – 6.8
(2) (l) (vii)	Degree to which the impact can be mitigated	6.3 – 6.8
(2) (m)	Description of assumptions, uncertainties and gaps in knowledge	1.5
(2) (n)	Reasoned opinion as to whether the activity should or should not be authorised, and any conditions that should be made in respect of that authorisation	7.3
(2) (o)	Environmental impact statement which contains:	7.1
(2) (o) (i)	A summary of the key findings of the EIA	7.1
(2) (o) (ii)	A comparative assessment of the positive and negative implications of the proposed activity and alternatives	7.1
(2) (p)	A draft environmental management programme	App F
(2) (q)	Copies of any specialist reports	App A – C
(2) (r)	Any specific information that may be required by the competent authority	-
(2) (s)	Any other matters required in terms of sections 24(4)(a) and (b) of NEMA	
	Detailed written proof of an investigation of feasible alternatives, or motivation if no reasonable or feasible alternatives exist.	3.3, 6.3 – 6.8

1.5 Assumptions and Limitations

As is standard practice, the report is based on a number of assumptions and is subject to certain limitations. These are as follows:

- Information provided by Ranor, other consultants and specialists is assumed to be accurate and correct;
- SRK's assessment of the significance of impacts of the proposed development on the affected environment has been based on the assumption that the activities will be confined to those described in Section 3. If there are any substantial changes to the project description, impacts may need to be reassessed;
- Where detailed design information is not available, the precautionary principle, i.e. a conservative approach that overstates negative impacts and understates benefits, has been adopted;
- It is assumed that the stakeholder engagement process undertaken during the S&EIR process has identified all relevant concerns of stakeholders;
- Ranor will in good faith implement the agreed mitigation measures identified in this report. To this end it is assumed that Ranor will commit sufficient resources and employ suitably qualified personnel; and
- The groundwater study comprised a limited hydrocensus, water level data collection, groundwater chemistry and monitoring data, and a desk study review of aquifer and modelling data from previous hydrogeological work and reports. These data have been evaluated and based on SRK's hydrogeological knowledge and experience and knowledge of the study area, the data are considered a reasonable representation of the aquifer and study area conditions.

Notwithstanding the above, SRK is confident that these assumptions and limitations do not compromise the overall findings of the report.

2 Governance Framework and Environmental Process

2.1 Legal Requirements

There are a number of regulatory requirements at local, provincial and national level with which the proposed development will have to conform. Some of the key legal requirements include the following:

- National Environmental Management Act 107 of 1998, as amended (NEMA);
- EIA Regulations 2010, promulgated in terms of NEMA;
- National Environmental Management: Waste Act 59 of 2008 (NEM:WA);
- National Water Act 36 of 1998 (NWA);
- National Heritage Resources Act 25 of 1999 (NHRA); and
- Subdivision of Agricultural Land Act 70 of 1970.

A brief summary of SRK's understanding of the relevant Acts and Regulations that are applicable to this study is provided below. Note that other legislative requirements may also pertain to the proposed project. As such, the summary provided below is not intended to be definitive or exhaustive, and serves only to highlight key environmental legislation and obligations.

2.1.1 National Environmental Management Act 107 of 1998, as Amended

NEMA establishes a set of principles which all authorities have to consider when exercising their powers. These include the following:

- Development must be sustainable;
- Pollution must be avoided or minimised and remedied;
- Waste must be avoided or minimised, reused or recycled;
- Negative impacts must be minimised; and
- Responsibility for the environmental consequences of a policy, project, product or service applies throughout its life cycle.

Section 28(1) states that "*every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring*". If such degradation/pollution cannot be prevented, then appropriate measures must be taken to minimise or rectify such pollution. These measures may include:

- Assessing the impact on the environment;
- Informing and educating employees about the environmental risks of their work and ways of minimising these risks;
- Ceasing, modifying or controlling actions which cause pollution/degradation;
- Containing pollutants or preventing movement of pollutants;
- Eliminating the source of pollution; and
- Remedying the effects of the pollution.

Legal requirements for this project

Ranor has a responsibility to ensure that the proposed activities and the EIA process conform to the principles of NEMA. The proponent is obliged to take actions to prevent pollution or degradation of the environment in terms of Section 28 of NEMA, and to ensure that the environmental impacts associated with the project are considered, and mitigated where possible.

2.1.2 EIA Regulations

Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities which may not commence without an EA issued by the competent authority (DEA&DP). In this context, the EIA Regulations, 2010 (GN R543, which came into effect on 2 August 2010), promulgated in terms of NEMA, govern the process, methodologies and requirements for the undertaking of EIAs in support of EA applications. The EIA Regulations are accompanied by Listing Notices 1-3 that list activities that require EA ("NEMA listed activities").

The EIA Regulations, 2010 and associated Listing Notices were replaced by the EIA Regulations, 2014 (Government Notice (GN) R982, which came into effect on 4 December 2014, and associated Listing Notices 1-3). **The application for EA for the Schanskraal development was submitted prior to the promulgation of the EIA Regulations, 2014. As such, the process is governed by the EIA Regulations, 2010.**

The EIA Regulations, 2010 lay out two alternative authorisation processes. Depending on the type of activity that is proposed, either a Basic Assessment (BA) process or an S&EIR process is required to obtain EA. Listing Notice 1[1] lists activities that require a BA process, while Listing Notice 2[2] lists activities that require S&EIR. Listing Notice 3[3] lists activities in certain sensitive geographic areas that require a BA process. The regulations for both processes – BA and S&EIR - stipulate that:

- Public participation must be undertaken at various stages of the assessment process;
- The assessment must be conducted by an independent Environmental Assessment Practitioner (EAP);
- The relevant authorities must respond to applications and submissions within stipulated time frames;
- Decisions taken by the authorities can be appealed by the proponent or any other Interested and Affected Party (IAP); and
- A draft EMP must be compiled and released for public comment.

GN R543 sets out the procedures to be followed and content of reports compiled during the BA and S&EIR processes.

The proposed project includes activities that are listed in terms of Listing Notices 1-3 of 2010 (see Table 2-1). Although this application is dealt with under the EIA Regulations, 2010, any activity not identified under the previous NEMA notices but now identified under the EIA Regulations, 2014 may be authorised as if it was applied for, on condition that all impacts of the newly identified activity have also been considered and adequately assessed. For ease of reference, Table 2-1 also shows the relevant listed activities applicable in terms of the EIA Regulations,

[1] GN R544 of 2010, as amended by GN R660 of 2010, GN R1159 of 2010 and GN R922 of 2013, and replaced by GN R983 of 2014.

[2] GN R545 of 2010, as amended by GN R660 of 2010, GN R1159 of 2010 and GN R923 of 2013, and replaced by GN R984 of 2014.

[3] GN R546 of 2010, as amended by GN R1159 of 2010, and replaced by GN R985 of 2014.

2014. All activities listed in terms of the EIA Regulations, 2014 are deemed to be addressed and assessed in this EIA.

Table 2-1: NEMA listed activities applicable to the proposed project

Activity applied for in terms of EIA Regulations, 2010	Equivalent activity in terms of EIA Regulations, 2014
Listing Notice 1	
9: The construction of facilities or infrastructure exceeding 1 000 m in length for the bulk transportation of water, sewage or storm water (i) with an internal diameter of 0,36 m or more; or (ii) with a peak throughput of 120 litres per second or more.	**9:** The development of infrastructure exceeding 1 000 m in length for the bulk transportation of water or storm water (i) with an internal diameter of 0,36 m or more; or (ii) with a peak throughput of 120 litres per second or more.
	10: The development and related operation of infrastructure exceeding 1 000 m in length for the bulk transportation of sewage […] (i) with an internal diameter of 0,36 m or more; or (ii) with a peak throughput of 120 litres per second or more.
11: The construction of (iii) bridges or (xi) infrastructure or structures covering 50 m^2 or more … within a watercourse or within 32 m of a watercourse…	**12:** The development of (xii) infrastructure or structures with a physical footprint of 100 m^2 or more; where such development occurs (a) within a watercourse; or (c) if no development setback exists, within 32 m of a watercourse measured from the edge of the watercourse.
18: The infilling or depositing of any material of more than 5 m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 m^3 from (i) a watercourse...	**19:** The infilling or depositing of any material of more than 5 m^3 into, or the dredging, excavation, removal or moving of soil, sand, shell grit, pebbles or rock of more than 5 m^3 from (i) a watercourse…
55A: The construction of facilities for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 m^3 but less than 15 000 m^3.	**25:** The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 m^3 but less than 15 000 m^3.
No equivalent	**28:** Residential […] developments where such land was used for agriculture or afforestation on or after 1 April 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 ha.
Listing Notice 2	
15: Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 ha or more.	**15:** The clearance of an area of 20 ha or more of indigenous vegetation.
Listing Notice 3	
11: The construction of tracks or routes for the recreational use of motor powered vehicles, excluding the conversion of existing tracks (a) in the Northern Cape (iii) within areas of indigenous vegetation outside urban areas.	**11:** The development of tracks or routes for the recreational use of motor powered vehicles, excluding the conversion of existing tracks (e) in the Northern Cape (iii) within areas of indigenous vegetation outside urban areas.
14: The clearance of 5 ha or more of vegetation where 75% or more of the vegetation constitutes indigenous vegetation (a) in the Northern Cape (i) in all areas outside urban areas.	*Activity 12 is not deemed applicable.*

Legal requirements for this project

Ranor is obliged to apply for EA for the activities listed in Table 2-1 and to undertake an S&EIR process in support of the application, in accordance with the procedure stipulated in GN 543 of 2010 under NEMA.

2.1.3 National Environmental Management: Waste Act 59 of 2008

NEM:WA aims to (amongst other things) regulate waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

The Act makes provision for the listing of waste management activities that have, or are likely to have, a detrimental effect on the environment and may not be undertaken without a Waste Management Licence (WML) issued by the competent authority. NEM:WA must be read in conjunction with NEMA (see Section 2.1.1). The principles of NEMA and the EIA Regulations (specifically GN 543) are applicable to the application process for WMLs.

A list of waste management activities (GN R718) came into force in 2009. These Regulations were updated and replaced by GN R921 in 2013. Both Regulations set out alternative procedures for authorisation processes: activities listed in Category A or Category B must be subjected to a BA process or an S&EIR process, respectively, to apply for EA as set out in the NEMA EIA Regulations, 2010 as part of the WML application process. The Act makes provision for a single environmental assessment process in instances where both EA and WML applications are required. GN R921 introduced a third category of activities that do not require EA (see Table 2-2).

Table 2-2: Summary of 2009 and 2013 waste management activities regulations

Requirement	2009 Regulations (GN R718)	2013 Regulations (GN R921)
BA	Category A	Category A
S&EIR	Category B	Category B
Comply with norms and standards	-	Category C

The environmental assessment process for the Schanskraal Sporting Estate commenced prior to the promulgation of GN R921 in 2013; as such the relevant activities were identified in term of GN R718. Activities listed under Category A and B applied to the project, requiring application for a WML and conducting of an S&EIR process. Table 2-3 lists the activities that were identified in terms of GN R718 of 2009.

However, none of the waste management activities listed in terms of GN R921 of 2013, which replaced GN R718, are applicable to the project (see Table 2-3).

Table 2-3: Waste Management Listed Activities applicable to the proposed project

2009 Listed Activities (as per Scoping Report)		Applicable/equivalent 2013 Listed Activities
Category A		**Category A**
1	The storage, including the temporary storage, of general waste at a facility that has the capacity to store in excess of 100 m^3 of general waste at any one time, excluding the storage of waste in lagoons.	None *The temporary storage of waste, which triggered listed activities in GN R718, is now excluded from listed activities in GN R921.*
18	The construction of facilities for activities listed in Category A of GN 718.	
Category B		
5	The treatment of hazardous waste using any form of treatment regardless of the size or capacity of such a facility to treat such waste.	None *The treatment of effluent, wastewater or sewage, which triggered listed activities in GN R718, is now excluded from GN R921.*
7	The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000 m^3 or more.	
11	The construction of facilities for activities listed in Category B of GN 718.	

Legal requirements for this project

At the outset of the project, Ranor was obliged to apply for a WML for activities listed in GN R718 of 2009 and to undertake an S&EIR process in support of the application in accordance with the procedure stipulated in GN R543 of 2010 under NEMA. A WML application was submitted in June 2011.

However, none of the activities listed in terms of GN R921 of 2013, which replaced GN R718, apply to the project. As such, the WML application was automatically withdrawn.

2.1.4 National Water Act 36 of 1998

Water use in South Africa is controlled by the NWA. The executive authority is the Department of Water Affairs (DWA). The NWA recognises that water is a scarce and unevenly distributed national resource in South Africa. Its provisions are aimed at achieving sustainable and equitable use of water to the benefit of all users and to ensure protection of the aquatic ecosystems associated with South Africa's water resources. The provisions of the Act are aimed at discouraging pollution and wastage of water resources.

In terms of the Act, a land user, occupier or owner of land where an activity that causes or has the potential to cause pollution of a water resource has a duty to take measures to prevent pollution from occurring. If these measures are not taken, the responsible authority may do whatever is necessary to prevent the pollution or remedy its effects, and to recover all reasonable costs from the responsible party.

Section 21 of the NWA specifies a number of water uses, including:

(a) Taking water from a water resource;

(c) Impeding or diverting the flow of water in a watercourse; and

(i) Altering the bed, banks, course or characteristics of a watercourse.

These water uses require authorisation in terms of Section 22 (1) of the Act, unless they are listed in Schedule 1 of the NWA, are an existing lawful use, fall under a General Authorisation issued under section 39 or if the responsible authority waives the need for a licence.

Legal requirements for this project

The proposed project activities are likely to trigger water use activities in terms of Section 21 (a), (c) and (i) of the NWA.

Schanskraal falls within Quaternary Catchment D32A. The General Authorisation for water abstraction in Quaternary Catchment D32A is 75 m^3 per hectare per annum (DWAF, 2004). This implies that 486 489 m^3 per annum of groundwater can be abstracted from Farm No. 121 Elands Kloof and 464 516 m^3 per annum from Farm No. 122 Ruigte Valey without the need to apply for Water Use Authorisation (WUA). As water demand for the development is anticipated to be 237 292 m^3 per annum or less (see Section 3.4.6), WUA is not required for abstraction in terms of Section 21(a).

Ranor must implement measures to prevent pollution of any water resources during construction and operation of the development.

As construction is proposed within 100 m of water courses, an application for WUA will be made to DWA, but public participation for the application will be undertaken in conjunction with the EIA.

2.1.5 The National Heritage Resources Act 25 of 1999

The protection and management of South Africa's heritage resources are controlled by the NHRA. The enforcing authority for this act is the South African National Heritage Resources Agency (SAHRA)[4]. In terms of the Act, historically important features such as graves, trees, archaeological artefacts/sites and fossil beds are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection.

Section 38 of the NHRA requires that any person who intends to undertake certain categories of development must notify SAHRA at the very earliest stage of initiating such a development and must furnish details of the location, nature and extent of the proposed development. SAHRA has designed the South African Heritage Resources Information System (SAHRIS) database to assist the developer in providing the necessary information to enable SAHRA to decide whether a Heritage Impact Assessment (HIA) will be required.

Section 38 also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that, if such an assessment is deemed adequate, a separate HIA is not required. There is however the requirement in terms of Section 38 (8) for the consenting authority (in this case the Northern Cape Department of the Environment and Nature Conservation (NCDENC)) to ensure that the evaluation of impacts on the heritage resources fulfils the requirements of the relevant heritage resources authority (SAHRA), and that the comments and recommendations of the heritage resources authority are taken into account prior to the granting of the consent.

Section 38(1) of the NHRA specifies activities that trigger the need for the proponent to notify SAHRA of the proposed development, in order for SAHRA to determine the need for further Heritage Assessment. The proposed Schanskraal development triggers a number of these activities, including:

(a) Construction of a road, wall, power line, canal or other similar form of linear development or barrier over 300 m in length;

(c) Any development or activity that will change the character of a site (i) exceeding 5 000 m^2 in extent, (ii) involving three or more existing erven or subdivisions thereof; and

(d) Rezoning of a site exceeding 10 000 m^2 in extent.

Legal requirements for this project

The proponent is required to notify SAHRA via the SAHRIS database of the proposed activities and then undertake any assessments deemed necessary by SAHRA. The notification and assessment of heritage, archaeological and paleontological impacts was as part of the S&EIR process in terms of NEMA.

2.1.6 Subdivision of Agricultural Land Act 70 of 1970

The Subdivision of Agricultural Land Act 70 of 1970, as amended, regulates the subdivision and rezoning of agricultural land[5] and its use for any purpose other than agriculture. The Act has two main goals, namely:

- To disallow the change in land-use of high potential agricultural land; and

[4] Although Ngwao Boswa Kapa Bokoni (Heritage Northern Cape) has been established as the Provincial Heritage Resources Authority of the Northern Cape Province, applications are generally processed through SAHRA.

[5] Agricultural land as defined in the Act excludes land situated in the area of jurisdiction of, amongst others, a municipal council, city council or town council.

- To keep viable farm units intact.

Written consent must be obtained from the Minister of Agriculture for the rezoning, subdivision or use for any other purpose of agricultural land.

Legal requirements for this project

The proposed development involves the subdivision of agricultural land. As such, approval for the proposed development must be obtained by the Department of Agriculture in terms of this Act. Application for such authorisation falls outside of the scope of the S&EIR.

2.2 Planning Policy Framework

This section discusses a number of key formal planning policies relevant to the project. The policies and plans briefly discussed below include regional and local development and spatial plans, including the:

- Northern Cape Provincial Growth and Development Strategy (PGDS) (2011);
- Northern Cape Provincial Spatial Development Framework (SDF) (2012);
- Integrated Development Plans (IDPs) for the Pixley Ka Seme District and Ubuntu Local Municipalities, which formulate the specific needs in, and desirable developments for, municipalities; and
- SDFs for the District and Local Municipalities, which translate the aims of the IDP into a spatial dimension and, together with the IDP, aim to give effect to the national imperative to increase economic growth and promote social inclusion whilst ensuring that such growth is environmentally sustainable (DEA&DP, 2009); and
- Ubuntu Tourism Strategy.

This section implicitly examines the extent to which the proposed project is consistent with relevant plans, supported by an explicit analysis of need and desirability in Section 3.5.

2.2.1 Northern Cape Provincial Growth and Development Strategy (2011)

The PGDS (Northern Cape Provincial Government, 2011) is a guiding tool for future development in the Northern Cape and identifies poverty as the most significant challenge facing the province. Long-term sustainable economic growth and development is recognised as a priority in order to ensure that challenges associated with poverty are addressed. The PGDS aims to guide and coordinate the allocation of government resources and private sector investment in order to facilitate sustainable development.

The PGDS defines a vision for the Northern Cape: *'building a prosperous, sustainable growing provincial economy to eradicate poverty and improve development for a caring society'*. The overarching objective of the PGDS is to ensure the integration of development processes and, in particular, to facilitate sustainable development throughout the province.

2.2.2 Northern Cape Provincial Spatial Development Framework (2012)

The Northern Cape Provincial SDF (Northern Cape Provincial Government, 2012) is a spatial planning document that guides district and local spatial initiatives such as IDPs and SDFs. The Provincial SDF is based on the principles of the PGDS and one of its overarching functions is to serve as a spatial land-use directive that aims to promote environmental, economic and social sustainability through sustainable development.

The SDF identifies a number of objectives, including the following:

- Provide a spatial rationale and directive for future development in terms of the principles of sustainability as advocated by the National Strategy for Sustainable Development;
- Give spatial effect to the provisions of the PGDS and guide the implementation of key projects;
- Provide guidance to public and private infrastructure investment in the province, taking cognisance of the growth and development potential of the various regions and settlements in the province; and
- Spatially co-ordinate and direct the activities and resources of provincial government departments.

The Provincial SDF identifies a number of Spatial Planning Categories (SPCs). These SPCs were formulated in terms of bioregional planning principles and collectively illustrate the desired matrix of land-use throughout the province. The SPCs are used to define a spatial vision for the province and are illustrated in a composite spatial vision of the Northern Cape Province (see Figure 2-1 for the south-eastern portion of the Province). The SPCs also provide a framework to guide decision-making regarding land-use at all levels of planning.

The proposed development area lies within the agriculture SPC. The agricultural areas in the project area are considered to be suitable for grazing with low to moderate grazing potential. According to the composite spatial vision for the Province, the N1 is identified as an important development corridor, located ~40 km to the north-west of the project site.

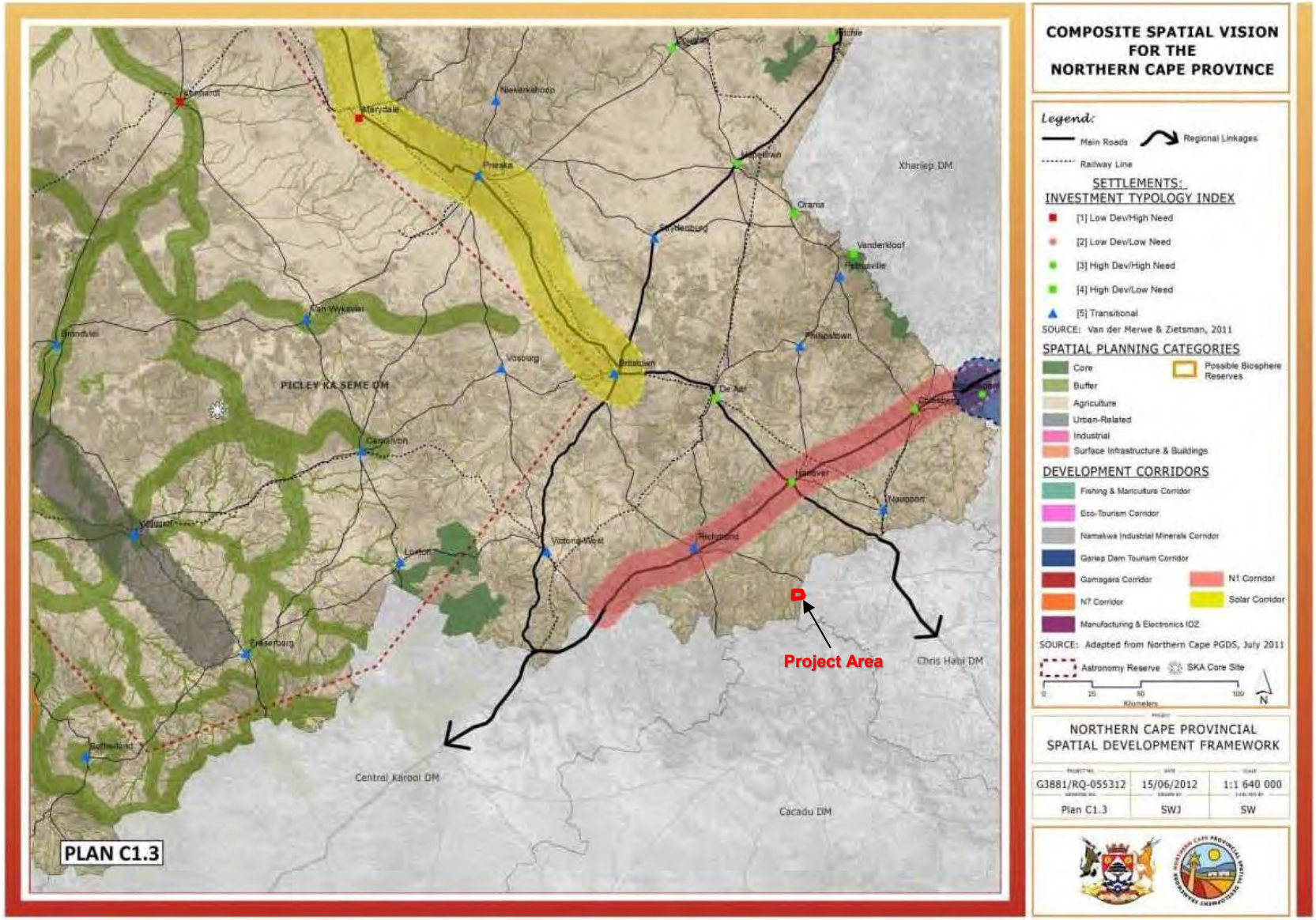


Figure 2-1: Provincial SDF Composite Spatial Plan for the project area

Source: Northern Cape Provincial Government (2012)

The Provincial SDF identifies a general approach to the investment of public and private funds. This is based on the business principle that investment should be directed where the best return on such investment can be generated. The Ubuntu Local Municipality, in which the Schanskraal development is located, is identified as having a generally high human needs index (NCPG, 2012). Of the three closest settlements, Richmond (in the Ubuntu Local Municipality) and Noupoort (in the Umsombovu Local Municipality) are identified as transitional, having neither high nor low development potential and need at present, while Hanover (in the Emthajeni Local Municipality) is deemed to have a high level of development potential and a high level of human need. Hanover is therefore considered a high priority area for public and private investment and infrastructural development. Investment into social capital, infrastructure development and large scale capital investment, producing secondary economic and social benefits, are deemed appropriate in all of these areas.

2.2.3 Pixley Ka Seme District Municipality Integrated Development Plan (2011-16)

The Pixley Ka Seme District Municipality's IDP (Pixley Ka Seme District Municipality, 2011) is a strategic plan that is used to guide the development of the District for a specific period, in this case 2011-2016. It guides the planning, budgeting, implementation, management and future decision making processes of the District Municipality. As district municipalities play an important role in the coordination of government actions across national, provincial and local government, the District IDP provides for strategic guidance, coordination and alignment of local municipality initiatives and national and provincial departments active in the district.

The main aims of development in the Pixley ka Seme District identified in the IDP are improving the quality of life of all people, promoting sustainable development in the region through effective and efficient service delivery, improving the health and living conditions of the poor and promoting local economic development and job creation. Addressing the following issues was identified as key to the long-term economic prospects of the District:

- Backlogs in the provision of basic services in rural areas and informal settlements;
- Limited availability of water in the district and its impact on economic and social activities;
- HIV/AIDS and its impact on regional demographics;
- Attracting international capital;
- Preservation of a pristine environment;
- Release and distribution of land to facilitate development;
- Spatial inequalities; and
- High levels of unemployment and poverty.

The IDP also identified opportunities in the region's location between South Africa's major cities (Bloemfontein, Cape Town, Johannesburg and Pretoria) and along several major national highways (N1, N12, N9 and N10) as well as in the rapid recent growth of renewable energy projects in the region.

2.2.4 Ubuntu Local Municipality Integrated Development Plan (2013-14)

The Ubuntu Local Municipality's IDP for 2013 – 2014 (Ubuntu Local Municipality, not dated) identifies various developmental needs. Key strategies identified in the IDP include the following:

- Upgrade water provision, supply systems and quality;
- Deliver houses in all categories;
- Upgrade transport infrastructure;

- Upgrade sanitation systems;
- Upgrade stormwater drainage systems;
- Improve solid waste management and infrastructure;
- Upgrade energy and electricity supply to communities;
- Upgrade telecommunication systems;
- Provide water, farming opportunities and training to the agricultural sector;
- Acquire land and infrastructure;
- Improve environmental management;
- Stimulate economic development through strategies and training;
- Improve administration, transformation and training;
- Alleviate poverty, promote empowerment, health, education and sport and recreation.

2.2.5 Ubuntu Local Municipality Spatial Development Framework

The SDF for the Ubuntu Local Municipality (McPherson, not dated) provides an overview of local socio-economic conditions and needs and largely re-affirms the planning principles and strategies expressed in the Pixley Ka Seme District SDF pertaining to the local municipality. Key spatial principles noted in the local SDF are:

- Improving access to land;
- Spatial integration;
- Sustainable land management; and
- Town development (particularly Victoria West and Richmond).

2.2.6 Ubuntu Local Municipality Tourism Strategy (2010-20)

Ubuntu Local Municipality has prepared a Ten-Year Tourism Strategy (Creative Harvest, not dated) to give effect to its goal of transforming the municipality into a viable tourist destination to improve the local economy, targeting leisure, retail, conferencing and general business tourism.

The strategy is to be implemented in phases, with an initial focus on improving planning and coordination, tourism infrastructure, human resources and promotion of the destination, with a particular focus on growing leisure tourism.

2.2.7 Ubuntu Local Municipality Integrated Environmental Management Programme (2007)

The Integrated EMP for the Ubuntu Local Municipality (African EPA, 2007) provides guidelines with the aim of improving environmental management and conditions in the municipality. The EMP addresses a range of aspects, including mineral resources exploitation, agriculture, tourism, land degradation, loss of habitat and urban renewal.

2.3 Environmental Process

The general approach to this study is guided by the principles contained in Section 2 of NEMA and those of Integrated Environmental Management (IEM).

NEMA lists a number of **principles** that apply to the actions of organs of state and that also serve as reference for the interpretation of environmental legislation and administration of

environmental processes. The principles most relevant to environmental assessment processes and projects for which authorisation is required are summarised below.

Principles relevant to the EIA process:

- Adopt a risk-averse and cautious approach;
- Anticipate and prevent or minimise negative impacts;
- Pursue integrated environmental management;
- Involve stakeholders in the process; and
- Consider the social, economic and environmental impacts of activities.

Principles relevant to the project:

- Place people and their needs at the forefront of concern and serve their needs equitably;
- Ensure development is sustainable, minimises disturbance of ecosystems and landscapes, pollution and waste, achieves responsible use of non-renewable resources and sustainable exploitation of renewable resources;
- Assume responsibility for project impacts throughout its life cycle; and
- Polluter bears remediation costs.

This S&EIR process complies with these principles through its adherence to the EIA Regulations, 2010 and associated guidelines, which set out clear requirements for, *inter alia,* impact assessment and stakeholder involvement (see below), and through the assessment of impacts and identification of mitigation measures during the Impact Assessment Phase. An initial analysis of the project's compliance with the aims of sustainable development is provided in Section 1.1 as well as in the impact assessment.

In accordance with the **IEM** Information Series (DEAT, 2004), an open, transparent approach, which encourages accountable decision-making, has been adopted.

The underpinning principles of IEM require:

- Informed decision making;
- Accountability for information on which decisions are made;
- A broad interpretation of the term "environment";
- An open participatory approach in the planning of proposals;
- Consultation with interested and affected parties;
- Due consideration of alternatives;
- An attempt to mitigate negative impacts and enhance positive impacts of proposals;
- An attempt to ensure that the social costs of development proposals are outweighed by the social benefits;
- Democratic regard for individual rights and obligations;
- Compliance with these principles during all stages of the planning, implementation and decommissioning of proposals; and
- The opportunity for public and specialist input in the decision-making process.

Although various environmental authorisations, permits or licences are required before the proposed project may proceed, the regulatory authorities are committed to the principle of cooperative governance and in order to give effect to this principle, a single S&EIR process is required to inform all applications. To this end, a single EIA Report (this report) has been compiled. The EIA Report will be submitted to the NCDENC in support of the application for environmental authorisation of NEMA listed activities[6].

Supplementary applications will be made as required for the remaining authorisations.

The study will also be guided by the requirements of the EIA Regulations, 2010 (see Section 2.1.2), which are more specific in their focus and define the detailed approach to the S&EIR process, as well as relevant guidelines published by the DEA and, in the absence of guidelines published by NCDENC, the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), including:

- DEA's Draft Companion to Environmental Impact Assessment Regulations of 2010 (DEA, 2010); and
- DEA&DP's EIA Guideline and Information Document Series (DEA&DP, 2013), which includes guidelines on Generic ToR for EAPs and Project Schedules, Public Participation, Alternatives, Need and Desirability, Exemption Applications and Appeals, an information.

2.3.1 Submission of Applications

Various environmental authorisations, permits and licences are required before the proposed project may proceed. Application forms must generally be submitted at the outset of the S&EIR process. The required authorisations and their status are listed in Table 2-4.

Table 2-4: Environmental authorisations, permits and licences required for the Project

Application	Authority	Status
EA	NCDENC	Application submitted to the NCDENC on 3 June 2011 and accepted on 11 November 2011. Reference number **NC/EIA/PIX/UBU/RIC1/2011** was issued for the application.
WML	DEA	Application submitted to the Department of Environmental Affairs on 3 June 2011 and accepted on 6 June 2011. Reference number 12/9/1/622/8 was issued for the application. The application was automatically withdrawn as none of the waste management activities listed in terms of GN R921 of 2013 apply to the project and a WML is no longer required.
Heritage Application	SAHRA	Application submitted via the SAHRIS on 21 June 2012. Acknowledgement of receipt was received from SAHRA on 22 June 2012 and Case ID. 143 was allocated to the project.
WUL	DWA	Application will be submitted at a later stage if required.

2.3.2 S&EIR Process and Phasing

The S&EIR process consists of two phases, namely the Scoping Phase (which has been completed) and an Impact Assessment Phase *(the current phase)* (see Figure 2-2 below).

[6] Note that although the Scoping Report was also submitted to DEA in support of an application for a WML, the WML is no longer required and the application has been withdrawn. The sole competent authority is thus NCDENC.

The objectives of the Scoping Phase are to:

- Identify stakeholders and inform them of the proposed activity, feasible alternatives and the S&EIR process;
- Describe the affected environment and present an analysis of the potential environmental issues and benefits arising from the proposed project that may require further investigation in the Impact Assessment Phase;
- Develop ToR for specialist studies to be undertaken in the Impact Assessment Phase;
- Provide stakeholders with the opportunity to participate effectively in the process and identify any issues and concerns associated with the proposed activity, review specialist study ToR and the Plan of Study for EIA; and
- Produce a Scoping Report for submission to the relevant authorities (in this case, DEA and DWA).

The aims of the Impact Assessment Phase are to:

- Inform and obtain contributions from stakeholders, including relevant authorities, the public and local communities and address their relevant issues and concerns;
- Build capacity amongst stakeholders during the S&EIR process so that they may actively and meaningfully participate;
- Document and contextualise the biophysical baseline conditions of the study area and the socio-economic conditions of affected communities;
- Assess in detail the potential environmental and socio-economic impacts of the project;
- Identify environmental and social mitigation measures to avoid and/or address the impacts assessed; and
- Develop and/or amend environmental and social management plans based on the mitigation measures developed in the EIA Report and EMP.

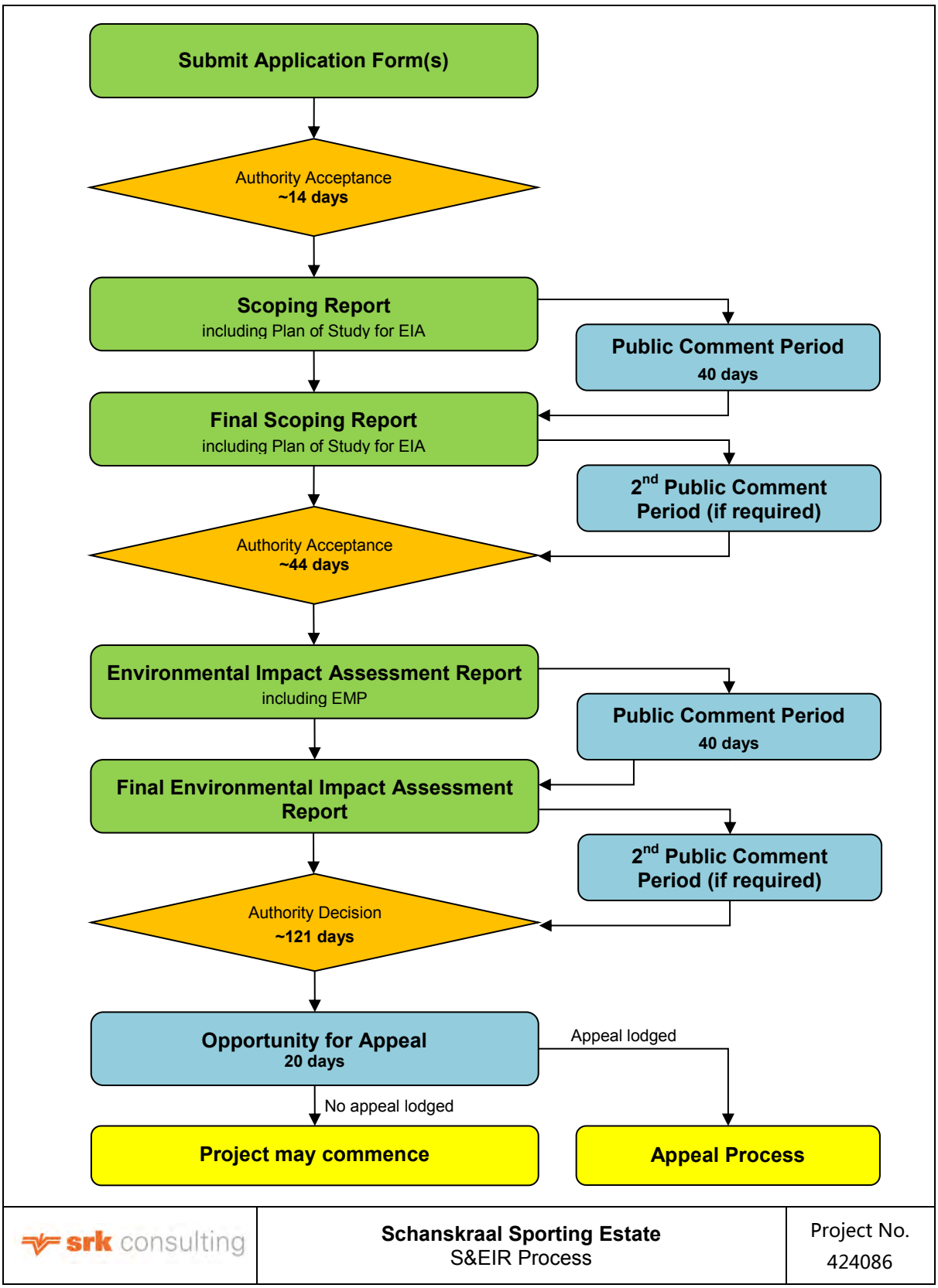


Figure 2-2: S&EIR Process

Further detail about activities undertaken or planned during the S&EIR process are presented in Section 5.

3 Project Description

3.1 Description of the Project Area

3.1.1 Site Description

Farm No. 121 Elands Kloof measures approximately 6 500 ha and is one of three farms owned by Ranor that are collectively referred to as Schanskraal Farm (the farm). Schanskraal Farm measurs approximately 13 000 ha and also includes Farm No. 122 Ruigte Valey (approximately 6 200 ha) and Farm No. 11 Windy Ridge (see Figure 1-1). The proposed Schanskraal Sporting Estate will be located and developed on Elands Kloof farm.

Livestock (cattle and sheep) farming is the predominant agricultural activity on the farm, which also hosts other fauna such as kudu, gemsbok, springbok, blesbok, zebra, klipspringer, steenbok, caracal, aardwolf, baboons and an abundance of birdlife.

The farm infrastructure includes two guest lodges (the Manor House and Burgersrust Lodge), stabling and paddocks (the farms secondary commercial activity), conference facilities, an aircraft landing strip, a main farm house and four smaller houses for labourers. Existing outdoor recreational activities at the farm include freshwater fishing, horse riding, mountain biking, hiking, quad-biking, archery and target shooting, bird watching and bird hunting (in season) and plain game culling / hunting. These activities and existing facilities will be incorporated into the Schanskraal Sporting Estate development.

Both the Manor House and Burgersrust Lodge are older than 60 years, and therefore have heritage significance. Burgersrest Lodge has noteworthy heritage value as it was built in 1793 and was once home to President Thomas Burgers, a former president of the former Orange Free State. Both buildings have been renovated in recent years.

San rock art as well as a number of sites thought to have been of cultural significance to the San People have been found at Schanskraal Farm (but not on the Elands Kloof Farm).

The non-perennial Elands Kloof River and its tributaries are located on the farm. Numerous other small episodic streams as well as three small wetlands / dams are located on the site, two close to the Burgersrust Lodge and one close to the Manor House.

The farm is in a remote location and not visible from any major or scenic routes.

The farm is run by a full time farm manager and seven labourers (six farm workers and one domestic labourer). The stabling and paddocks also have a dedicated manager who lives in the farm house with two assistants. Three labourers are employed at the stabling and paddocks. A total of 14 people are permanently employed at the farm.

The farm manager stays in the Manor House and the labourers stay in existing houses consisting of two bedrooms, a bathroom, a kitchen / dining room and lounge each.

3.1.2 Surrounding Land Use

Two formal roads are located in the vicinity of the project site:

- R398 main road that connects Richmond and Middleburg, located north of the site; and
- R63 secondary road that connects the R398 and Graaff-Reinet, located west of the site.

Schanskraal Farm is accessed off the R398 via an unnamed farm road that crosses Farm No. 120 Kraanvogel Vally.

The area is very sparsely populated. The rural village of Nieu Bethesda is the nearest formal settlement and located approximately 60 km south of the site. The nearest towns in the region include Richmond (64 km west of the site), Middleburg (67 km east of the site) and Graaff-Reinet (90 km south of the site).

Land use in the vicinity of Schanskraal Farm is determined by the regional climate, particularly the low rainfall and resulting water scarcity. The area is largely agricultural, mostly low intensity sheep farming. Since the carrying capacity of the land is low, farms in the area are generally large. Most farms are characterised by a homestead and a limited number of outbuildings, including labourers' cottages. Some of the surrounding farms also offer guest accommodation as secondary income streams.

Schanskraal Farm is bordered by Farm No. 120 Kraanvogel Vally to the north; Farm No. 116 Dasses Fontein to the northwest, Farm No. 123 Vergelegen to the west, Farm No. 10 Driefontein to the southwest, Farm No. 12 Baviaanskrans to the south, Farm No. 146 Kruygers Baaken to the southeast and Farm No. 147 Oppermans Kraal and Farm No. 145 Alphen to the east (see Figure 1-1).

3.2 Proponent's Project Motivation

The proposed Schanskraal Sporting Estate seeks to be a unique development in the greater Karoo area. Having already spent significant effort over the last decade on rehabilitation to secure the ecological sustainability of the farm as an agricultural entity, Ranor now seeks to build on its vision for the farm to create a viable sporting estate that offers sustainable and ecologically sensitive sporting facilities in the scenic Karoo Highlands to both domestic and foreign owners.

The development has potential to attract visitors that have not previously been exposed to the region by providing a venue for sporting events in a variety of disciplines, such as long distance horse riding, mountain biking and trail running. Already Schanskraal organises and hosts a Fédération Equestre Internationale (FEI) Endurance Ride, an event that pays homage to Richmond's heritage as a past centre for equestrian activities in South Africa. More than 300 participants and supporters attended the last event. In addition, this region of the Karoo Highlands also provides an excellent climate and environment for sport fishing, and there are plans to develop the lake and accommodation at the Burgersrust Lodge specifically for catching Yellow Fish on the fly.

Given that the basis of the proposed development is the enjoyment of the outdoors and nature, there is an in-built incentive for the developer to continue to manage the estate in an ecologically sustainable manner. The proponent has indicated that one of the project's development goals is the reversal of historical degradation associated with previous unsustainable land management practices at Schanskraal.

Integral to this vision is the improvement of socio-economic conditions for the local community residing on the farm. The development makes provision for an expansion of formal housing for labourers which will largely be sourced from the local community.

Furthermore, the proponent has expressed a desire to invest a percentage of the revenue produced by the sales of residential units on the estate in the Richmond Primary School (see Section 3.5.9).

It is also assumed that certain indirect social and economic benefits will be associated with the development, these may include, but are not limited to, the following:

- Income generation for home service providers;

- Improved equestrian facilities which may attract further international travel to Richmond, as well as increased business sales; and
- Improved accessibility to the area through the encouragement of the use of the Schanskraal landing strip.

As a result of the redevelopment of a relatively small proportion of the farm, the proponent hopes to cross–subsidise and ensure the financial viability of the remainder of the farm. Initiatives under consideration include improved irrigation and sustainable land use programmes that would allow the farm to increase its stock of cattle without a negative impact on indigenous flora and fauna.

3.3 Project Alternatives

The EIA Regulations, 2010 require that all S&EIR processes must identify and describe "alternatives to the proposed activity that are feasible and reasonable". Different types or categories of alternatives can be identified, e.g. location alternatives, type of activity, design or layout alternatives, technology alternatives and operational alternatives. The "No-Go" or "no development" alternative must also be considered.

Not all categories of alternatives are applicable to this project, as discussed below.

3.3.1 Location Alternatives

A number of locations on Schanskraal Farm were considered for the proposed development during the conceptual planning phase, as indicated in Table 3-1. As all but one of these location alternatives have been eliminated, no location alternatives will be assessed.

Table 3-1: Location alternatives considered during the conceptual phase

Location	Feasibility of alternative
Southern portion of Farm No. 121 Elands Kloof	This location alternative was **excluded** due to inappropriate topography, as the slopes in that area are generally deemed too steep for the development.
Farm No. 122 Ruigte Valey	This location alternative was **excluded** due to the lack of access to the site (there are no suitable roads in the vicinity of this site) and the largely steep topography.
Northern portion of Farm No. 121 Elands Kloof	This location alternative was selected as a **feasible alternative** as the physical characteristics of the site, e.g. in terms of topography and scenic qualities, are particularly well-suited to the proposed development.

3.3.2 Activity Alternatives

Feasible and reasonable activity alternatives for the proposed development of the site are limited by the proponent's motivation and intention to establish a sporting estate, the current land use (including surrounding land use), limited water availability and the scenic character of the environment. As such, no activity alternatives will be assessed.

3.3.3 Layout Alternatives

A considerable amount of pre-planning, informed by technical, financial and environmental factors, has been considered in designing the layout of the proposed Sporting Estate. Factors that have informed the layout include:

- Access to services, in particular the cost of laying service infrastructure to individual plots vs a number of housing clusters;
- Access to water, in particular sustainable groundwater abstraction volumes for the site that have informed the feasible number of housing units;

- Vehicular access, ensuring that the site is easily accessible by vehicles off the unnamed rural road leading to the farm;
- Environmental impact, in particular the location of the development footprint relative to sensitive environmental features, including sensitive vegetation clusters, seeps and wetlands;
- Design considerations, which include the location of housing units that are north-facing, enhance the views of occupants and reduce the visual impact of the development; and
- Topographical features, which inform the location of housing clusters and the golf course.

Based on the above considerations, a layout with 57 residential units was initially developed and presented in the Scoping Report. A layout alternative with 36 residential units was subsequently added, as indicated in Table 3-2. Both layout alternatives will be assessed in Chapter 6.

Table 3-2: Layout alternatives considered in the impact assessment

Alternative	Description
Alternative 1	Estate with 57 residential units and associated infrastructure and sporting facilities (see Figure 3-1)
Alternative 2	Estate with 36 residential units and associated infrastructure and sporting facilities (see Figure 3-2)

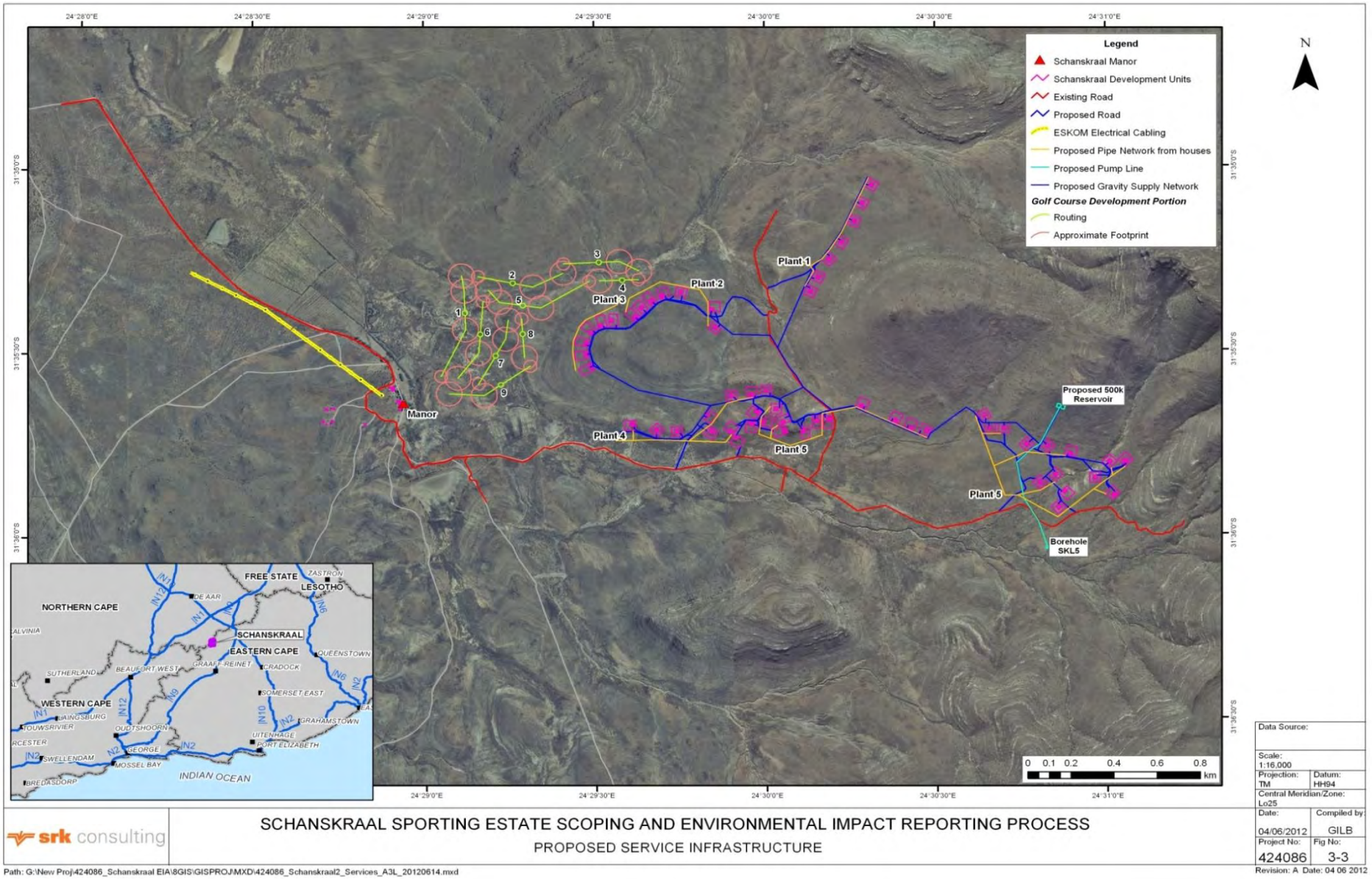
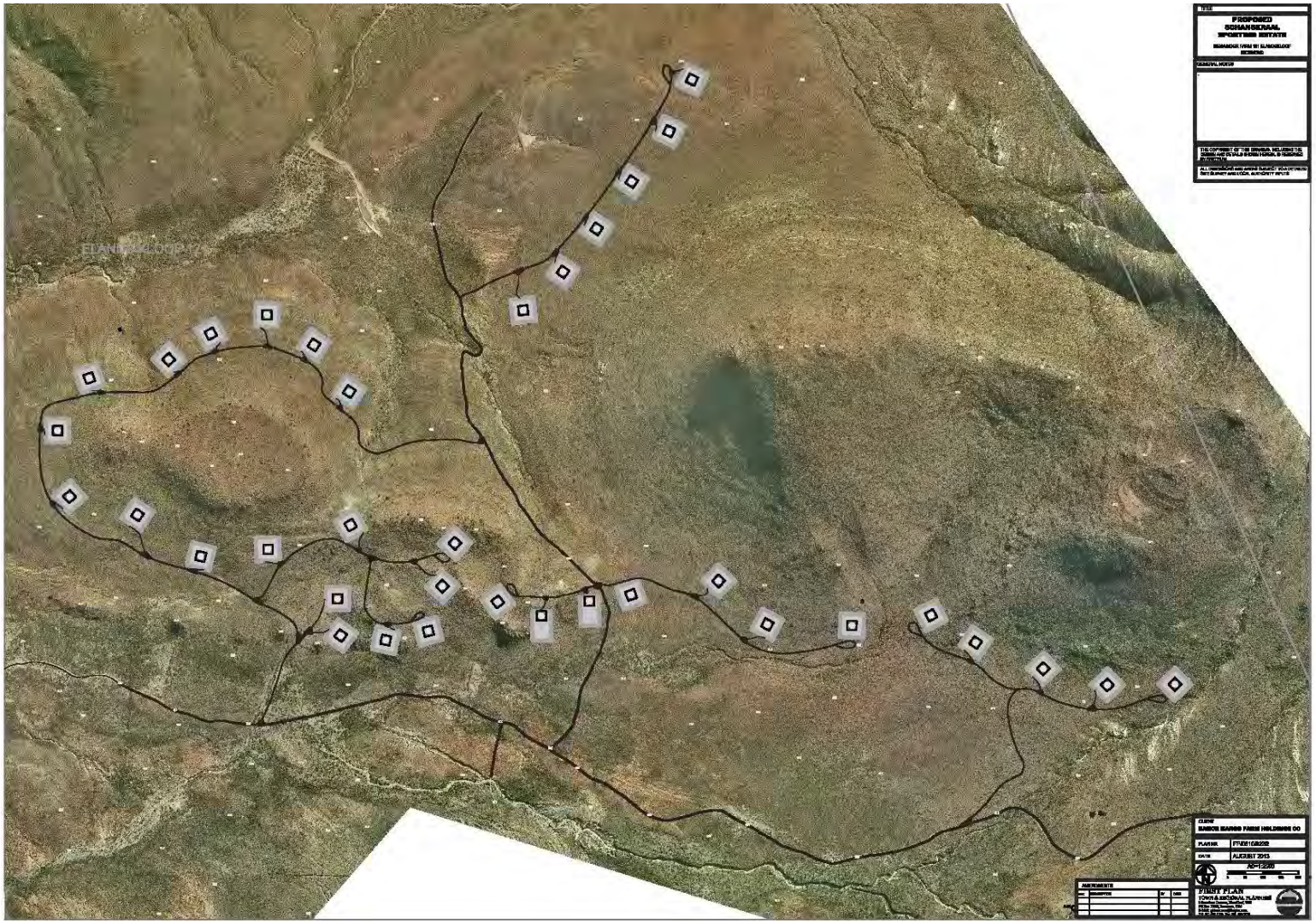
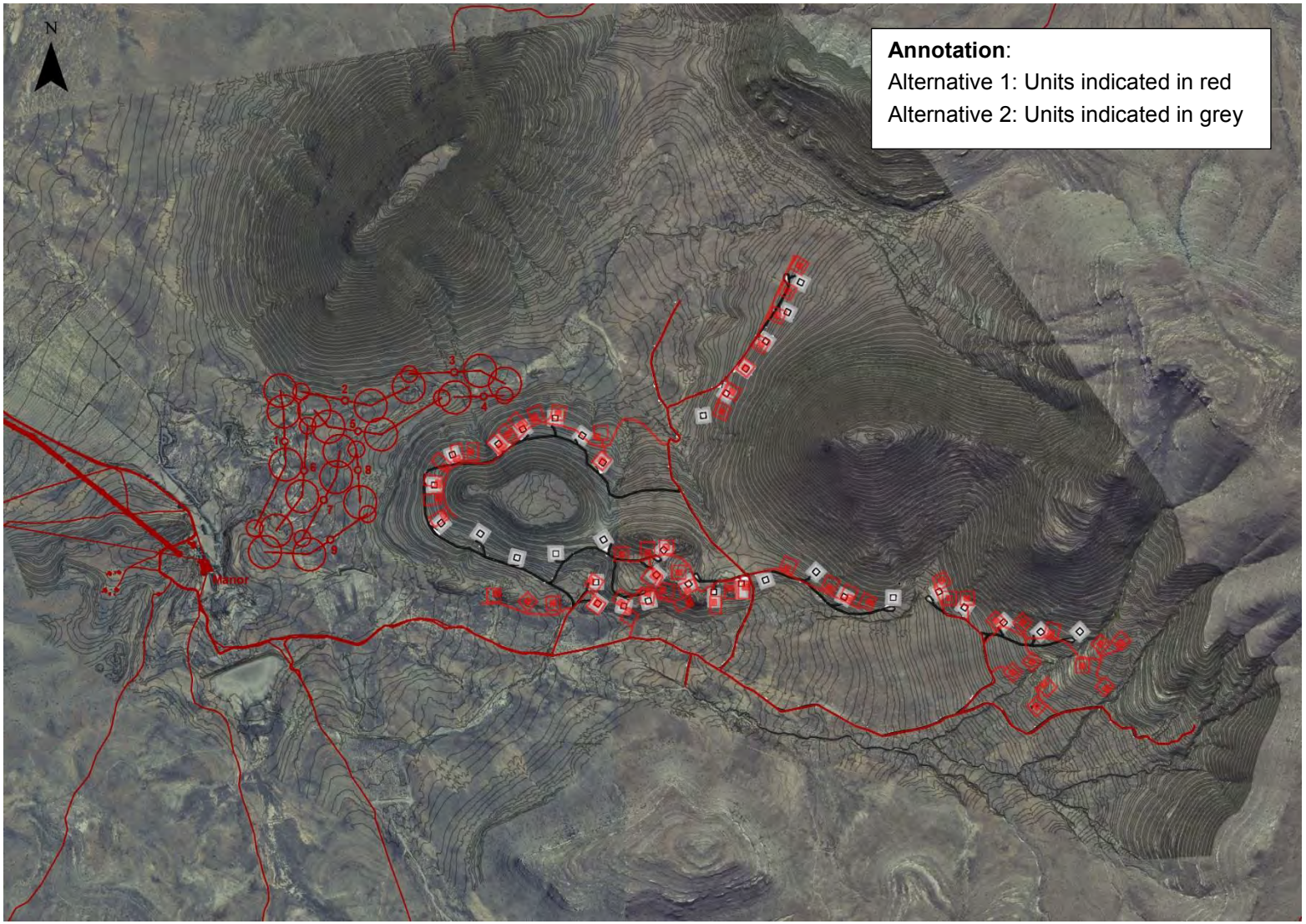


Figure 3-1: Layout Alternative 1



srk consulting	**Schanskraal Sporting Estate** Layout Alternative 2	Project No. 424086

Figure 3-2: Layout Alternative 2



srk consulting	**Schanskraal Sporting Estate** Overlay of Layout Alternatives 1 and 2	Project No. 424086

Figure 3-3: Overlay of Layout Alternatives 1 and 2

While the unit clusters are largely the same in both layouts, the position of individual units, and therefor associated roads and services, differs slightly between the two alternatives, as shown in Figure 3-3. The layout of sporting facilities is identical for both alternatives.

3.3.4 The No Go Alternative

In addition, the No-Go alternative will be considered in the EIA in accordance with the requirements of the EIA Regulations, 2010. The No-Go alternative implies no change in the property's *status quo*, in other words no development, rezoning or subdivision. Sustainable livestock agriculture will continue at the site under this scenario (as it would with the development proposal).

3.4 Project Construction and Infrastructure

Ranor proposes to establish a residential estate and sports facilities on 2 000 ha of the northern section of Elands Kloof farm (see Figure 1-1). The total development footprint will be less than 100 ha, including the sports facilities. Key components of the project include those listed below, which are described in more detail in the remainder of this section:

- Residential units and staff accommodation;
- Sporting facilities, including golf course, sporting clay arena and tennis courts; and
- Associated services and infrastructure.

Although homes will only be built following the sale of individual erven it is likely that essential service infrastructure will be installed shortly following authorisation. The golf course will only be built once suitable demand is generated by the residential development. No clearing will be undertaken for the golf course until it can be demonstrated that the development is viable, and there is suitable demand for this recreational facility. The construction phase is therefore likely to extend over the medium to long term, and will, in some cases, take place at the same time as operations (i.e. construction of individual erven and infrastructure will continue take place following the occupation of some residential units).

3.4.1 Residential Units and Staff Accommodation

The residential component of the development will comprise either:

- **Alternative 1:** up to 57 residential units (see Figure 3-1); or
- **Alternative 2:** up to 36 residential units (see Figure 3-2).

Each unit will be constructed on individual plots of no more than 4 000 m^2, with a unit footprint of no more than 550 m^2. Units will be grouped into five clusters that are aligned with the natural contours of the landscape. Units will only be cleared and developed after being sold.

The two existing guest lodges on Schanskraal Farm, Manor House (which includes conference facilities) and Burgersrust Lodge, will be retained and upgraded as part of the Schanskraal Sporting Estate development.

A staff community precinct will also be constructed as part of the development near the Manor House, and will comprise ten new two-bedroom houses for general staff and two three-bedroom houses to be used as management quarters.

3.4.2 Sporting Facilities

Existing outdoor recreational facilities at the farm include: freshwater fishing, equestrian, horse riding, mountain biking, hiking, quad-biking, archery and target shooting at a range, bird hunting (in season) and plain game culling / hunting.

These facilities and infrastructure will complement the proposed new (commercial) recreational facilities to be constructed:

- Nine hole golf course and driving range;
- Sporting clay arena[7]; and
- Tennis courts.

The nine hole golf course is intended to be a private course for homeowners to use at their leisure. Given the topography of the property and regional water scarcity, the course will, as far as possible, incorporate natural features and indigenous vegetation into the design, and locally occurring grasses will be used for the greens and fairways (where possible). As a result, the course will not be built to 'championship specifications', but should rather be considered a small 'country course' designed for casual use. A water feature will be the central focus of the sporting clay arena, and the design will utilise the natural terrain to provide elevated traps and shooting stands. Preference will be given to tall, fast growing, indigenous tree species to provide visual obstacles on the arena.

The golf course will occupy some 10 ha and construction will involve limited earthworks to achieve the desired topography and vegetation cover.

3.4.3 Rehabilitation and Landscaping

Rehabilitation of the natural environment is an important component of the current farm operations, and includes, amongst other activities, the planting of indigenous trees and shrubs, the reintroduction of indigenous grasses. These operations will continue following the development of the Schanskraal Estate.

3.4.4 Roads

Access to the site is currently obtained via a 15 km gravel road off the R398. This access road runs a further 1.5 km to the Manor House. The road is in a good condition and requires no upgrading.

All internal roads constructed for the development will lead from the Manor House to the residential units and facilities. The majority of the internal road network will make use of existing farm tracks, while some new roads will be constructed (see Figure 3-4).

Internal roads will be 3 m wide, with road widening at strategic positions to allow safe passing. All existing internal roads will be refurbished and remain as cambered gravel roads to accommodate surface runoff. Road sections with an incline of more than 12% will be laid by concrete strips that are cast off-site.

3.4.5 Stormwater Management

Roads will be constructed with sufficient gradient to ensure effective drainage. Where roads cross streams, suitable drainage structures will be provided to ensure access during rain events, e.g.

[7] A sporting clay arena is a series, or course, of unique shooting stations established in natural terrain. Clay targets, which must be destroyed in order to earn points, are fired in a variety of methods from each station.

pipe structures with headwalls that can accommodate 1:10 year events will be constructed at stream crossings. Storms of a higher intensity (up to 1:50 years) will be accommodated in an overflow low water bridge structure with the necessary erosion protection.

3.4.6 Water Supply

Water demand for the new residential units has been calculated based on an average usage of 2 000 litres per erf per day, in line with engineering guidelines for high income erven. Although it is highly unlikely that all houses will be occupied at the same time over long periods, the total demand was calculated as if all houses were occupied (see Table 3-4).

Water will be supplied from boreholes on Farm No 121 Elands Kloof. Storage for approximately five days of full water supply for new residential units will be provided on site in an approximately 500 m^3 reservoir, which allows sufficient time for any repairs of pump installations, borehole equipment and electricity supply if necessary.

The proposed water distribution network consists of the following (see Figure 3-6):

- Pump and standby pump at borehole SKL5;
- Rising main of 90 mm diameter from borehole SKL5 to the reservoir;
- Up to 500 m^3 reservoir;
- Water treatment works if required (chlorination only);
- Supply line from reservoir to individual erven with a diameter of approximately 110 mm to 200 mm;
- Isolation, air and scour valves where necessary; and
- House connections (32 mm diameter) with a water meter from the main network to each house.

Storage tanks will be provided at each erf to make provision for firefighting. These tanks can either be filled with rain water or from the main supply network.

3.4.7 Sanitation and Sewerage

On-site treatment of waste water will comply with the requirements of DWA and the package plant(s) will either be:

- Localised, with provision for a smaller packaged wastewater treatment plant on each erf, to be installed by each owner when building the units. The plumbing network from the unit is connected to the plant, which will be constructed on the topographical low point of the erf; or
- Centralised, with a conventional underground sewer reticulation network with manholes to a central packaged wastewater treatment plant. Due to the proposed layout and natural topography, up to six centralised plants will be required to serve the clusters.

3.4.8 Power Supply

The surrounding area is supplied with power by the Eskom Middleburg / Heydon (MBH) 22 kilovolt feeder line. The nearest Eskom supply point is located approximately 1 km from the proposed development. Only 300 kilovolt-amperes (kVA) is currently available on that overhead line, whereas the anticipated maximum demand for the development is 500 kilovolt-amperes (kVA) for Option 1 and 300 kilovolt-amperes (kVA) for Option 2.

For the reticulation network it is thus proposed that a 22 kilovolt (kV) overhead feeder line is constructed from the nearest supply point to a location close to the Manor House. Medium voltage underground cables will be installed to miniature substations at each of the development clusters, from where low voltage underground cables run to each individual erf.

3.4.9 Waste Management

Waste skips will be used for construction waste collection and any domestic or hazardous waste will be removed from site to the licensed waste facility in Richmond by a contractor on a weekly basis. Waste will be separated at source.

It is anticipated that up to 10 tons of waste will be generated per week during the construction phase.

3.4.10 Work Force

The construction workforce has not been estimated but is unlikely to exceed 50 staff at any given time. Personnel will be accommodated at the site during the construction phase in a temporary construction camp. Security guards will be on site 24 hours per day during the construction phase.

During construction, although mostly unskilled construction workers will be required, a limited number of skilled workers will also be employed. These may include:

- Site manager;
- Health and safety personnel;
- Civil engineer;
- Operators for machines such as earth moving equipment; and
- Surveyors.

Unskilled workers would mainly include labourers assisting the skilled workers in their tasks.

Most construction activities will be undertaken by local contractors who will recruit in accordance with their recruitment policies and practices. In many instances it is probable that contractors will have an existing workforce.

Contractors will provide specialist job-specific training (i.e. when new machinery is used). Skilled workers will be required to have a good degree of literacy and be able to read, write and understand detailed work instructions. Labourers will be required to have a basic degree of literacy and be able to read and understand e.g. work instructions and safety rules.

At present, it is anticipated that construction work will take place 12 hours per day, 6 days a week.

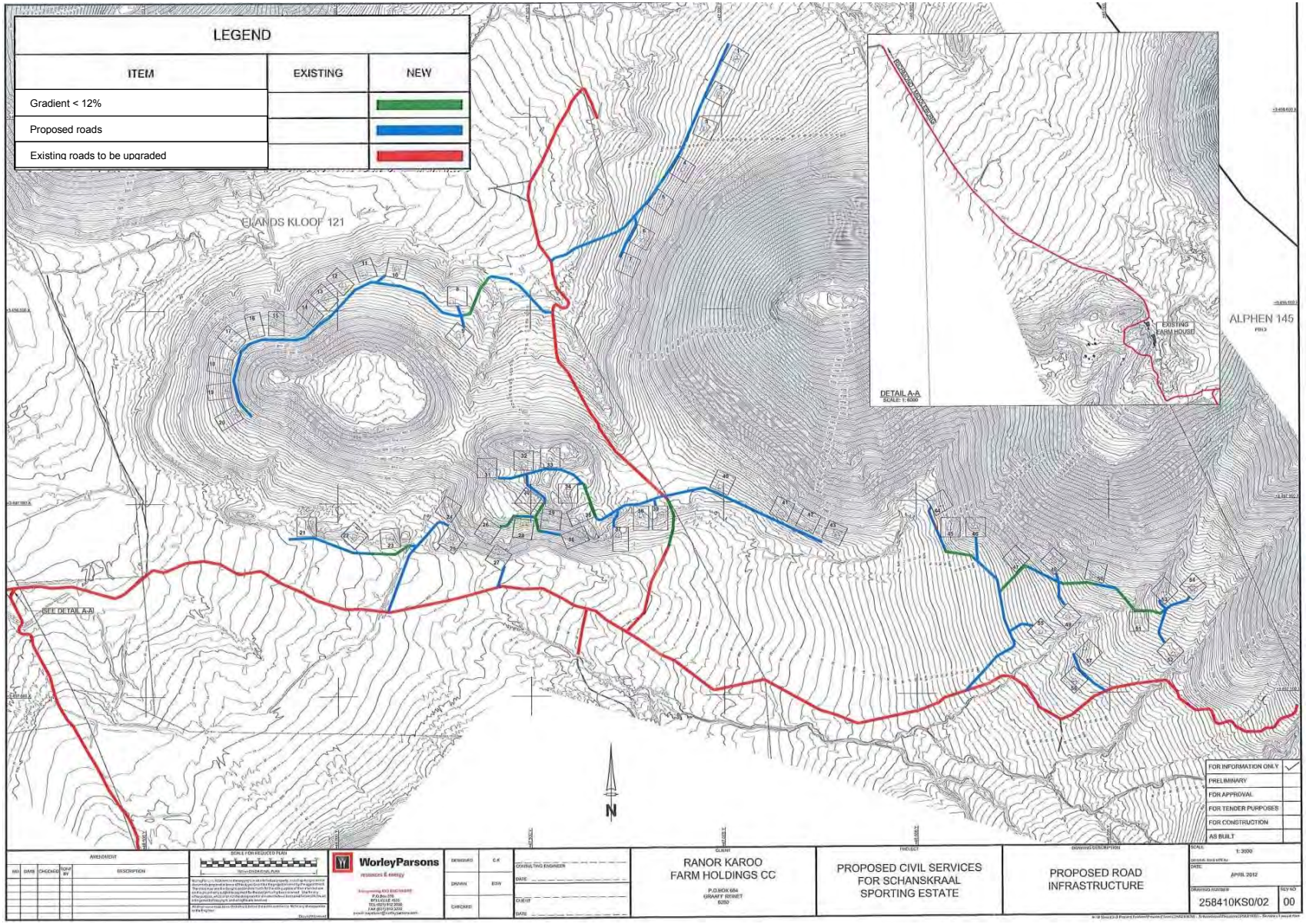


Figure 3-4: Proposed road infrastructure (for Layout Alternative 1)

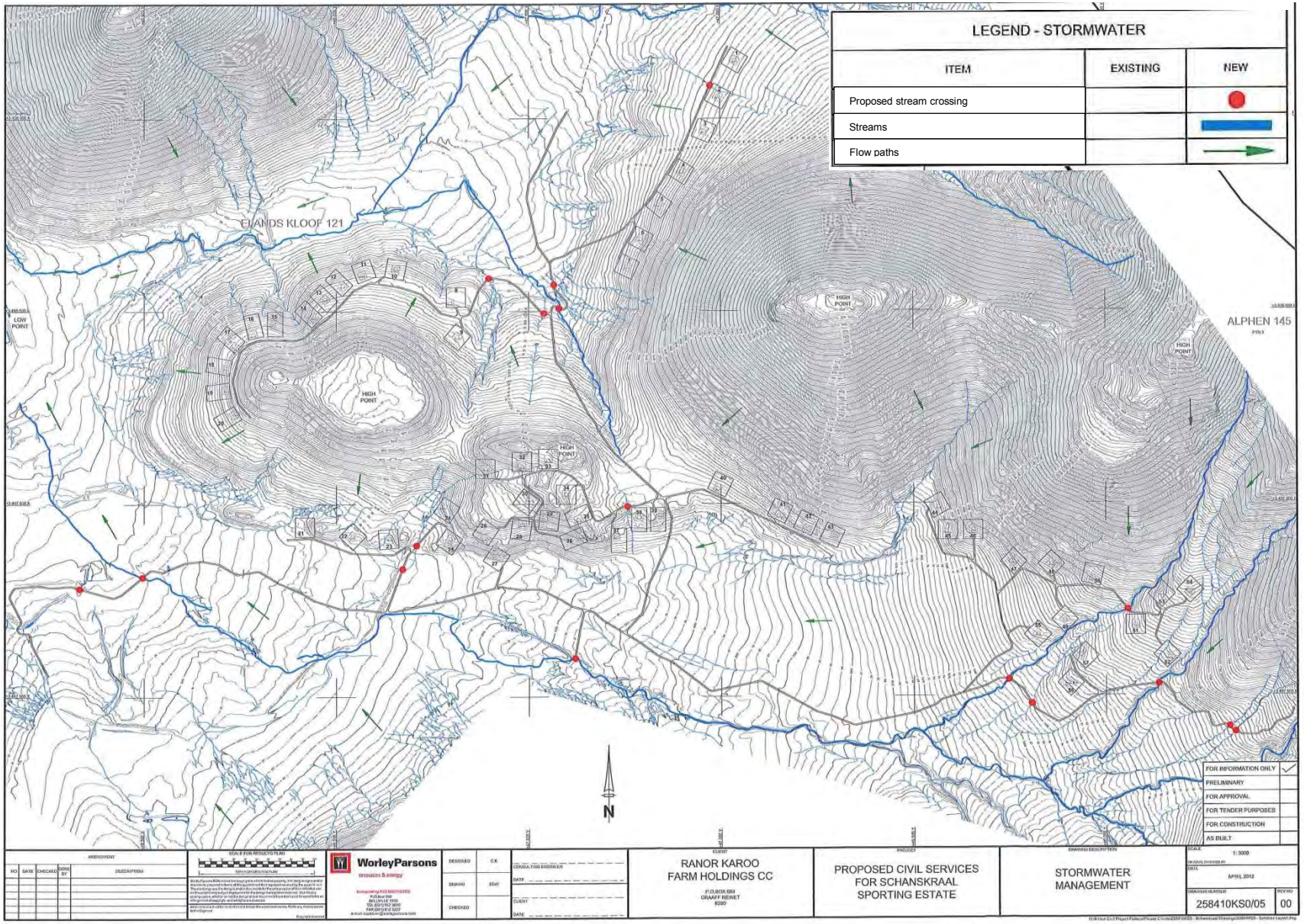


Figure 3-5: Proposed stormwater infrastructure (for Layout Alternative 1)

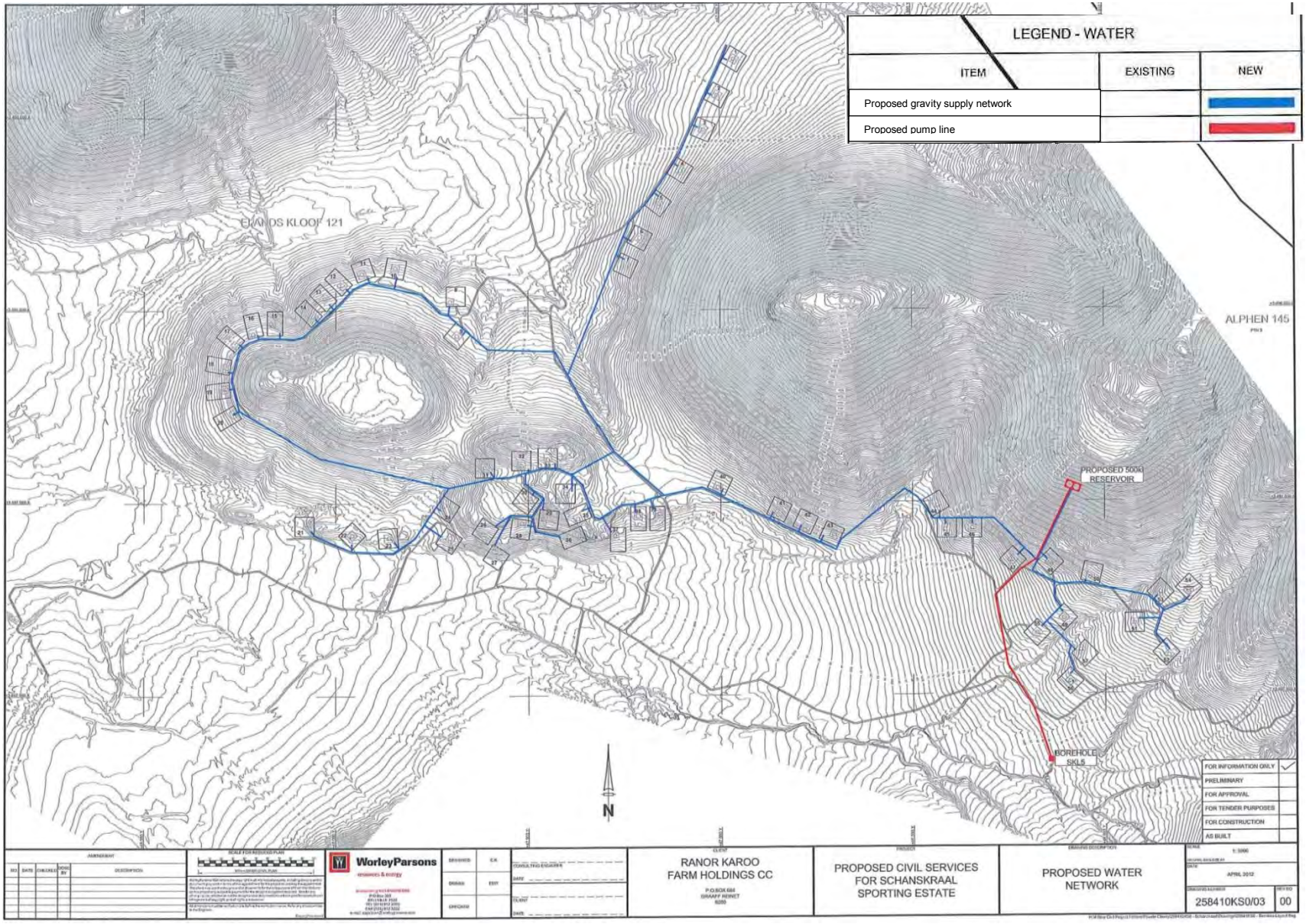


Figure 3-6: Proposed water supply infrastructure (for Layout Alternative 1)

3.5 Project Operations

Operation refers to the ongoing functioning of the estate post construction.

3.5.1 Residential Units and Staff Accommodation

Although it is unlikely that all residential units are occupied fully at the same time, the Estate will provide accommodation for approximately 232 to 316 people, depending on the layout alternative implemented (see Table 3-3).

Table 3-3: Number of potential residents on the Estate

Aspect of the development	Approximate number of people
Residential units (4 people per household) • Alternative 1: 57 units • Alternative 2: 36 units	 228 144
Two Guest lodges	40
12 staff houses (4 people per household)	48
Total Alternative 1	**316**
Total Alternative 2	**232**

3.5.2 Roads

The speed limit on internal roads will be 40 km/hr. Limited signage will be placed at the entrance road, but not on the internal road network.

3.5.3 Stormwater Management

Where stormwater collection is unavoidable as a result of infrastructure development, it will be released into streams and open areas with suitable outlet structures and erosion protection.

3.5.4 Water Demand and Supply

Water saving devices such as low flow shower heads and dual flush toilets will be used in all residential units to save water. Additional rain tanks will be installed for gardening purposes in addition to the storage tanks, and booster pumps will be installed for firefighting.

Since water allocations are farm-specific, water demand has been calculated for activities that will take place on Farm No. 121 Elands Kloof only (as opposed to the whole Schanskraal farm). Water demand for the new development on Farm No. 121 is estimated at 628 m^3/day for Alternative 1 and 586 m^3/day for Alternative 2, in addition to a current water demand for existing activities of approximately 22 m^3/day (see Table 3-4).

Table 3-4: Estimated water demand at Farm No. 121 Elands Kloof

Aspect	Unit water demand (m^3/unit/day)	Number of units	Average total demand	
			(m^3/day)	(m^3/a)
New Development				
Residential Units – **Alternative 1**	2	57	114	41 610
Residential Units – **Alternative 2**		36	72	26 280
Staff Accommodation (2-bedroom)	1	10	10	3 650
Manager Accommodation (3-bedroom)	2	2	4	1 460
9 Hole Golf Course	500	1	500	182 500
Total New Development – Alternative 1			**628**	**229 220**
Total New Development – Alternative 2			**586**	**213 890**
Existing Water Use				
Labourer's Cottages	1	4	4	1 460
Manor House	5	1	5	1 825
Cattle (average)	0.053	215	11	4 178
Sheep	0.008	215	2	661
Total: Existing Activities			**22**	**8 124**
Grand Total – Alternative 1			**650**	**237 292**
Grand Total – Alternative 2			**608**	**221 962**

3.5.5 Sanitation and Sewerage

Waste water volumes have been calculated based on an effluent discharge volume of 1 000 litres per erf per day, a Peak Factor of 2.5 and 15% infiltration. Although it is highly unlikely that all houses will be simultaneously occupied over long periods, the Average Dry Weather Flow (ADWF) and Peak Wet Weather Flow (PWWF) were calculated as if all houses were occupied and are shown in Table 3-5. Combined daily wastewater treatment **capacity** will therefore be approximately 100 m^3 for Alternative 2.

Table 3-5: Wastewater volumes

Alternative	ADWF (l/s)	PWWF (l/s)
Alternative 1	0.66	1.9
Alternative 2	0.42	1.2

3.5.6 Power Supply

Peak demand for the proposed development is estimated to be approximately:

- **Alternative 1:** 500 kilovolt-amperes (kVA); or
- **Alternative 2:** 300 kilovolt-amperes (kVA).

As peak demand for option 1 is expected to exceed supply from Eskom by 200 kv kVA, the development will either, in case of option 1, need to be phased until more supply capacity becomes available by upgrading the existing Eskom line, or alternative methods of electricity supply and/or efficiency of the system (e.g. heat pumps, gas stoves, LED lighting and solar panels) will need to be investigated and implemented. In case of option 2, adequate capacity is available.

3.5.7 Waste Management

Waste during operations will be mostly domestic waste and a small volume of office waste as well as some garden waste. Waste volume has been calculated on the basis of waste generation rates of 3 kg/person/day for residents of the residential units and guest lodges and 1-2 kg/person/day for staff. Although it is highly unlikely that all houses will be simultaneously occupied over long periods, the maximum waste volume generated has been calculated as:

- **Alternative 1:** approximately 1 130 kg per day; or
- **Alternative 2:** approximately 880 kg per day.

A dedicated fenced area with a capacity of at least 20 m^3 will be established at the Manor House for storage of waste until it is removed on a weekly basis by a private contractor for disposal at the authorised Richmond landfill.

A waste minimisation strategy will be implemented by encouraging recycling by all residents and staff and composting of garden waste. Each unit will be provided with two 240 liter wheelie waste bins to separate recyclable and general waste. Bins will be collected on a weekly basis (or more frequently if necessary) at each unit and dumped at the temporary storage area.

3.5.8 Work Force

It is anticipated that 12 unskilled, three skilled and two managerial employment positions will be created by the development for the management, maintenance and servicing of houses and grounds, including sporting facilities. Single family homes will be constructed for new labourers.

3.5.9 Social Initiative

Ranor propose that, following the sale of the first two plots, 1% of all subsequent revenue from the sale of property at Schanskraal be donated to the Ikhaya Senior Primary School (or other suitable education facility located in Richmond as identified or agreed to by the local authority).

Guidance will be sought from the Ubuntu Local Municipality as to how the donation can be best directed so as to achieve maximum effect.

3.6 Analysis of Need and Desirability

Best practice requires that the need and desirability of a project (including viable alternatives) is considered and evaluated against the tenets of sustainability. It requires an analysis of the effect of the project on social, economic and ecological systems; and places emphasis on consideration of a project's *justification* not only in terms of financial viability, but also in terms of the specific needs and interests of the community and the opportunity cost of development. Proposed actions of individuals are therefore measured against the interests of the broader public, and project impacts are not allowed to be distributed in such a way that they unfairly discriminate against members of society (DEA&DP, 2013).

Regional planning documents such as SDFs, IDPs and EMFs enunciate the strategic needs and desires of communities, and project alignment with these documents must therefore be considered and reported on in the EIA Report. With the use of these documents or - where these planning documents are not available - using best judgment, the EAP (and specialists) must consider the project's strategic context, or justification, in terms of the needs and interests of the broader community (DEA&DP, 2013).

The compatibility of the proposed project (or the "desirability" thereof) with the objectives for planning and development for the area (or the "need") is considered in Table 3-6 below, based on the above analysis of the existing planning framework and proposed project activities.

Table 3-6: Need and desirability of the Project in the context of planning objectives

Socio-Economic	
Objective ("Need")	
Provincial, District and Local Municipality level planning documents identify the need for: • Poverty alleviation by promoting local economic development and job creation; • Long-term sustainable economic growth and development; • Investment into social capital, infrastructure development and large scale capital investment; • Attracting investors to the region; • Effective and efficient service delivery; • Improving the efficiency of water use; • Transforming Ubuntu into a viable tourist destination to improve the local economy; • Provision of water, farming opportunities and training to the agricultural sector, especially emerging farmers; and • Maintenance and upgrading of access and linkage roads in the region.	
Compatible aspects	**Potentially incompatible aspects**
The project will create temporary employment opportunities during the construction phase and seasonal and permanent employment opportunities during the operation phases for unskilled and low-skilled workers. The project is also aiming to improve the living conditions of staff on the farm and as local inhabitants will be employed at the estate, therefore, to a very limited extent the wider rural community through improved housing, service provision and recreational facilities. Opportunities for skills development will arise during the construction and operation phases. Through the provision of new residential units and guest accommodation as well as the participation in and hosting of events, the project will likely increase the tourism potential in the area and contribute to the stimulation of local economic growth. As the project aims to attract high-income clientele, it may contribute to attracting investment into the region. Due to the emphasis on an environmentally friendly design and operations, the project is expected to contribute to sustainable development in the area.	The project does not significantly contribute to improved service delivery in the wider region. However, within the limitations of a single project, this is not considered feasible.
Environmental	
Objective ("Need")	
District and Local Municipality level planning documents stipulate that: • Environmental management must be improved; • Action must be taken to prevent aridification and possibly desertification of land; • Loss of riverine habitat must be prevented, as river courses and their riparian zones have an important biodiversity function and economic value in the Karoo; • Solid waste management and infrastructure must be improved; and • A comprehensive environmental management plan must be compiled and implemented to protect the region and ensure sustainable development	
Compatible aspects	**Potentially incompatible aspects**
A key aim of the project is to maintain and improve the environmental quality of the farm through rehabilitation of previously impacted areas and careful environmental management of the development during construction and operations, including farming on the remaining portions of Schanskraal farm. The development includes comprehensive services such as wastewater and sewage treatment and waste minimization and disposal.	Intrusive aspects of the project, including aspects such as landscaping and the proposed redevelopment of dams, must be governed by a comprehensive environmental management plan.

<table>
<tr><th colspan="2">Regional planning</th></tr>
<tr><th colspan="2">Objective (“Need”)</th></tr>
<tr><td colspan="2">A number of regional planning documents have particular relevance to the project. According to the:
Northern Cape Provincial SDF, the greater project area, and Hanover in particular, is identified as a high priority area for public and private investment and infrastructural development;
District IDP the following needs are prevalent:
Providing access to farm land for emerging farmers;
Making land available for residential development and transfer of ownership;
Providing serviced land for development;
Promoting investment along identified development corridors (N1, N10, N12 and Orange river corridor); and
Promoting a variety of housing typologies and densities to provide for all demand categories;
Ubuntu SDF, the Central Lower Nama Karoo, in which the site is located, is sensitive to development and the environment must be protected and development managed; and
Ubuntu EMP, Apartheid-era townships must be renewed and quality of life in such areas improved, e.g. by planting trees and improving the quality of open spaces.</td></tr>
<tr><th>Compatible aspects</th><th>Potentially incompatible aspects</th></tr>
<tr><td>The project will provide additional housing for local people in need thereof, and increase the exposure of the area for investment opportunities.
The area is deemed environmentally sensitive to development and the project aims to implement the development in an environmentally sustainable manner.</td><td>The project will not at present contribute to improved access to land for emerging farmers. However, due to the limited carrying capacity of the farm and limited water supply, the agricultural potential of the farm is understood to be limited.</td></tr>
</table>

The relevant regional and local policies and planning guidelines support sustainable development that promote economic growth and contribute to an improvement in local living conditions and alleviation of poverty. Tourism and farming are identified as sectors that have particular potential for growth in the area.

The proposed development speaks to a number of the needs identified in the local and regional planning framework at it is a largely self-sustaining project that is designed in cognisance with the capacity constraints of local environmental resources. The development will include comprehensive management of water supply, wastewater treatment and access provision, although municipal services will required in terms of power supply and waste disposal. Through its focus on a high-income clientele the project has the potential to raise awareness of and investment in the area.

4 Description of the Affected Environment

The following chapter presents an overview of the biophysical and socio-economic environment in which the proposed project is located, to:

- Understand the general sensitivity of and pressures on the affected environment;
- Inform the identification of potential issues and impacts associated with the proposed project, which were assessed during the Impact Assessment Phase;
- Identify gaps in available information to inform specialist study requirements; and
- Start conceptualising practical mitigation measures.

The region has previously been studied to some extent and is recorded in various sources. Consequently, some components of the baseline have been generated based on literature review. However, where appropriate, baseline information has been supplemented or generated by specialists appointed to undertake baseline and impact assessments for the proposed Project.

The specialist baseline and impact studies undertaken for the EIA process are listed in Table 4-1.

Table 4-1: Specialist baseline studies undertaken for the EIA

Specialist Study	Specialists	Organisation
Groundwater	Mr. Des Visser	SRK Consulting
Terrestrial and Aquatic Ecology	Ms. Larissa Heyns Prof. Johann du Preez	SRK Consulting University of the Free State
Archaeology, Paleontology and Heritage	Mr. Cobus Dreyer Mr. Johan C. Loock	Independent

Final specialist baseline and impact assessment reports are attached as Appendices A to C.

4.1 Biophysical Environment

4.1.1 Topography

The study area is located on the northern foothills of the Sneeuberg Mountain Range. The topography is rugged and ranges in elevation from 1 300 m above mean sea level (amsl) in the north to over 2 000 m amsl in the south to south east (see Figure 4-1).

Several butte and mesa landforms are characteristic of local relief, separated by wide valleys with flat bottoms (see Figure 4-2and Figure 4-3).

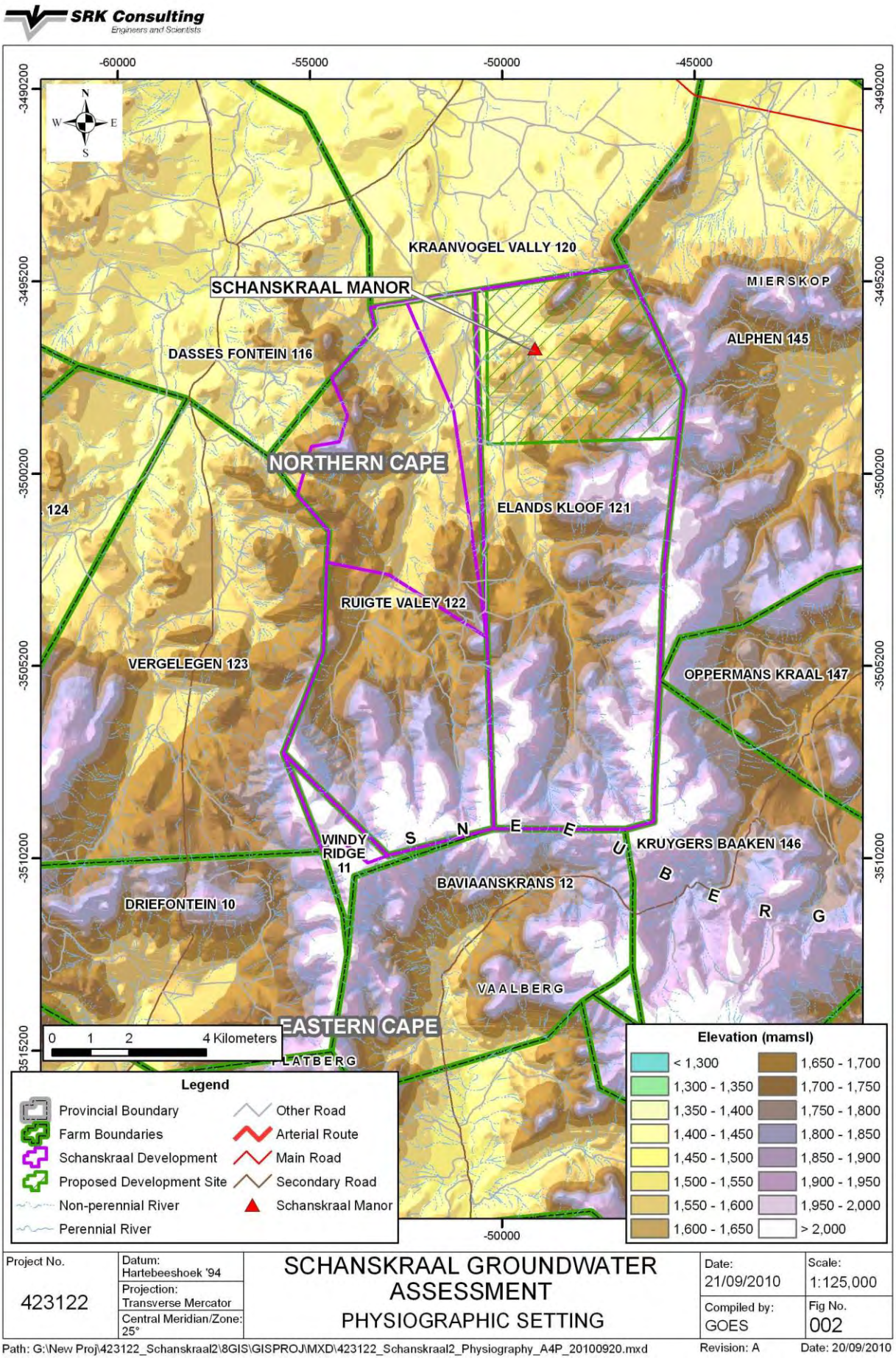
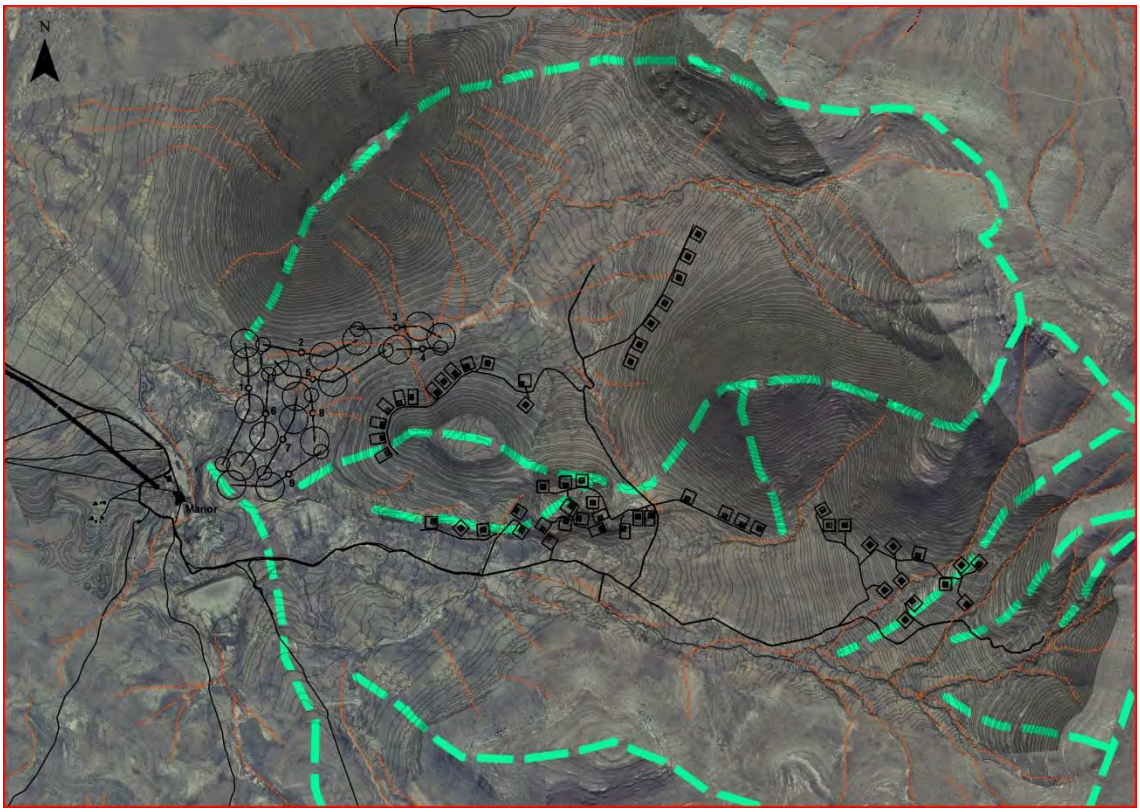


Figure 4-1: Physiographic setting of the study area



srk consulting	**Schanskraal Sporting Estate** Topography	Project No. 424086

Figure 4-2: Contours and ridgelines of the development site

srk consulting	**Schanskraal Sporting Estate** Topography	Project No. 424086

Figure 4-3: Butte and mesa landforms on the project site

4.1.2 Geology

Schanskraal is mainly underlain by sediments of the Beaufort Group of the Karoo Supergroup, with post-Karoo dolerite intrusions in the form of dykes and sills. Outcrops of the Adelaide Subgroup of the Beaufort Group occur in the north-western part of the property on low hills and along the mountain slopes. Outcrops consist of red, purple, grey and blue-green mudstone with subordinate sandstone. The sediments were originally washes into the Karoo Basin by rivers flowing from the west and south east and deposited on flood plains and in river channels.

The higher lying south-eastern part of the property is underlain by fine grained sandstone and red and green-grey mudstone of the Katberg Formation of the Tarkastad Subgroup. These sediments overlie the sediments of the Adelaide Subgroup. Outcrops occur on the highest slopes of the mountains and the formation is easily recognised by the white appearance in high ground.

Large areas of the study area have been intruded by post-Karoo-age dolerite. These intrusions occur as dykes (vertical to sub-vertical intrusions) and sills (horizontal to sub-horizontal intrusions). The sills can be >100 m in vertical thickness, whilst the dykes are normally <25 m in width. Several dykes in the area are <5 m wide (see Figure 4-4).

The area underlain by Beaufort beds contains many small and a few large deposits of uranium. No uranium deposits are shown for Schanskraal, although a small deposit is located just north of the farm. Sandstone and dolerite stones are widely used for construction of buildings in the area.

4.1.3 Soils and Land Capability

Land capability is directly associated with soil form and slope.

Regionally, hills consist of caved sandstone with a shallow covering of loose sandy soil. The flatter slopes and undulating territory have a deeper layer of loose sandy topsoil underlain either by decomposed shales and mudstones or by sandstones (Pixley Ka Seme District Municipality, 2011).

Schanskraal Farm is characterised by rocky outcrops and alluvial soil deposits. Rocky outcrops with limited soil covering are located over extensive portions of Schanskraal Farm. Soils are found in between rock outcrops and overlying rocks at shallow depths. These soils are associated with dolerite or Beaufort rock group sediments, but tend to be more reddish in colour and of heavier texture when derived from the dolerite.

Alluvial soils are associated with riverbeds and drainage courses and are present in the flatter areas and wide valleys of the site. Alluvial soils have varying depths and marked differences in textural characteristics. These soils are generally associated with water courses and are therefore important in the context of the predominately dry surrounding catchment. Episodic rivers and rocky streambeds serve to channel water from mountainous areas in the region.

Due to the largely shallow profiles and arid environment, Karoo soils are considered to have low agricultural potential (Golder Associates, 2011b).

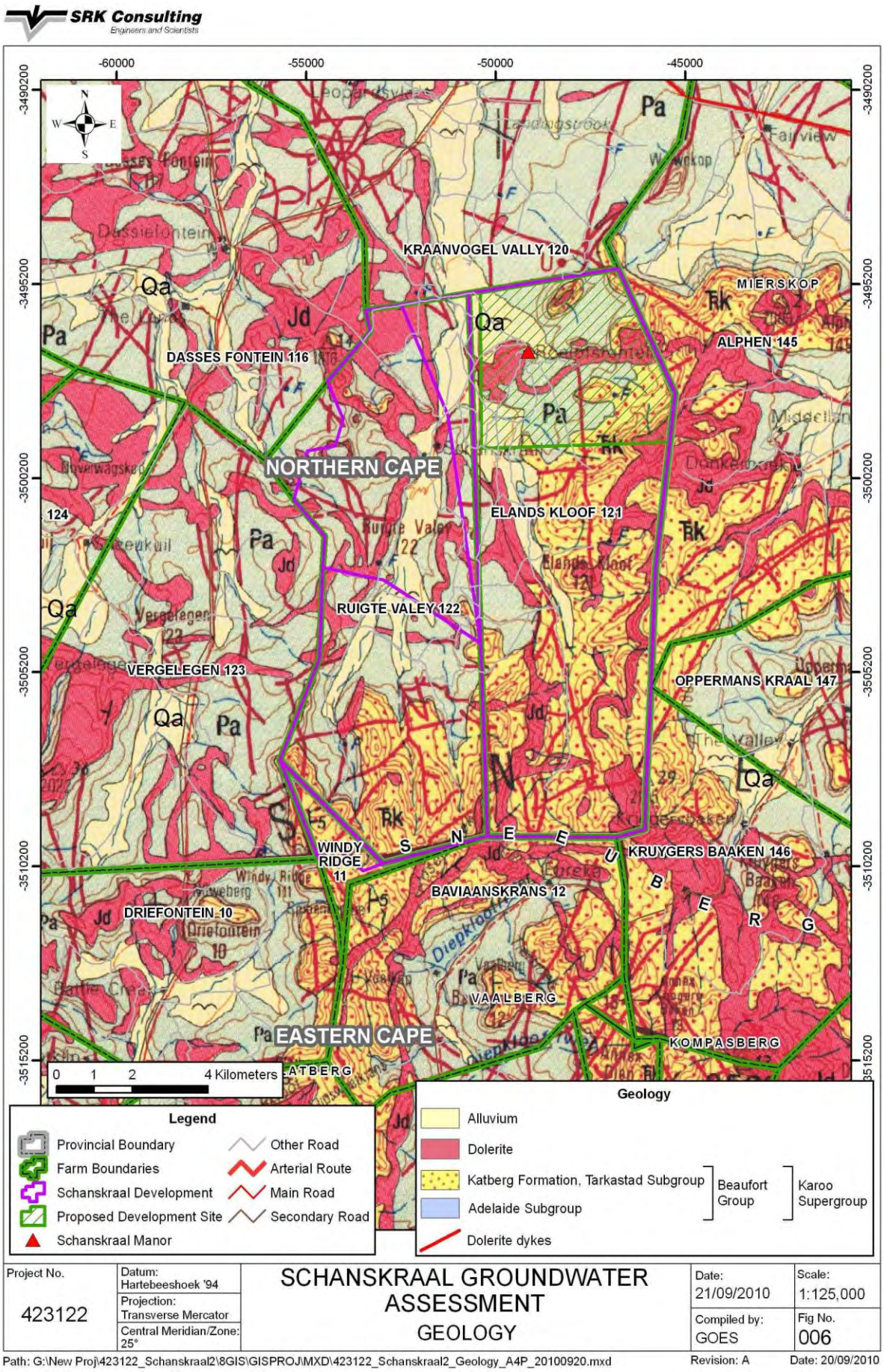


Figure 4-4: Geology of the project area

4.1.4 Climate

4.1.4.1 General Description of Regional Climate

The study area falls within the BSk (cold arid steppe) climate subtype of the Tropical and Subtropical Steppe Climate, as classifies by the Köppen Climate Classification system. This climate type occurs primarily on the periphery of true deserts in low-latitude semiarid steppe regions. It is transitional to the tropical wet-dry climate on the equatorward side and to the mediterranean climate on its poleward margin, with a cooler, wetter winter resulting from the higher latitude and mid-latitude frontal cyclone activity. Annual precipitation totals are greater than in tropical and subtropical desert climates. Yearly variations in amount are not as extreme as in the true deserts but are nevertheless large (www.weatherbase.com).

The site falls within the upper region of the Karoo and experiences moderate to hot summers. Winters are cold and dry with moderate frost occurring at night. Average annual temperature ranges between a maximum of 40°C and a minimum of 10°C. The coldest months are June and July, while January is the hottest month.

The area is located in a summer rainfall region. Rain occurs predominantly in the form of thunderstorms and 60% of the average annual rainfall falls between October and April. Mean annual rainfall ranges from 130 mm to 300 mm per year. The region experiences periodic severe droughts as well as frequent heavy rainfalls with the possibility of flooding. Humidity is low at approximately 43% (Pixley Ka Seme District Municipality, 2011).

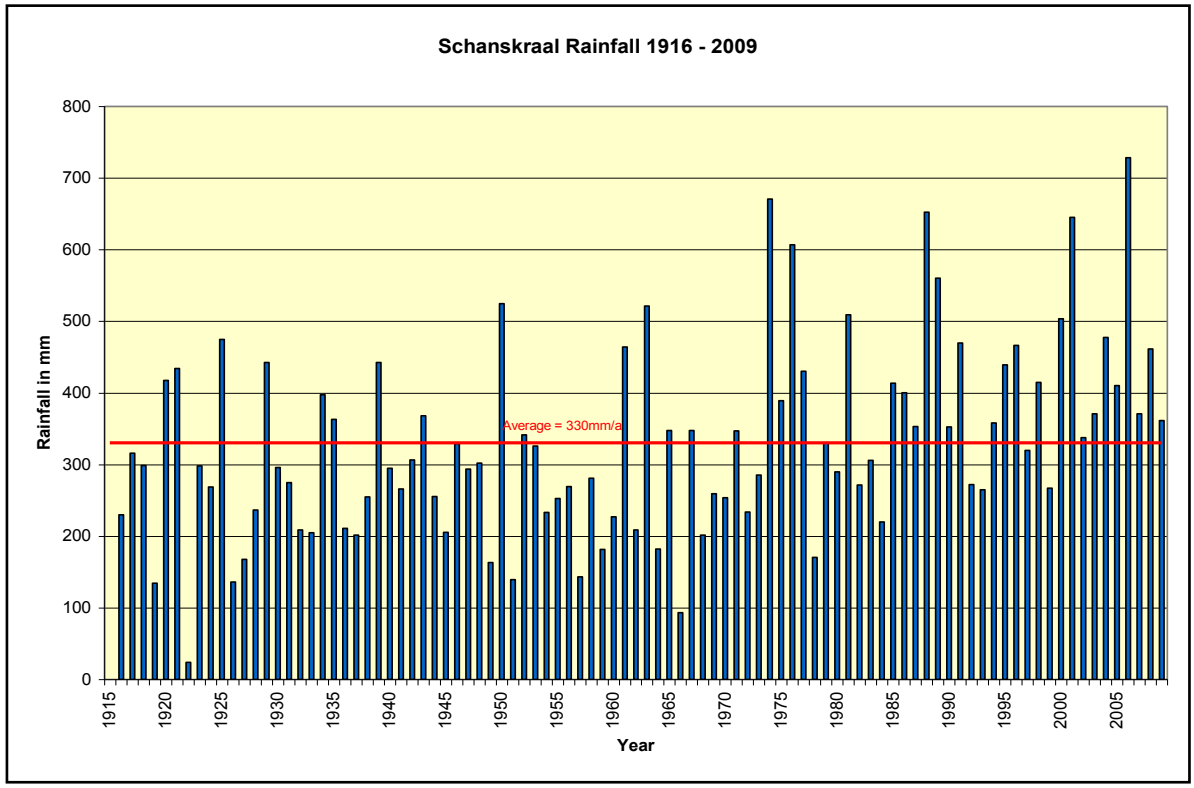
4.1.4.2 Rainfall

The mean annual precipitation for Quaternary catchment D32A, which includes the site, is 314 mm (DWAF, 2005). Rainfall data collected at Schanskraal since 1916 is shown in Figure 4-5. Based on these records, the mean annual precipitation for Schanskraal is 330 mm, or slightly higher than the average reported for the catchment[8].

The 10-year average precipitation shown in Figure 4-6 indicates that precipitation in the study area has increased over the monitoring period. The data show an increase in average precipitation from approximately 275 mm/a in the 1920s to more than 450 mm/a in the 2000s.

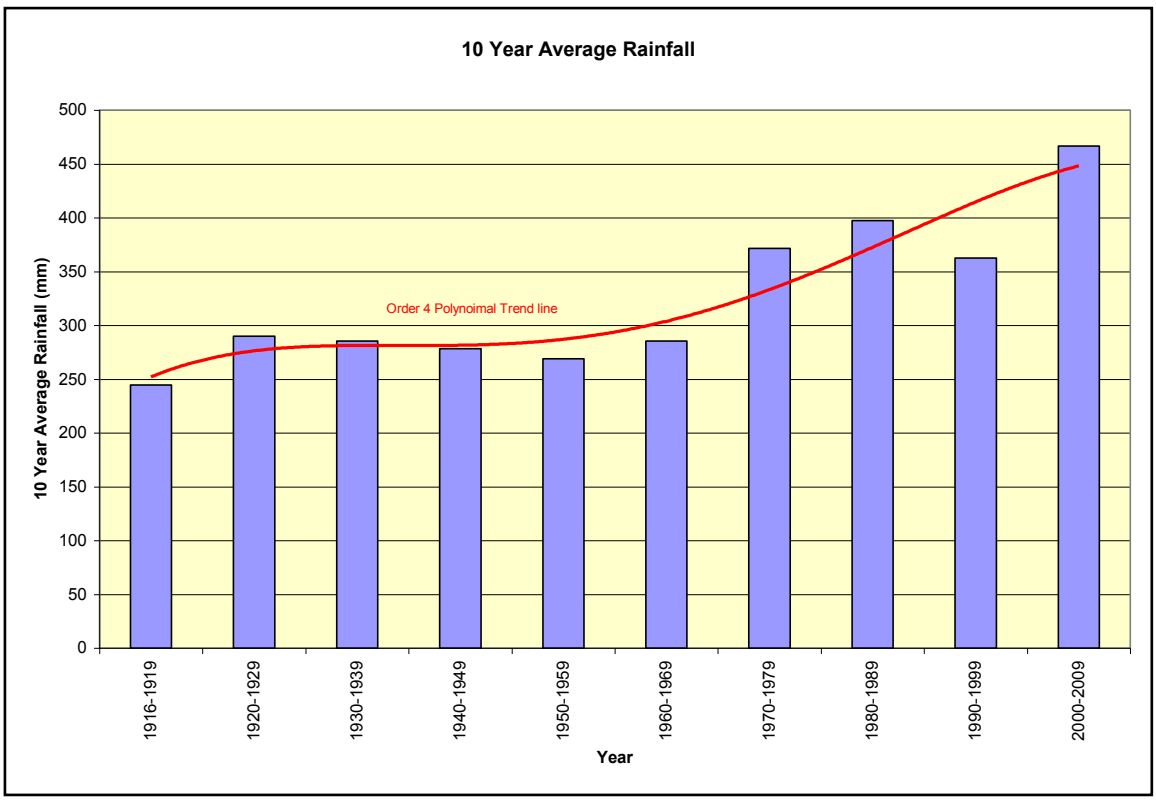
Figure 4-7 shows mean annual precipitation across the study area. Precipitation is significantly higher on the high-lying areas in the southern portion of the farm, while the proposed development site lies in the lower rainfall area in the northern portion of the farm.

[8] The mean annual precipitation of the catchment is based on a number of rainfall stations. The difference in the mean annual precipitation for the catchment and the site reflects regional variations in rainfall.



srk consulting	**Schanskraal Sporting Estate** Rainfall	Project No. 424086

Figure 4-5: Annual precipitation recorded on Schanskraal since 1916



srk consulting	**Schanskraal Sporting Estate** Rainfall	Project No. 424086

Figure 4-6: Ten-year average rainfall trend at Schanskraal

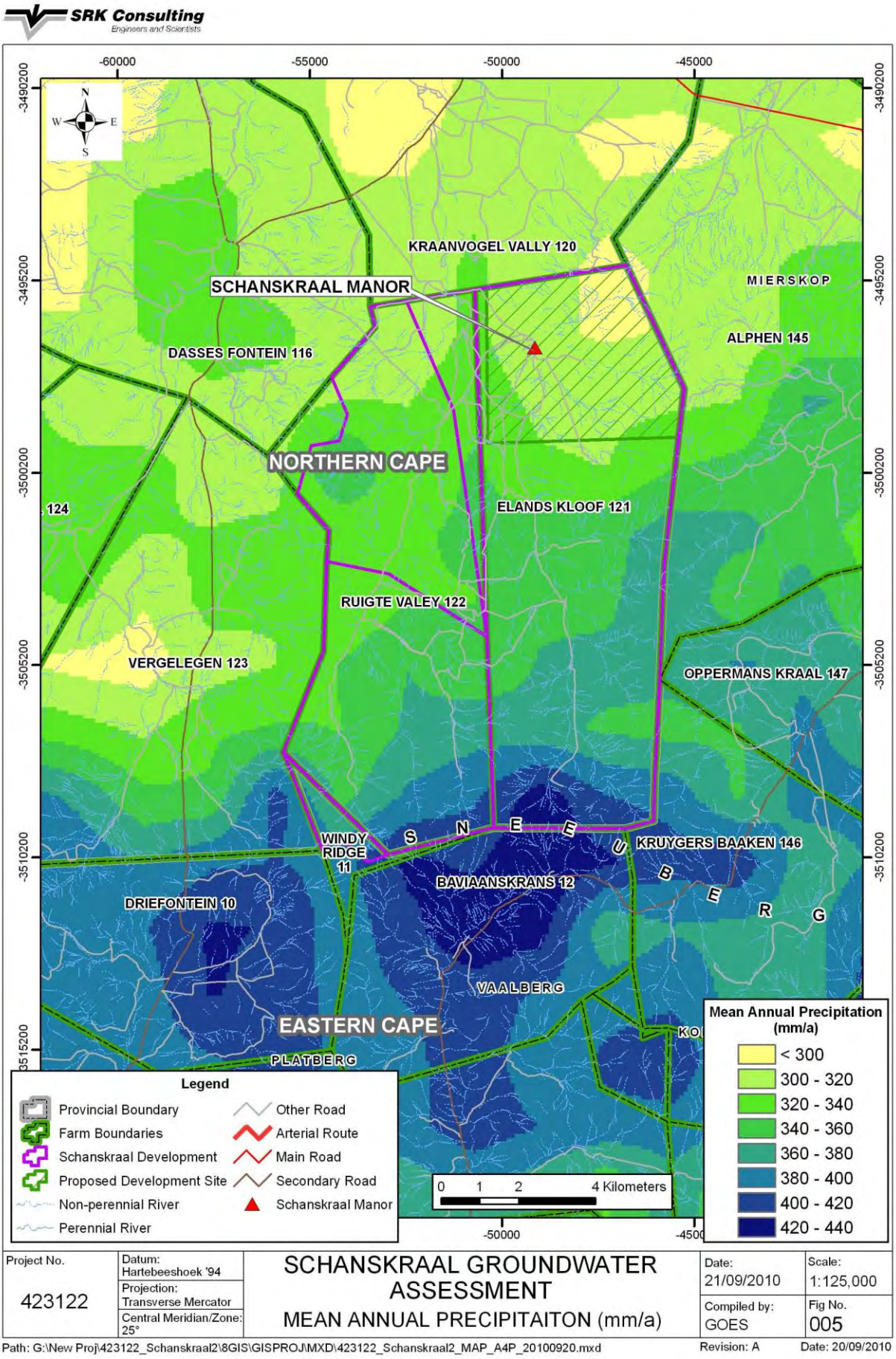


Figure 4-7: Mean annual precipitation in the Schanskraal study area

4.1.4.3 Ambient Temperature

Temperature information was obtained from the South African Weather Service historical climate data (WeatherSA, 2011) for the weather station nearest to the site, i.e. De Aar, located approximately 100 km to the north west of the project site. The data is considered suitable for the purposes of this report as there are no noteworthy physical barriers between De Aar and the site that would result in significant variation in temperature. However, because of the local topography of the site (see Figure 4-1), some variation in local temperatures across the site is expected.

The annual average maximum and minimum temperatures in the region are 25°C and 9°C. The coldest months are June and July, with monthly maximum and minimum temperatures of 16°C - 17°C and 1°C, respectively. In January, the warmest month of the year, monthly maximum and minimum temperatures reach 32°C and 16°C, respectively (see Table 4-2).

Maximum and minimum temperatures vary significantly in the study area and higher temperatures during the summer months correspond with increased rainfall.

Table 4-2: Monthly average temperatures in De Aar for the 30-year period 1961 – 1990

Month	Average maximum (°C)	Highest recorded (°C)	Average minimum (°C)	Lowest recorded (°C)
January	32	40	16	7
February	31	38	15	4
March	28	37	13	1
April	24	34	9	-1
May	20	30	4	-5
June	16	26	1	-7
July	17	25	1	-8
August	19	28	2	-8
September	23	35	6	-5
October	26	36	9	-3
November	29	38	12	-1
December	31	39	14	3
Year	25	40	9	-8

Source: WeatherSA, 2011

4.1.4.4 Wind

The prevailing wind is north easterly, though wind speeds of more than 5 m/s occur less than approximately 25% of the time for north easterlies. Wind is also experienced from the south west at a lower frequency but higher velocity than winds from the east (typically wind is blowing from the south west at more than 6 m/s 50% of the time) (Burger, 2011).

4.1.5 Air Quality

Regionally, the most likely local sources of air pollution are dust storms, burning waste, burning coal or firewood for cooking or heating, localised mining activities, burning of crop residues and veld management or accidental fires (Pixley Ka Seme District Municipality, 2011).

There are no significant sources of air pollution in the study area. Farming activities generate limited emissions, mainly airborne particulates. It is therefore expected that air quality in the project area is good. The majority of the roads in the development area are dirt roads and small volumes of dust are generated by the movement of vehicles.

4.1.6 Noise

There are no significant sources of noise in the area, and very few noise receptors. Some noise may be propagated by vehicles travelling through the area, although levels of traffic are extremely low.

4.1.7 Hydrology

The study area falls within the D32A Quaternary catchment. The non-perennial Elands Kloof River and a net of non-perennial tributaries are located on the Schanskraal Farm (DWA, 2004) (see Figure 4-7). There are numerous other small non-perennial and episodic streams on the site. The Elands Kloof River and other streams on the site flow in a northerly direction, draining into the perennial Seekoei River.

Three small wetlands / dams have been constructed in the area; two of these are located close to the Burgersrust Lodge (see Figure 4-8) and one is located close to the Manor House. No rivers or wetlands considered National Freshwater Ecosystem Priority Areas are situated on the development site.

srk consulting	**Schanskraal Sporting Estate** Burgersrust Dam	Project No. 424086

Figure 4-8: Burgersrust Dam on the development site

4.1.8 Hydrogeology

Most of the site is underlain by Beaufort Group rock. Dolerite intrusions result in intermittent occurrences of intergranular and fractured-rock aquifers (see Figure 4-9) that are approximately 110 m thick and consist of a 40 m thick weathered zone and a 70 m thick fractured zone (DWAF, 2005). The study area is classed as a major aquifer at a regional scale (DWA, 2012).

Based on the findings of the GRA-II project (DWAF, 2005), the study area is for the most part classified as being of medium vulnerability with occurrences of low vulnerability in the south[9] (see Figure 4-10).

[9] Aquifer vulnerability is defined as the likelihood for contamination to reach a specified position in the groundwater system after being introduced at some point above the uppermost aquifer.

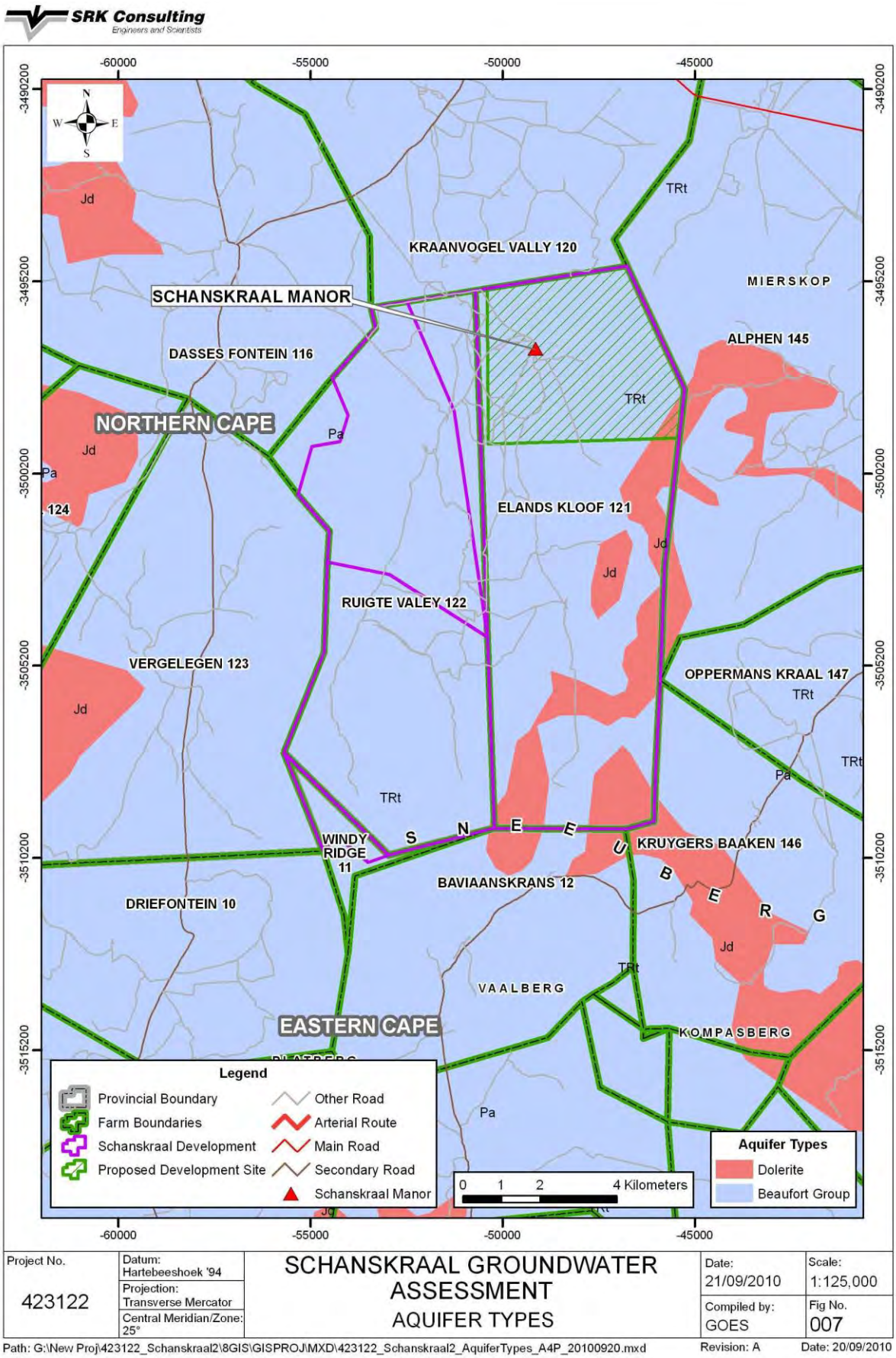


Figure 4-9: Aquifer types at Schanskraal

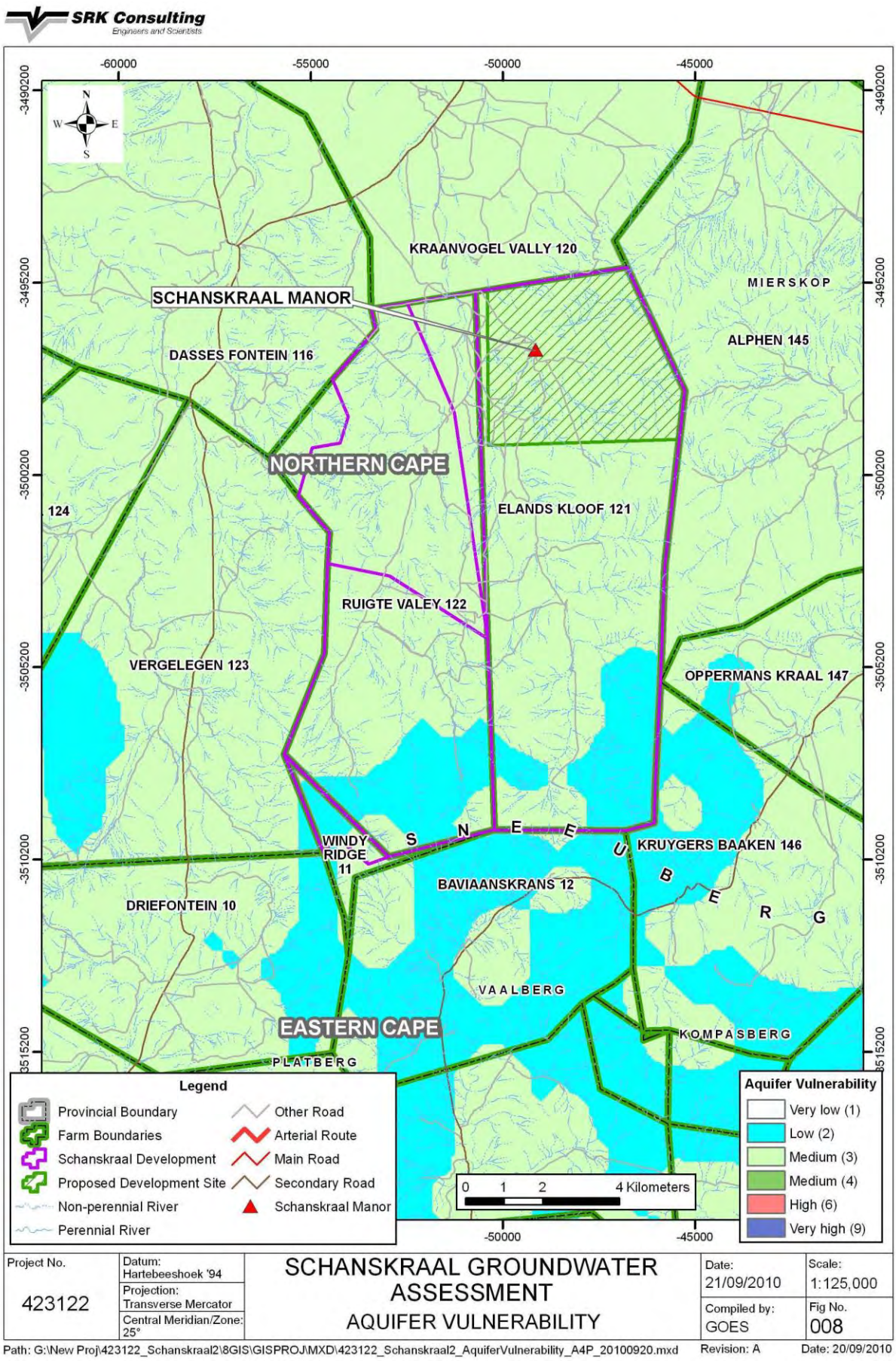


Figure 4-10: Aquifer vulnerability at Schanskraal

The property lies in a geologically favourable location along a prominent drainage channel that is intersected by several dolerite intrusions, which will contribute to higher than average borehole yields and success rates. The presence of several springs in the area could also indicate that this area has good groundwater potential.

The groundwater exploitation potential of the catchment varies between 6.7 and 5.4 Mm^3/annum, depending on the season. Effective mean annual recharge is estimated at:

- 1.04 Mm^3/a for Farm No. 121 Elands Kloof, or 4.6% of the mean annual precipitation of approximately 346 mm; and
- 0.95 Mm^3/a for Farm No. 122 Ruigte Valey, or 4.4% of the mean annual precipitation of 344 mm.

The GRA-II data (DWAF, 2005) indicate that the groundwater exploitation potential for the Schanskraal Groundwater Resource Unit[10] varies between approximately 1.2 Mm^3/annum during wet years and approximately 1 Mm^3/annum during dry years.

Field measurements of electrical conductivity indicate that the groundwater is of very good quality and likely suitable for irrigation purposes and long-term human consumption.

4.1.9 Flora

4.1.9.1 Regional Context

The development area falls within the semi-arid Nama Karoo Biome which is known for its unreliable summer rainfall and periodic episodes of drought. The landscape is characterized by gently sloping sandy, rocky plains with scattered igneous bolder outcrops and flat topped mesas. The plains of the Nama Karoo are dominated by low shrubs (chamaephytes), succulents, grasses (graminoids/ hemicryptophytes) and annual forbs (Mucina & Rutherford 2006).

The biome has remained largely untransformed by land uses that threaten natural diversity in other regions, such as cultivation, dams and industry. The biome's flora is not particularly species rich compared to other South African biomes and contains no centre of endemism. There are very few plant Species of Conservation Concern (SCC) in the region and the biome is categorised as being Least Threatened (Golder Associates 2011a, Mucina & Rutherford 2006).

A number of natural disturbance factors drive vegetation dynamics in the region. These include grazing (by domestic livestock, wild herbivores and insects), fire, rainfall and runoff (which results in erosion). Although fire events in the Nama-Karoo are rare, recovery is extremely slow. High intensity rainfall events coupled with low vegetation cover (exacerbated by grazing and aridity) can result in sheet erosion, and overgrazing by domestic livestock can be detrimental to biodiversity and agricultural productivity (Mucina & Rutherford 2006).

4.1.9.2 Local Vegetation Types

The proposed development area falls within two vegetation types as identified by Mucina and Rutherford (2006):

- Eastern Upper Karoo (NKu4) vegetation occurs on the slopes and foot slopes of the development area. The vegetation type occurs mostly on mudstones and sandstones from the Beaufort group. It is characterised by the 'white' grass and dwarf shrub-dominated flats and gently undulating plains of the Upper Karoo. The sloping plains associated with this vegetation type are often interspersed with hills and rocky outcrops of the Upper Karoo Hardeveld.

[10] Groundwater Resource Units represent areas where the broad geohydrological characteristics (i.e. water occurrence and quality, hydraulic properties, flow regime, aquifer boundary conditions etc.) are anticipated to be similar.

Dominant grass genera are *Aristida* and *Eragrostis*. Only 2% of the total extent of this vegetation type has been transformed and the vegetation type is categorised as being Least Threatened; and

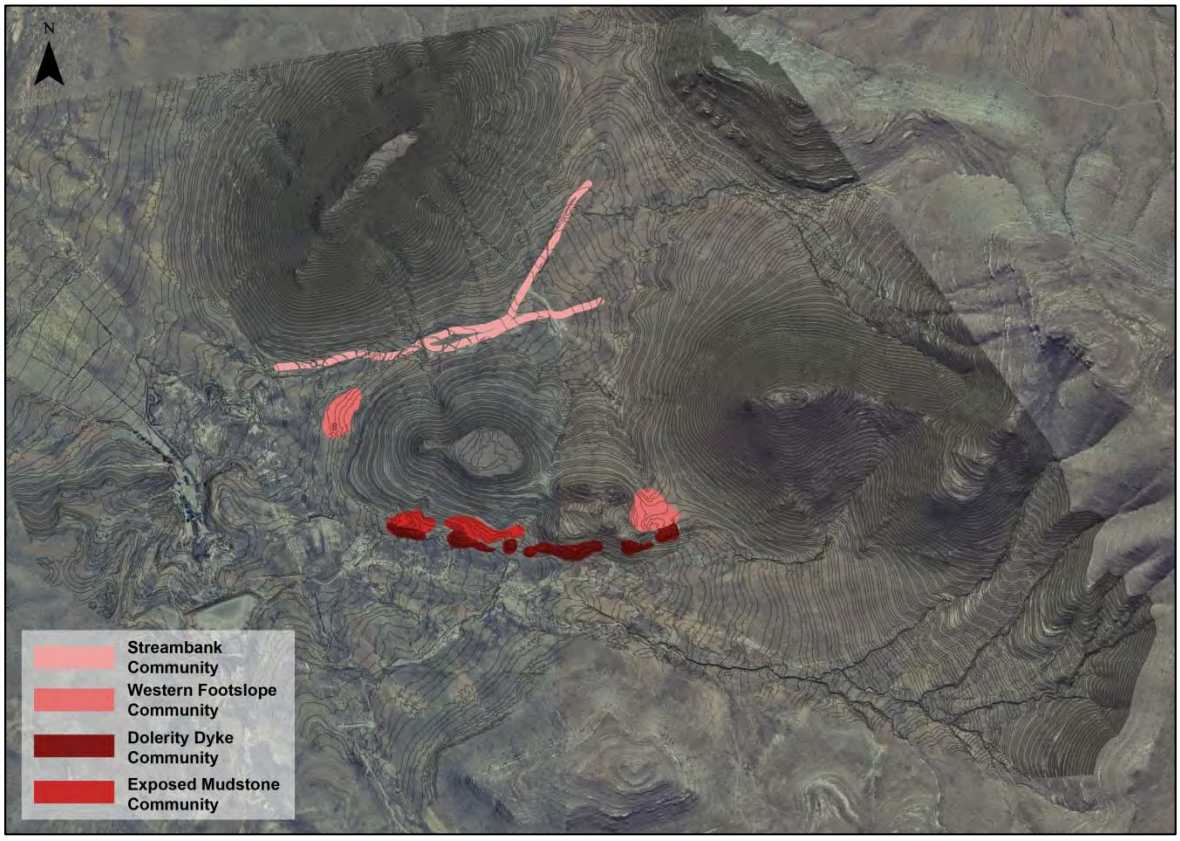
- Upper Karoo Hardeveld (NKu2) vegetation occurs on the upper slopes and plateaus of the mountains and hills. The vegetation type is characterised by sparse dwarf Karoo scrub interspersed with drought tolerant grasses. It typically occurs on koppies, butts and mesas, covered with stones and large boulders. The dominant genera are *Aristida*, *Eragrostis* and *Stipagrostis* (ACE 2007). Although the Nama Karoo is characterised by low levels of biodiversity, the *Upper Karoo Hardeveld* is one of the richer vegetation types in the biome. The highest numbers of local endemics are concentrated here. However, much of the vegetation type remains untransformed and the conservation status of the Upper Karoo Hardeveld is Least Threatened (Mucina & Rutherford 2006).

4.1.9.3 Plant Communities and Ecosystems

Six plant communities were identified in the development area: five karroid communities and one streambank community. An overview of the species richness and ecological sensitivity of the six plant communities is provided in Table 4-3. A detailed description of each plant community is provided below, while an indicative distribution of highly sensitive plant communities in the development area is provided in Figure 4-11.

Table 4-3: Plant communities, species richness and sensitivity rating

Plant Community	Species Richness	Sensitivity Rating
Dolerite dyke community	Medium	High
Southern Footslope community	Medium	Medium - Low
Northern Footslope community	Low	Medium - Low
Western Footslope community	Medium	High
Exposed mudstone community	Low	High
Streambank community	Low	Medium - High



srk consulting	**Schanskraal Sporting Estate** Distribution of highly sensitive plant communities	Project No. 424086

Figure 4-11: Indicative distribution of highly sensitive plant communities

Note: Only the development footprint and not surrounding areas that are also included in the above map were surveyed for this study.

Dolerite Dyke Community

The Dolerite Dyke community consists of fragmented, high-lying shrubland on dolerite outcrops. The community is characterised by the presence of dolerite boulders and surface rocks. It is dominated by the shrubs *Searsia burchellii*, *S. dregeana*, *Asparagus laricinus* and *Diospyros austro-africana*, karroid shrubs such as *Elytropappus rhinocerotis* (D), *Pteronia mucronata*, *Euryops annae* (d), *Pentzia sphaerocephala*, *Chrysocoma ciliata*, *Pentzia quinquefida*, *Felicia filifolia*, *Felicia muricata*, *Selago saxatilis*, *Eriocephalus ericoides*, *Nenax microphylla*, the forbs *Tripteris aghilliana*, *Berkheya pinnatifida* (w), *Asparagus glauca*, *A. suaveolens* as well as the grasses *Aristida adscensionis* (D), *A.congesta*, *A diffusa*, *Heteropogon contortus*, *Eragrostis chloromelas*, and *E. lehmanniana* (d).

No protected species or SCC were found in this community. However, the community is unique in terms of species composition (i.e. species associations) and is regarded as being highly sensitive, especially in the local context. However, at a regional level, the Dolerite Dyke community is relatively widespread and could be considered relatively common at a regional scale.

srk consulting	**Schanskraal Sporting Estate** Dolerite Dyke Community	Project No. 424086

Figure 4-12: Dolerite Dyke Community

Southern Footslope Community

This karroid shrubland occurs on exposed sedimentary layers (mudstones, siltstones and sandstones) along the mountain slopes. Slopes are strewn with rocks and smaller stones.

Elements of the Upper Karoo Hardeveld are present in this Southern Footslope community. The community consists of karroid shrubs such as *Melilobium humile*, *Eriocephalus ericoides*, *Pteronia mucronata*, *Phymaspermum aciculare*, *Euryops annae*, *Nenax microphylla*, *Pelargonium abrotanifolium*, *Diospyros austro-africana* and *Elytropappus rhinocerotis*. Prominent grasses are *Aristida adscensionis* (D), *A. congesta*, *Eragrostis curvula*, *E. lehmanniana* (d) and *Themeda triandra*. *Merxmuellera stricta*, a C3-grass that dominates the mountainous areas of the Eastern Cape was recorded. Two succulent species, namely *Euphorbia mauritanica* and *Senecio radicans* were noted in this community.

No protected species or SCC were found. The community has relatively low biodiversity conservation importance at a regional or national level and is therefore considered to be of Medium – Low sensitivity.

srk consulting	**Schanskraal Sporting Estate** Southern Footslope Community	Project No. 424086

Figure 4-13: Southern Footslope Community

Northern Footslope Community

Similar to the Southern Footslope community, this karroid shrubland also occurs on exposed sedimentary layers on the mountain slopes and slopes are strewn with rocks and smaller stones. However, the vegetation cover is sparser than the south- facing southern slope community because of the direct exposure to the sun on the northern footslope.

srk consulting	**Schanskraal Sporting Estate** Northern Footslope Community	Project No. 424086

Figure 4-14: Northern Footslope Community

The community consists of similar karroid shrubs as the Southern Footslope community except for the presence of the shrub *Searsia burchellii*, and the absence of species such as the shrubs

Diospyros austro-africana, *Elytropappus rhinocerotis* and the succulent *Senecio radicans*. No Protected species or SCC were found. The community has relatively low biodiversity conservation importance at a regional or national level and is therefore considered to be of Medium – Low sensitivity.

Western Footslope Community

This karroid shrubland is situated on the west facing footslopes of the hills. Similar to the Southern and Northern Footslope communities, the geology consists of sedimentary layers with slopes covered in rocks and smaller stones.

srk consulting	**Schanskraal Sporting Estate** Western Footslope Community	Project No. 424086

Figure 4-15: Western Footslope Community

This is a variation of the Northern Footslope community in that a number of succulents are present on the open exposed patches. The succulents *Stomatium braunsii*, *Chasmatophyllum musculinum* and a species of *Hereroa* were recorded. No Red Data or SCC were found, but the abovementioned succulents are Protected species. This community, and especially the sparsely covered soil areas, are considered to be locally rare of High sensitivity.

Exposed Mudstone Community

The Exposed Mudstone community is situated on the northern side of the dolerite dyke outcrop. A few species occur here, on large barren patches, including *Rhadamanthus* sp.

No SCC were found to be present, but a number of Protected plant species were found in this community, e.g. *Avonia ustulata* (see Figure 4-17).

These Exposed Mudstone patches are unique habitats which support a highly sensitive community that is prone to erosion. The Exposed Mudstone community is unique, small in size and relatively rare.

srk consulting	**Schanskraal Sporting Estate** Exposed Mudstone Community	Project No. 424086

Figure 4-16: Exposed Mudstone Community

srk consulting	**Schanskraal Sporting Estate** *Avonia ustulata*	Project No. 424086

Figure 4-17: *Avonia ustulata*

Streambank Community

Several minor non-perennial streams drain the slopes of the mountains in the project area. Ecosystems with specific biodiversity have established along these drainage courses. The development area falls within the vicinity of one of the tributaries to the Seekoei River. The vegetation surrounding this non-perennial stream can be classified as the Streambank community. Runoff from the mountains is high in this community and erosion gullies are deep. The absence of topsoil also contributes to the sparse distribution of plants in this community.

Non-perennial streams of this nature are common in the region and the Streambank community is not unique at a regional scale. However, all streams in South Africa are considered to be ecologically sensitive and although no Protected species were found in the Streambank community, the community is considered to be of Medium - High sensitivity.

srk consulting	**Schanskraal Sporting Estate** Streambank Community	Project No. 424086

Figure 4-18: Streambank Community

4.1.10 Fauna

4.1.10.1 Mammals

Large herds of indigenous migratory ungulates and predators once roamed the Nama Karoo. While these have now been mostly replaced by domestic livestock, a number of medium to large mammal species are still known to occur in the study area. These include Kudu, Gemsbok, Springbok, Blesbok, Zebra, Klipspringer, Caracal, Jackal, Steenbok, Aardwolf and Baboon.

Several mammal species were observed on site, including *Cynictis penicillata* (Yellow Mongoose), Aardvark (*Orycteropus afer*), African Wild Cat *(Felis silvestris lybica)* and Cape Ground Squirrel (*Xerus incurs*). The Dolerite Dyke community was found to be particularly rich in fauna species, with evidence of a number of rodent species occurring here.

A number of mammal SCC occur in the Nama Karoo region. These include: Riverine rabbit (*Bunolagus monticularis*), White-tailed mouse (*Mystromys albicaudatus*), Mountain zebra (*Equus zebra zebra*), Karoo rock sengi (*Elephantulus pilicaudus*), Black-footed cat (*Felis nigripes*), Brown hyaena (*Hyaena brunnea*) and Leopard (*Panthera pardus*). None of these species were directly or indirectly observed in the study area. Following discussions with local residents in the area, spatial distribution mapping data and field observations, none of these species are expected to occur at Schanskraal Farm (Mills & Hes 1997, Golder Associates, 2011a).

srk consulting	**Schanskraal Sporting Estate** Cape ground squirrel	Project No. 424086

Figure 4-19: Cape ground squirrel (*Xerus inauris*)

4.1.10.2 Avifauna

Approximately 130 bird species are expected to occur in the region according to the South African National Biodiversity Institute's (SANBI) SIBIS website, some of which are listed as SCC. These include Secretary bird (*Sagittarius serpentarius*), Martial eagle (*Plemaetus bellicosus*), Lesser flamingo (*Phoenicopterus minor*), Ludwig's bustard (*Neotis ludwigii*) and Blue bustard (*Eupodotis caerulescens*). None of these species were observed on the site, and no sensitive habitats or breeding areas were observed in the vicinity of the site. It is unlikely that any other avifaunal SCC are dependent on any ecological resource / habitat within the site or that the development will have any adverse effects on any of these species.

srk consulting	**Schanskraal Sporting Estate** Karoo scrub-robin	Project No. 424086

Figure 4-20: Karoo scrub-robin (*Cercotrichas coryphoeus*)

Blue cranes (*Anthropoides paradiseus*) are also listed as a SCC. Blue cranes were not directly observed on the site, but are expected to occur in the vicinity of the development area. It is highly unlikely that any breeding areas or sensitive Blue crane habitat will be disturbed by the development, but they are susceptible to fatal collisions with overhead powerlines.

4.1.10.3 Reptiles

Although there is a paucity of data regarding the conservation classification of reptilian species in the region, no reptilian SCC are expected to occur in the development area and none were directly observed on site. It is expected that a number of reptilian species may favour rocky dolerite outcrops and the Dolerite Dyke community.

4.1.10.4 Amphibians

Ten amphibian species are expected to occur within the vicinity of the development area, but not within the proposed development footprint. The distribution range of one amphibian SCC falls within the study area, the Giant bullfrog (*Pyxicephalus adspersus*). Field observations concluded that no suitable habitat for this species occurs within the vicinity of the development area and this species is not expected to occur in the area. It is therefore not expected that any amphibian species will be adversely affected by the development.

4.2 Sensitive Areas

The sensitivity of areas in the development site was rated and mapped (see Figure 4-21) based on the sensitivity and distribution of plant communities and the gradient of slopes, where:

- Slopes steeper than 1:4 (25%) are considered to have High sensitivity (development / disturbance of these slopes is not recommended);
- Slopes steeper than 1:5 (20%) are considered to have Medium-High sensitivity (development / disturbance of these slopes is not recommended); and
- Slopes between 1:8 (12.5%) and 1:5 (20%) are considered to have Medium-Low sensitivity (disturbance of these slopes is discouraged).

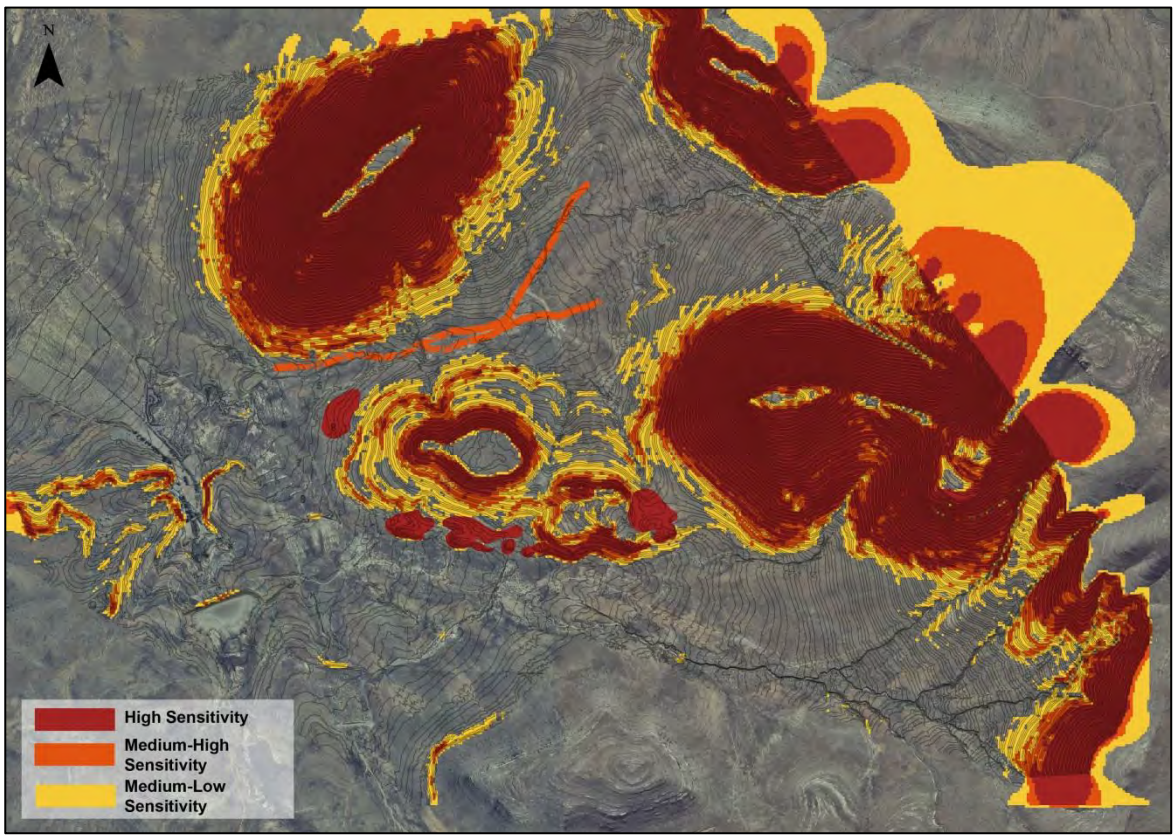


Figure 4-21: Schanskraal Sporting Estate composite sensitivity map

4.3 Socio-Economic Environment

4.3.1 Regional Context

The project site is located in the Ubuntu Local Municipality, which itself forms part of the Pixley Ka Seme District Municipality, one of five district municipalities in the Northern Cape Province. The Northern Cape is the largest and least densely populated province in South Africa. Some 2.2% of the South African population (or approximately 1.14 million people) resided in the province in 2011. Important economic activities in the province include mining, intensive agriculture in areas where water is available, especially along the banks of the Orange River, and extensive agriculture, particularly sheep raising, in the largely arid southern areas. Mining made the highest contribution to provincial GDP (26.7% in 2013), but only employed 3.6% of the provincial workforce in 2011, a drop from 7.8% in 2003. The Services sector, followed by Trade and Agriculture, employed the most people. The provincial unemployment rate was 28.2% in 2011 (StatsSA, 2013).

The Pixley ka Seme District Municipality had 186 351 inhabitants in 2011 (StatsSA Census 2011), or ~16% of the provincial population. A number of key national transport routes traverse the district, including the N1 (Pretoria / Johannesburg to Cape Town), N9 (Colesberg to the N10 to Port Elizabeth / Eastern Cape), N12 (Johannesburg via Kimberley to Cape Town) and N10 (Namibia to Eastern Cape). Intensive crop farming takes place on the banks of the Orange and Vaal Rivers, which flow through the district municipality. However, water availability is a key constraint to development and economic activity in the Pixley ka Seme District (Pixley Ka Seme District Municipality, 2011).

The Ubuntu Local Municipality is the southern-most municipality in the district and borders the Western Cape and Eastern Cape Provinces. The local municipality is ~20 400 km^2 in size and has a population of 18 601, with an average population density of less than one person per km^2. The main town in the municipality is Victoria West. Other significant settlements in the local municipality include Richmond, Loxton and the small railway villages of Hutchinson and Merriman. The railway line that runs from Cape Town to Kimberley passes through the local municipality. The following socio-economic baseline focuses on the Ubuntu Local Municipality.

4.3.2 Demographics

The population of the Ubuntu Local Municipality grew by 14% in the ten years between 2001 and 2011 (compared to a provincial population grow rate of 39% and a national growth rate of 16%). The vast majority of the population in the municipal area (70%) is Coloured, followed by Black Africans (21%), Whites (8%) and Indians (1%). While the African, Coloured and Indian population groups experienced the increases, the White population group declined by 16% (see Figure 4-22).

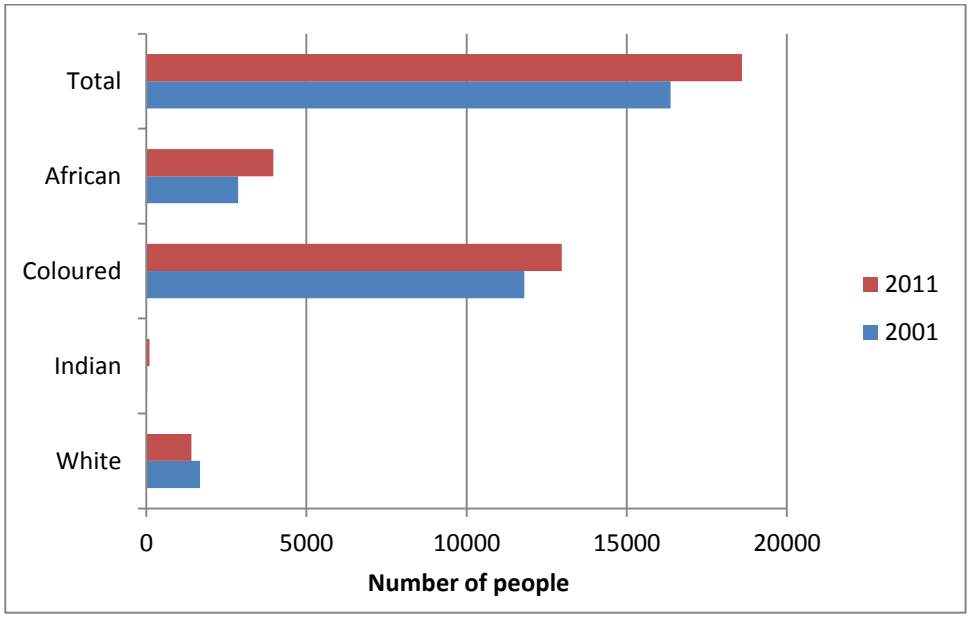


Figure 4-22: Population of the Ubuntu Local Municipality

Source: StatsSA Census 2001 and 2011

Approximately 61% of the population are of a working age (between 15 and 64 years old), while approximately 33% are below the age of 15, and 6% are over the age of 65. Proportions of these age groups relative to the whole population have remained stable between 2001 and 2011.

The dependency ratio, calculated as the proportion of children and elderly to the working age population, is 0.63. The dependency ratio indicates the degree of dependence of the non-productive portion of the population on the productive portion, and provides an indicator of the pressure on social services and household spending. The dependency ration is significantly higher than the national average (0.53), meaning there are more young and elderly in the Ubuntu Local Municipality than in South Africa on average. This indicates that government expenditure will have to focus proportionately more on social and community services as opposed to spending on more productive enterprises. This is likely to account for the disproportionately high government expenditure in the local economy (see Figure 4-28). Since only a fraction of people aged between 15 and 64 is employed, the actual ratio of people depending on economically productive members of the community is much higher.

4.3.3 Housing and Services

Housing is a basic human need and influences health, welfare and economic productivity. It is also a good indicator of standard of living. To achieve the Millennium Development Goals, South African Government Policy aims to ensure that people live in adequate housing conditions (Pixley Ka Seme District Municipality, 2011). In order to achieve this goal, informal dwellings and inadequate sanitation systems are to be eliminated and people should have access to electricity for lighting and clean, safe water within a reasonable distance.

The majority of households in the Ubuntu Local Municipality (88%) lived in formal dwellings in 2011, although the proportion has slightly reduced from 93% of households in 2001, which a corresponding increase in households living in informal dwellings from 3% in 2001 to 9% in 2011. The latter is equivalent to the proportion of informal dwellings recorded in 1996. Approximately 73% of households lived in urban areas in 2011, with the remainder located on farms. Some 80% of households have up to five household members.

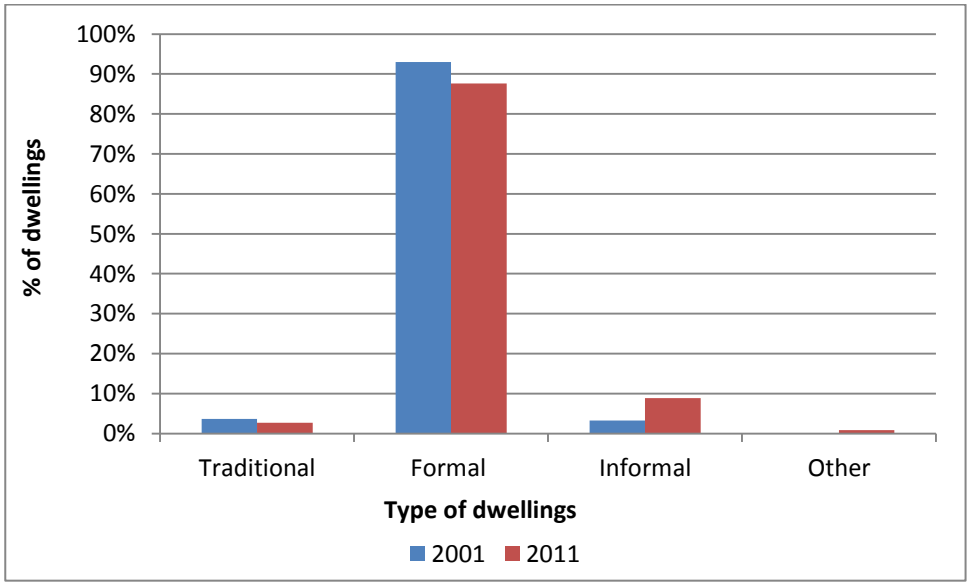


Figure 4-23: Dwelling types in Ubuntu Local Municipality

Source: StatsSA Census 2001 and 2011

Service levels are relatively high in the Ubuntu Local Municipality. The vast majority of households have access to piped water inside their dwelling or yard, flush toilet and electricity. The majority of households is also serviced by municipal refuse removal or other forms of waste management. Only 6% do not have any form of refuse removal. Some 14% of households in the local municipality continue to use pit or bucket toilets (see Figure 4-24).

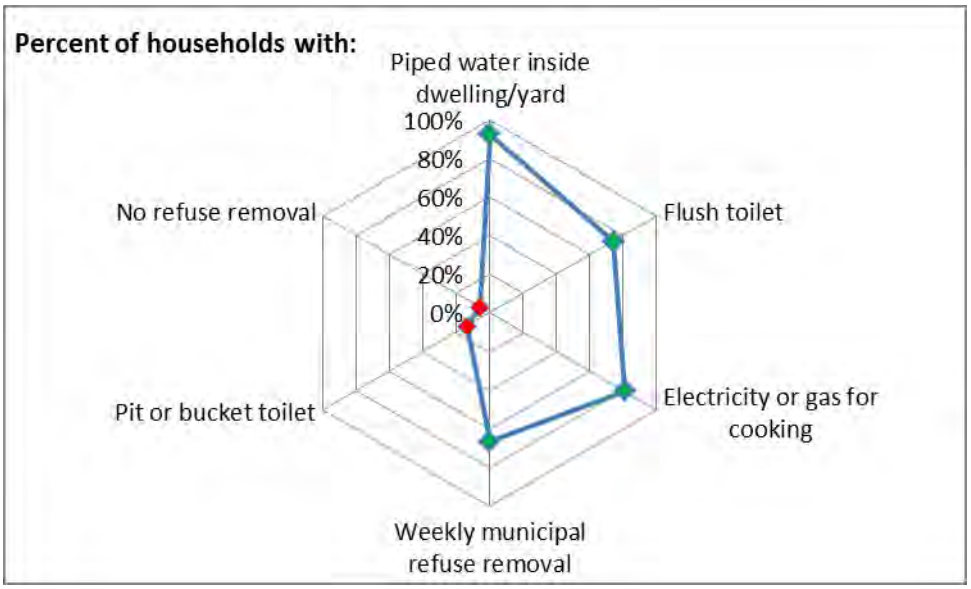


Figure 4-24: Services in Ubuntu Local Municipality

Source: StatsSA Census 2001 and 2011

4.3.4 Employment

While the official unemployment rate in the Ubuntu Municipality at 29% is similar to that in the district and the province, labour market participation appears to be significantly higher in Ubuntu at 62%, compared to participation rates of just over 50% in the district and province (see Figure 4-25), implying that a larger proportion of the population aged 15 – 64 is either working or actively looking for work. The youth unemployment rate in Ubuntu is significantly higher than the overall unemployment rate at 38% (StatsSA Census 2011). Some 69% of the employed work in the formal sector of the economy, while 19% are active in the informal sector and 11% are employed in private households (StatsSA Census 2011).

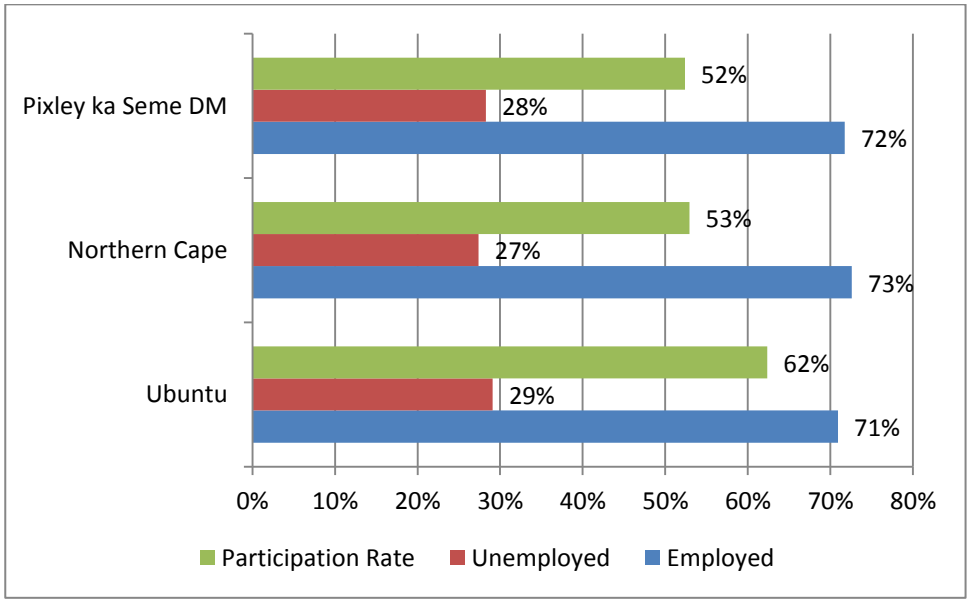


Figure 4-25: Employment in Ubuntu Local Municipality

Source: StatsSA Census 2001 and 2011

4.3.5 Household Income

Some 12% of households (591 households) earned no income in 2011, a proportion that has remained at the same level as in 2001. For the remainder of the population, however, income has generally shifted to higher income brackets – the proportion of households earning less than R19 600 per year (or approximately R1 600 per month) has halved, while the proportion of households earning higher income levels as increased relative to 2011. Nevertheless, 45% of local households still earn less than R19 600 per year, compared to 41% at district and provincial level, an indication of the social challenges facing the region. In addition, inflation between 2001 and 2011 implies that an annual income of R19 600 in 2001 would be equivalent to R32 816 in 2011. Adjustment for inflation will significantly lower the actual increase in income, if any, in real terms.

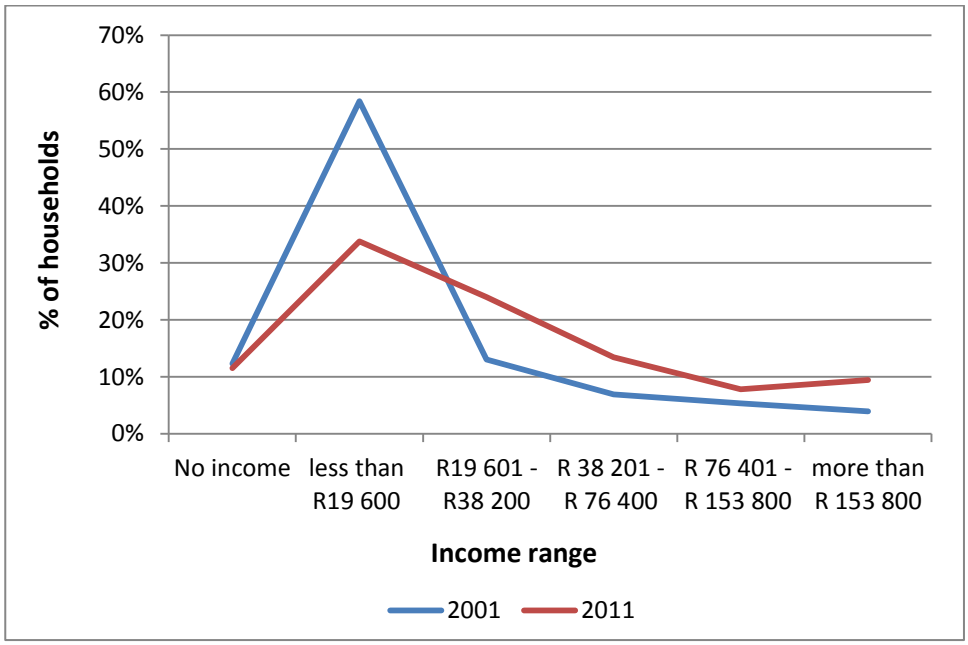


Figure 4-26: Annual household income in Ubuntu Local Municipality

Source: StatsSA Census 2001 and 2011

4.3.6 Education

Schooling levels are relatively low in the area but have improved since 2001. While the overall share of the population with a higher education (diplomas, certificates or a tertiary degree) has remained relatively stable at approximately 17%, the portion of the population that has no schooling has decreased significantly from 21% in 2001 to 11% in 2011. At the same time, the portion of the population that has attended some secondary schooling has increased from 24% in 2001 to 35% in 2011 (StatsSA Census 2001 and 2011, see Figure 4-27). Although concerning, lower levels of formal education can be anticipated in a largely rural community.

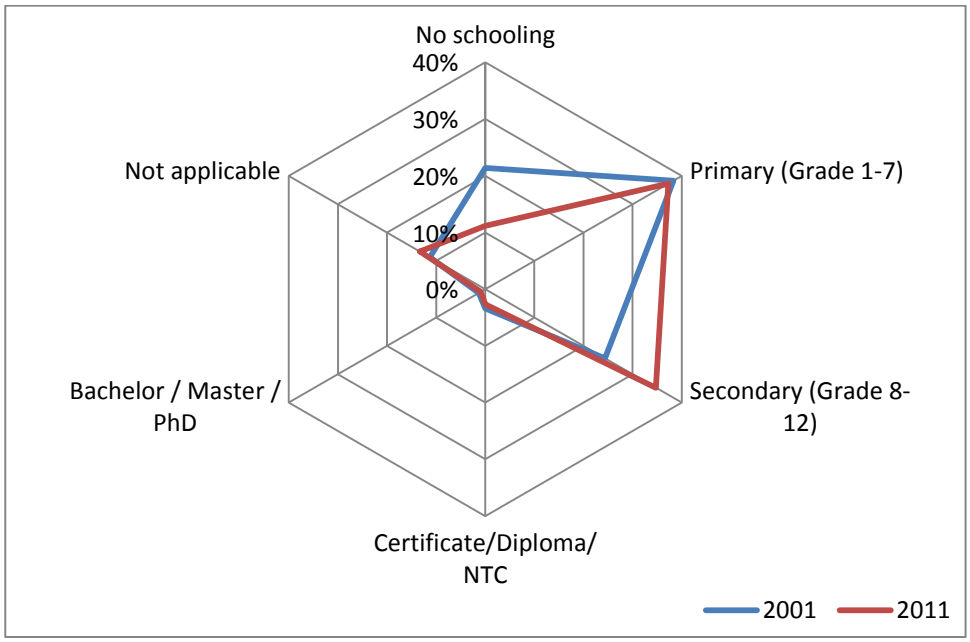


Figure 4-27: Education levels in the Ubuntu Local Municipality

Source: StatsSA Census 2001 and 2011

The local municipality has five crèches, 15 primary schools, three secondary schools and four libraries. Significant distances must often be travelled to access these facilities from rural areas, and many schools in the district lack essential services such as water, electricity and sanitation (Pixley Ka Seme District Municipality, 2011).

The only tertiary institution in the district municipality is located at De Aar, outside of the Ubunut Local Municipality. The institution offers courses like Marketing Management, Hospitality Services, Public Relations, etc. The existing capacity of tertiary institutions is not considered sufficient for long term education needs of the district (Pixley Ka Seme District Municipality, 2011).

4.3.7 Health and HIV/AIDS

The HIV prevalence in antenatal women in the Northern Cape is lowest in South Africa at 17.0% in 2011, and significantly below the national average of 29.5%. Prevalence in antenatal women in the Pixley ka Seme District Municipality was even lower at 15.1% in 2011, which makes Pixley ka Seme the district with the 5th lowest prevalence rate in antenatal women in South Africa (DOH, 2012).

HIV prevalence rates in the general population (15-49 years) are estimated at 9.2% in the Northern Cape and 17.3% in South Africa as a whole. Prevalence rates in the Northern Cape Province are relatively equal amongst the various age groups between 25 and 49, with a slight dip in people 35-39 years old that is equivalent to the prevalence rate of 20-24 year olds (DOH, 2012).

The 2002 Ubuntu HIV/AIDS Strategy notes that the municipality had a high incident of teenage pregnancies and sexually transmitted diseases, which is an indication that people, and youth in particular, are not practising safe sex. The area also had a high rate of alcohol abuse, which often leads to irresponsible sexual behaviour. The report noted that unemployment and poverty can lead to young women to become sex workers in order to earn money, further increasing the risk of spreading HIV/AIDS (Ubuntu Local Municipalities, 2002).

According to estimates by the District Council in 2002, approximately 10% of the total population were likely to be HIV positive in the area (Ubuntu Local Municipalities, 2002). Golder Associates (2011) reports that 6% of the population aged 15-49 years in the Ubuntu Local Municipality was HIV positive in 2010, with 22% of deaths in the municipality related to HIV/AIDS.

Other notable diseases in the area are tuberculosis, hypertension and diabetes mellitus. The prevalence of tuberculosis is appreciably higher in the Northern Cape (360 per 100 000) than the national average (254 per 100 000) and is expected to rise with the increase in HIV/AIDS prevalence. The tuberculosis cure rate in Pixley ka Seme is 62% (Pixley Ka Seme District Municipality, 2011).

Ubuntu municipality has three clinics and two hospitals in Victoria West, Richmond and Loxton, in addition to a further 30 health establishments and 7 hospitals in the district municipality (Pixley Ka Seme District Municipality, 2011). According to the 2002 Ubuntu HIV/AIDS Strategy, hospitals and clinics in the area are understaffed and under-resourced to provide an effective service relative to the size of the potentially affected population (Ubuntu Local Municipalities, 2002).

4.3.8 Local Economy

Agriculture is the primary economic activity in the local municipality and includes animal husbandry, particularly cattle, sheep and goats, as well as some farming of crops such as Lucerne and fruits. Wool is an important export product of the Ubuntu region. Game farming also takes place in the area and focuses on the foreign tourism market (StatsSA). The agriculture and hunting sector employed 37% of all workers in the municipality in 2001, followed by the services sector (33%) and trade (9%) (StatsSA Census 2001). Although comparable numbers for 2011 were not available from StatsSA, the general importance of these sectors is expected to remain similar.

The importance of tourism and eco-tourism is currently increasing in the municipality. Victoria West is the most important tourist centre in the region, but tourism in the previously disadvantaged communities is poorly developed (StatsSA). The main attractions of the area are linked to its scenic and remote character and the rich cultural-historic heritage of the area. The region is popular as a backpacking destination and as a scenic detour road trips. A variety of hiking, cycling, camping and adventure sports are available. Amateur astronomy is also popular, owing to the clear night skies and lack of light pollution (IDP, 2011). Tourism is seasonal, with most visitors arriving in the region during holiday times.

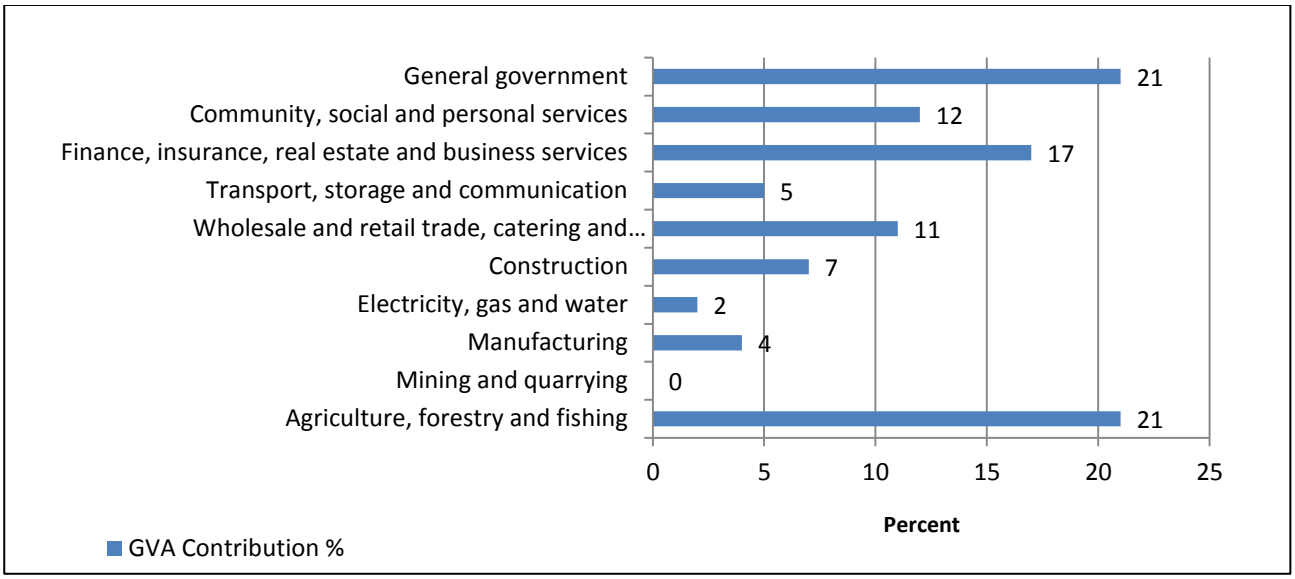


Figure 4-28: Contribution of economic sectors to the Ubuntu Local Municipality GVA-R

Source: Golder (2011)

The relative contribution of the various economic sectors to the Regional Gross Value Added[11] (GVA-R) of the Ubuntu Local Municipality is shown in Figure 4-28. Government services make up a significant portion of the local economy, indicating that social welfare grants are heavily relied on. Agriculture plays an equally important role in GVA-R, typical of a predominantly rural economy. The regional importance of tourism in the local economy is reflected in the relatively large size of the wholesale and retail trade, catering and accommodation sector.

4.4 Historical and Cultural Environment

4.4.1 Palaeontology, Archaeology and Historical Record

Karoo rocks of the area contain fossils of many species of reptiles and other types. During the Late Permian period, the flood plains and river channels of the Beaufort group supported a wide variety of animals and plants. Schanskraal Farm is located within the central (western) extent of the Karoo Basin, one of only a few basins globally where the terrestrial fossil record for the 45-million-year period spanning the Permian and Triassic periods is preserved and exposed (Prins, 2011). The so-called Permian Extinction at the end of the Permian period (which coincided with the formation of the Adelaide subgroup) is also recorded in the Adelaide-Katberg contact on Elands Kloof and Ruigte Valey farms (Dreyer and Loock, 2012).

Regionally, there are numerous remnants of Xam San archaeology and symbolic use of the landscape. Isolated scatters of stone tools are found in the plains, rock art sites are found in the mountains and shell middens are found along river banks, pans and floodplains (Prins, 2011). San rock art as well as a number of sites thought to have been of cultural significance to the San People have been found on the Schanskraal property.

Between 1200 and 1400 AD a global climatic fluctuation known as the Little Ice Age made the Karoo suitable for grazing, and as a consequence the remains of stone kraal complexes associated with the Koenkoen people are found in the region (Prins, 2011).

Between 1740 and 1787 Trekboers expanded into the Little Karoo and interior plateaux resulting in fierce conflict with the San people, and the eventual depletion of the San culture. Trekboers had to move regularly and homesteads associated with the Trekboer expansion close to springs and other water sources can be found at various locations in the region (Prins, 2011). There are also numerous stone walls on the property that were constructed by these farmers in the late 1700's and early 1800's.

Schanskraal and some of the other historic farms were already settled by white farmers and in 1825 Schanskraal was in the Field-Cornetcy of Agter Sneeuberg in the Graaff-Reinet district (Dreyer and Loock, 2012).

The Burgersrust Lodge on Schanskraal farm has particularly noteworthy heritage value in this regard as it was built by the Trekboers in 1793 and once home to preacher and State President of the South African Republic Thomas Francois Burgers (1834-1881). After retiring from public life, Burger farmed on Zoetvlei in the Richmond district and later on moved to Schanskraal where he fell ill and subsequently passed away in Richmond.

Various battle grounds and cemeteries dating back to the Anglo-Boer War (1899-1902) are also found in the region. Skirmishes took place near Schanskraal somewhere towards the mountains between Middelburg and Richmond. A considerable collection of fired rifle cartridge cases has been

[11] GVA measures the contribution to the economy of each individual producer, industry or sector. The link between GVA and GDP can be defined as: GVA (at current basic prices; available by industry only) plus taxes on products (available at economy level only) less subsidies on products (available at economy level only) equals GDP (at current market prices; available at whole economy level only).

made on the ash heaps at different farms yards elsewhere in the Karoo. These finds date from the 19th and 20th centuries. Some .303 cartridge cases are dated to the Guerrilla-phase of the Anglo-Boer Wars.

Most farms in the Karoo have large cemeteries with graves of European settlers and farm labourers, sometimes dating back to the 18th and 19th centuries. No graves were identified on Schanskraal.

Buildings with architectural or historical value are found in and around towns in the region, including the following near the development site:

- In Victoria-West: Victoria trading post and Mannetjies, Roux Aglican Church, Dutch Reformed Church, museum, print shop and Appolo theatre; and
- In Richmond: Anglo-Boer war graves, De Oude Dak, Driefontein, Dutch Reformed Church, Mailbox, Old tome horse corn-mill, pedestrian bridge and saddle horse museum (Pixley Ka Seme District Municipality, 2011).

4.4.2 Cultural Landscapes and Sense of Place

The landscape of the surrounding area can be described as remote and arid. The visual characteristics of the area are linked to the undulating topography and undisturbed nature of the landscape, which is largely devoid of signs of human intervention – a notable quality of the Karoo (Prins, 2011). Typical visual intrusions (vertical elements) are associated with homesteads, power and phone lines, windmills and some low intensity agricultural infrastructure. These structures contrast with low (sparse) vegetation cover, often not more than 1 m high. However, these human elements are not necessarily considered visual intrusions and in many cases add to the visual interest of the landscape.

Buttes and mesas are significant geological features (landforms) in the landscape and comprise of a hard resistant layer of rock creating flat mountain tops. The Sneeuberg Mountain Range is considered a possible extension of the Graaff-Reinet cultural landscape. The Schanskraal Farm lies on the north western foothills of the Sneeuberg, while Graaff-Reinet lies to the south. The range is a significant landscape marker in the area and an important icon in the history of the San people (hosting many Later Stone Age sites associated with this people) (Prins, 2011).

Richmond, the closest urban centre to the farm, was established in 1843 to meet the religious needs of a growing farming community in the region. Richmond has a number of elements of cultural significance, such as its church, village square, and saddle horse museum.

srk consulting	**Schanskraal Sporting Estate** Visual Landscape	Project No. 424086

Figure 4-29: Visual landscape near the development site

5 Stakeholder Engagement

Stakeholder engagement forms a key component of the S&EIR process. The objectives of stakeholder engagement are outlined in this section, followed by a summary of the approach followed and issues raised by the public with regard to the proposed development during project initiation and scoping phases.

5.1 Objectives and Approach to Stakeholder Engagement

The overall aim of public consultation is to ensure that all stakeholders have adequate opportunity to provide input into the process and raise their comments and concerns. More specifically, the objectives of public consultation are to:

- Identify IAPs and inform them about the proposed development and S&EIR process;
- Provide the public with the opportunity to participate effectively in the process and identify relevant issues and concerns;
- Coordinate cooperation between organs of state in the consideration of the assessment; and
- Provide the public with the opportunity to review documentation and assist in identifying mitigation and management options to address potential environmental issues.

5.2 Stakeholder Engagement during the Scoping Phase

The key stakeholder engagement activities undertaken during the Scoping Phase are summarised in Table 5-1 below.

Table 5-1: Stakeholder engagement activities undertaken during the Initiation and Scoping Phases

Task	Objectives	Reference	Dates
Submit Application Forms to NCDENC and Department of Environmental Affairs (DEA)	Register the application for EA and confirm authority requirements.	SRK Project No: 424086 – EA Application Form WML Application Form	3 June 2011 (EA and WML application submissions) 6 June 2011 (WML application acceptance) 11 June 2011 (EA application acceptance)
Place posters on-site	To notify stakeholders of the commencement of the EIA process and to provide a description of the proposed project and the affected environment, as well as a description of potential environmental issues, and the proposed approach to the Impact Assessment Phase.	SRK Report No. 424086/1 (Final EIA Report) Appendix D	18-20 June 2012
Advertise commencement of S&EIR process and release of Scoping Report for public comment period		SRK Report No. 424086/1 (Final EIA Report) Appendix D	20 June 2012
Public comment period	To provide stakeholders with the opportunity to review and comment on the results of the Scoping Phase.	N/A	20 June 2012 – 13 August 2012
Conduct one-on-one meetings with neighbouring property owners / occupiers	To present the findings of the Scoping Report to stakeholders and provide an opportunity for	N/A	16 – 20 July 2012

Task	Objectives	Reference	Dates
	questions and discussion.		
Finalise Scoping Report	To update the Scoping Report in response to comments made and changes to the project description.	N/A	August – October 2012
Compile Comments and Responses Report	To record and respond to all issues and concerns raised, and collate these comments.	N/A	August – October 2012
Submit Final Scoping Report (and public comments) to NCDENC and DEA	To provide authorities with information for decision-making.	SRK Report No. 424086/1 (Final EIA Report)	5 October 2012

Comments submitted during the public review period for the Scoping Report are provided in this report.

The key activities are described in further detail below.

5.2.1 Newspaper Advertisements and Posters

Newspaper advertisements announcing the commencement of the S&EIR process, the availability of the Scoping Report and inviting IAPs to register on the project database were placed in:

- One regional paper: Die Burger (in Afrikaans) on 26 June 2012; and
- One local paper: Noordkaap (in Afrikaans and English) on 20 June 2012.

In addition to the advertisements, a set of posters (an English and Afrikaans version) was placed on the site's boundary fence. These posters contained brief details of the proposed project and process and the contact details of the consultant. In addition, A3 copies of the posters (English and Afrikaans) were placed on community noticeboards located at the Municipal Offices and Post Office in Richmond.

5.2.2 Identification of Key Stakeholders and IAPs

Relevant IAPs from local, provincial and national authorities, conservation bodies, Non-Governmental Organisations (NGO) groups, local businesses and forums and surrounding land owners and occupants were considered for inclusion as IAPs for the project.

Relevant authorities and owners of properties neighbouring the farm were automatically registered as IAPs. As specified in GN R 543: 55(1), all persons who submit written comments, attend meetings or request in writing to be placed on the register were (and will be) registered as IAPs.

The stakeholder database is attached as Appendix D and was updated throughout the process.

5.2.3 Notification of Scoping Report for Public Comment

The release of the Scoping Report for public review was communicated to all automatically registered IAPs by post, email or fax on or by 20 June 2012. Hard copies of the full report were placed at the following venues:

- Victoria West Municipal Office;
- Ntsikelelo Tida Library (Municipal Building, Loop Street, Richmond); and
- SRK's office in Rondebosch, Cape Town.

An electronic version of the report was available on SRK's website www.srk.co.za.

Hard copies of the Scoping Report were sent to the following Organs of State on 18 June 2012 for comment:

- Ubuntu Local Municipality (Municipal Manager for distribution);
- Pixley Ka Seme District Municipality (Municipal Manager for distribution);
- Pixley Ka Seme District Municipality (Municipal Planners);
- Northern Cape Provincial Government: Planning;
- Department of Water Affairs (Northern Cape);
- Department of Agriculture, Fisheries and Forestry (Northern Cape);
- South African Heritage Resources Agency;
- Ngwao Boswa Kapa Bokoni; and
- Northern Cape Department of Economic Development and Tourism.

NCDENC and DEA were notified that the reports were sent to the organs of state listed above to request their comment. Proof of notifications was provided to NCDENC and DEA with the Final Scoping Report submitted on 5 October 2012.

Stakeholders were afforded a 40 day comment period, ending on 6 August 2012.

5.2.4 Focus Group Meetings

One-on-one meetings with owners and/or occupants of neighbouring properties of the Schanskraal Farm and other stakeholders (on request) were held on 17 and 18 July 2012 on neighbouring properties and on 2 August 2012 in Cape Town (see Table 5-2). This level of direct participation is deemed adequate given the nature of the development and regional population density.

Table 5-2: One-on-one meetings with neighbouring property owners

No	Name	Organisation	Meeting date
1.	Brenda Sheard	Lucern Vale	17 July 2012
2.	Adriaan Myburgh	Donkerhoek	18 July 2012
3.	Anette van der Merwe	Fairview	18 July 2012
4.	John Watson	Dassiesfontein	18 July 2012
5.	Shauna Wescott	Kriege's Bayen and Oppermanskraal	2 August 2012

Comments received at stakeholder meetings were incorporated into the comments and responses table (Table 5-4).

5.2.5 Issues and Concerns Raised by IAPs during Scoping

Comments received were incorporated into the comments and responses table (Table 5-4) and are appended to this report as Appendix E. Stakeholders who submitted written comments during the Scoping Phase are listed in Table 5-3.

Table 5-3: Written comments received during the Scoping phase

No	Name	Organisation	Comment date
1.	Mr W Grobler	DWA	3 August 2012
2.	Shauna Wescott	Private / Kompasberg Protected Environment	21 August 2012
3.	Eric and Jennifer Naude	Private	30 July 2012

Key comments and concerns raised by stakeholders can be summarised as follows:

- **Water use:** Concerns were expressed that the development will have a negative impact on the scarce water resources in the area. All requirements in terms of the NWA and DWA must be adhered with;
- **Socio-economic:** An increase in population in the area may increase social pathologies such as crime, including stock theft; and
- **Sense of Place:** Concerns were raised that the development is not in keeping with the rural and remote sense of place of the region.

5.2.6 Submission and Acceptance of Final Scoping Report

Since the Final Scoping Report was not substantively different to the Draft Scoping, it was not released for a further comment period, and was submitted to NCDENC and DEA on 5 October 2012. Stakeholders were notified of the submission and the availability of the Final Scoping Report for their viewing.

The Final Scoping Report was accepted by NCDENC on 5 May 2013 and by DEA on 3 August 2013.

Table 5-4: Stakeholder comments during Scoping Phase and EAP responses

ID	Issues / Comments	Date	Stakeholder	Response
A	**Schanskraal Sporting Estate development**			
A	BIOPHYSICAL IMPACTS			
	Water			
1.	The availability of groundwater for the development is a concern. But if enough groundwater is available to sustain the development, there are no objections from a groundwater perspective.	17 July 12	Brenda Sheard	Water demand and availability were assessed for this EIA. Groundwater abstraction for the proposed development will lie within the limits of the General Authorisation for Farm No. 121 Elands Kloof. A reduction in surface water quality or quantity is not anticipated as a result of the development (see Section 6.4). The number of units to be developed has been reduced, and nearly halved for the preferred Layout Alternative, since the Draft Scoping Report was released (see Section 0).
2.	The availability of groundwater to sustain the development of 57 residential units is a concern, as well as the effect that the development may have on downstream water use.	18 July 12 21 August 12	John Watson Shauna Wescott	
3.	The Schanskraal Property acts as a catchment for vital surface and groundwater resources.	21 August 12	Shauna Wescott	
4.	There must be adequate provision for potable water and sanitation for the proposed development.	3 August 12 30 July 2012	W Grobler (DWA) Eric Naude	
5.	Necessary applications must be made for the development should activities that would reduce the resource quality take place within the 1:100 year flood return line or within 100 m of a water resource.	3 August 12	W Grobler (DWA)	Application for a WUA relating to construction within 100 m of water courses will be made to DWA at a later stage.
6.	Should the applicant need to abstract water for the proposed development the necessary authorisation must be sought.	3 August 12	W Grobler (DWA)	Groundwater abstraction for the proposed development will lie within the limits of the General Authorisation for Farm No. 121 Elands Kloof.
	Stormwater			
7.	Proper stormwater management must be in place for the construction and operation phases of the proposed development.	3 August 12	W Grobler (DWA)	Stormwater management concepts are provided in Sections 3.4.5 and 3.5.3.
	Ecology			
8.	The Sneeuberg area plays an increasingly important role as a sanctuary for threatened biodiversity and developments such as the proposed will reduce its capacity to play this role.	21 August 12	Shauna Wescott	The impact of the project on fauna is deemed to be low, and very low with mitigation. Mitigation measures have been proposed to minimise any impact of the development on fauna (see Section 6.6). The number of units to be developed has been reduced, and nearly halved for the preferred Layout Alternative, since the Draft Scoping Report was released (see Section 3).
9.	The Kompasberg Protected Environment has been established close to the southern border of Schanskraal Farm. The	17 July 12	Brenda Sheard	The development is located on the north-eastern portion of Schanskraal Farm, away from the Kompasberg Protected

ID	Issues / Comments	Date	Stakeholder	Response
	Schanskraal development should have no effect on the Protected Area.			Environment, and impacts are generally deemed to be of local extent.
10.	The proposed development runs counter to the imperatives of the Kompasberg Protected Environment.	21 August 12	Shauna Wescott	
11.	The introduction of predators (such as leopards and caracal) into the farm is a concern as predators pose a threat to surrounding property owners and their presence is undesirable.	18 July 12 30 July 12	John Watson Eric Naude	No wild animals or predators will be introduced to Schanskraal Farm as part of the proposed development.
	Noise and air quality			
12.	Concern about noise and air quality impacts associated with quad bikes on the Schanskraal Farm.	21 August 12	Shauna Wescott	The use of quad bikes is expected to be very limited. Noise impacts are assessed in Section 6.2.1.
B	SOCIAL IMPACTS			
	Increased security threat			
13.	Increased population density may lead to increased threat of livestock theft, poaching and related crimes in the area. Temporary labourers may become familiar with the area and this may increase the likelihood of theft.	18 July 12	John Watson Anette van der Merwe Eric Naude	The impact of increased crime as a result of temporary in-migration has been considered in the Impact Assessment section of the report, and the potential for stock theft and other crime in the short term is acknowledged. Ranor will employ on-site security for the duration of construction activities and appoint a local contractor. Permanent workers will be accommodated at the farm, sourced from the local community and are likely to be integrated into the community fabric. The increase in the permanent staff compliment will also be limited to approximately 13 people. The increase in staff at Schanskraal is not expected to markedly increase incidences of anti-social behavior regionally.
14.	Who will police stock theft in the area?	30 July 12	Eric Naude	The South African National Police Service is responsible for policing crime in South Africa.
	Loss of sense of place			
15.	The development proposal in inappropriate for the uniquely beautiful, silent and ancient landscape and will degrade the character of the area.	21 August 12	Shauna Wescott	The impact of the development on the region's visual character and sense of place is assessed in Section 6.8.
16.	The development of a golf course is inappropriate.	21 August 12	Shauna Wescott	

ID	Issues / Comments	Date	Stakeholder	Response
	Degradation of community fabric			
17.	The surrounding farming community is close-knit, and co-operation between neighbouring land owners is important. Residents in the area that are not directly involved in farming operations (such as those people who may purchase property at the Schanskraal Sporting Estate) have a different agenda are often not actively involved in community activities. This could degrade the community fabric and affect farming operations and co-operation between neighbours.	17 July 12 30 July 12	Brenda Sheard Eric Naude	Social impacts relating to changes to the community structure are considered in Chapter 6 of this report. The Schanskraal Farm will continue to be run as an operational agricultural property, and the new residential development will not affect this. Further, the residential units will not be permanently occupied. New residents are therefore not expected to reside in the area for long enough to materially influence the community fabric.
18.	The introduction of a school and community facilities will give rise to the creation of a small settlement or 'township'. More labourers and their families will be drawn to the area. This will degrade the existing community fabric and result in undesirable social conditions. Many farmers in the area have highlighted this concern.	18 July 12	John Watson	Ranor no longer propose to build a new school, but rather propose to donate a portion of revenue from the estate to an existing school in Richmond.
	Opportunities for social improvement			
19.	There is a small school in Middelpos (in the Eastern Cape, not far from Schanskraal). There are concerns that the government is in the process of closing schools with less than 135 pupils. There is a need for funded schooling facilities in the area, but the exact placing of these facilities should be carefully considered.	18 July 12	Anette van der Merwe	Ranor no longer propose to build a new school, but rather propose to donate a portion of revenue from the estate to an existing school in Richmond.
	Traffic			
20.	Taxis and the length of road needed for permanent workers to access the site will be a problem given that the road passes over my property and I have no fences in this camp.	30 July 12	Eric Naude	Only public roads will be used to access the development. Traffic volumes are expected to be limited as units will not be occupied throughout the year and staff will mostly stay on the farm. During construction, workers will be accommodated on the farm.
C	ECONOMIC IMPACTS			
	Economic viability			
21.	With the correct marketing of the proposed development to an international market, it could be viable.	17 July 12	Brenda Sheard	The client's motivation and the need and desirability of the proposed development are discussed in Sections 3.2 and 3.6. The economic viability of the project to the proponent is not assessed as part of an EIA, but residential units will only be constructed once erven are sold, and thus the development will only be realised at the scale currently proposed if there is a demand for it.
22.	The economic viability of the project is uncertain. The (Richmond rural) area may not be suitable for this type of development. The site is very secluded and projects of a similar nature have not been successful.	18 July 12	Anette van der Merwe John Watson	

ID	Issues / Comments	Date	Stakeholder	Response
	Altered property values			
23.	The proposed development could have a positive effect on property values in the area. People may become more interested in buying property in the area resulting in an increase in property values.	18 July 12	Anette van der Merwe	Property values are determined by a number of variables, and it is often difficult to isolate or predict the direct effect that a change in the environment will have on property prices. However, as biophysical impacts are entirely limited to the development area, the impact on surrounding property (farm) quality and therefore prices is not considered to be significant. Property prices are also a function of supply and demand, and there is a shortage of formal housing for rent or sale in the district. The project will however not address this demand, as the residential unit are aimed at a holiday residential market and permanent staff will be accommodated at Schanskraal in units that are not available on the open market.
24.	The proposed development is likely to result in a decrease in property values. Farms next to towns and cities are usually less valuable in terms of farming capacity and resale value.	18 July 12	John Watson	
	Regional agriculture			
25.	We need more agricultural land not less.	21 August 12	Shauna Wescott	The farm will remain a productive agricultural unit. Due to the low carrying capacity of the land and very extensive nature of agriculture practiced in the area at present, mostly south of the proposed development site, the project is not expected to have a significant impact on agricultural productivity.
	Service supply			
26.	The demand (and use) of services (such as water, sewage and power) will be “huge” and a threat to downstream users.	21 August 12	Shauna Wescott	Service and resource requirements are described in Section 3.5 are not expected to exceed available resources / capacities.
D	ASSESSMENT PROCESS			
	Authority notification			
27.	The DWA must be informed of comments made by stakeholders and of how objections will be addressed.	3 August 12	W Grobler (DWA)	All comments received to date and responses are contained in the EIA Report. Comments on the Final EIA Report will also be forwarded to the relevant authorities.
28.	The DWA must be notified of any pollution incident that has occurred during any stage of the project.	3 August 12	W Grobler (DWA)	The proponent has a responsibility in terms of the NWA to report any pollution event that has the potential to contaminate a water resource. It is assumed by the environmental consultant that the applicant does and will continue to fulfill this obligation.
	Miscellaneous			
29.	All sections of NEMWA must be adhered to.	3 August 12	W Grobler (DWA)	Noted. An application for a waste management is no longer required.

5.3 Stakeholder Engagement during the Impact Assessment Phase

Stakeholder engagement activities during the Impact Assessment Phase are aimed at ensuring that the specialist studies and assessment by the EIA project team adequately address the issues and concerns raised during the Scoping Phase. Opportunity to raise further issues is also provided.

The key public participation activities during the Impact Assessment Phase are summarised in Table 5-5 below.

Table 5-5: Stakeholder engagement activities undertaken and planned during the Impact Assessment Phase

Task	Objectives	Reference	Projected Dates
Notification of registered IAPs	To announce the availability of the EIA Report for public comment.	N/A	17 Mar 2015
Public comment period including distribution of an Executive Summary to all registered stakeholders	To provide stakeholders with the opportunity to review and comment on the results of the Impact Assessment Phase, and to obtaining written comments from stakeholders and key stakeholders on the EIA Report.	N/A	18 Mar – 20 Apr 2015
Finalise EIA Report and submit to NCDENC	To present the findings of the EIA process, incorporating stakeholder comment and submit the EIA Report to the authorities to facilitate their decisions.	N/A	May 2015

The key activities are described in further detail below.

5.3.1 Notification of Draft EIA Report for Public Comment

Registered stakeholders will be notified of the release of the draft EIA Report for public review. Notifications, including copies of the executive summary, will be posted, faxed or e-mailed to all registered IAPs on the same date (a list of registered IAPs notified of the Draft EIA Report is included as Appendix D).

Copies of the notification letter sent to all registered I&AP's will be included in the final EIA Report.

Full hardcopies of this report are available for public viewing at the following venues:

- Ntsikelelo Tida Library (Richmond);
- Victoria West Municipal Office; and
- SRK's office in Rondebosch.

The report is also accessible as an electronic copy on SRK's website www.srk.co.za (via the "Library" and "Public Documents" link), and available on CD, on request. A hard copy of the Draft EIA Report as well as a CD containing an electronic copy has been made available to each of the following authorities, to facilitate comment:

- Northern Cape Department of Environment and Nature Conservation;
- Northern Cape Department of Water and Sanitation;
- Northern Cape Department of Agriculture, Land Reform and Rural Development;
- Northern Cape Department of Economic Development and Tourism;
- South African Heritage Resource Agency (Northern Cape);
- Pixley Ka Seme District Municipality; and

- Ubuntu Local Municipality.

A 30-day comment period commenced on 18 March 2015 and registered IAPs have been requested to submit comments to SRK Consulting by 20 April 2015. Comments received in response to the Draft EIA Report will be included in a Comments Report and attached to the Final EIA Report.

5.4 Next steps

This Draft EIA Report is not a final report and may be amended based on comments received from authorities or IAPs, and if amended the final version of the report will be released again to IAPs for a 21 day review period. However, if no substantive changes are required following the release of the Draft EIA Report, the report will be submitted in its current form (with small administrative changes, like changing the report to reflect that it is the “Final” version and an update of key dates in the Impact Assessment Phase) to NCDENC. IAPs will be notified of the submission.

6 Environmental Impact Assessment

6.1 Introduction

6.1.1 Environmental Impacts Identified

Based on the professional experience of the EIA team, legal requirements (Section 2.1), the nature of the receiving environment (Section 4) and the proposed activity (Section 3) and issues raised in the public participation process (Section 5), the following key environmental issues – potential negative impacts and potential benefits – were identified:

- **Soils** – potential erosion due to construction activities on slopes steeper than 1:5;
- **Water** – potential reduction in water availability due to abstraction of groundwater and potential contamination of surface water or groundwater resources due to effluent or leaks;
- **Terrestrial and aquatic ecology** – potential loss of faunal and floral species associated with construction and operations phases of the development (including the impacts associated with the abstraction of groundwater and physical encroachment into surface water resources), and possible cross-subsidy from the development to land rehabilitation projects;
- **Socio-economic** – possible socio-economic benefits and costs to the wider community in the form of job creation, increased tourism, decreased water supply as well as the provision of community services (e.g. housing and education) and infrastructure;
- **Cultural heritage** – potential impacts on the heritage and archaeological resources of the property, such as paleontological resources, historic buildings and graves; and
- **Visual and sense of place** – potential deterioration of sense of place due to noise impacts (as a result of traffic and construction machinery) and possible dust generation during the construction phase as well as potential visual impacts of the housing clusters and expanse of the golf course (including possible impacts on regional cultural heritage).

6.1.2 Specialist Studies Undertaken

A number of specialist studies (see Table 4-1 and below) were undertaken as part of the Impact Assessment Phase to investigate potential direct, indirect and cumulative impacts (negative and positive) identified during Scoping. These specialist impact studies are as follows:

- Groundwater Impact Assessment;
- Terrestrial and Aquatic Ecology Impact Assessment; and
- Archaeology, Paleontology and Heritage Impact Assessment.

These reports are included as Appendices A to C to this report.

Certain impacts which SRK believes to be less significant are assessed in Section 6.2. These impacts include:

- Increased noise and vibration; and
- Destruction of or damage to archaeological or paleontological artefacts.

6.1.3 Alternatives Assessed in the EIA

During the prefeasibility phase of most projects various development alternatives are investigated. Furthermore, the EIA Regulations, 2010 require that all S&EIR processes must identify and describe

"alternatives to the proposed activity that are feasible and reasonable". Depending on the specific project circumstances the following alternatives may be considered:

- Site Alternatives;
- Design Alternatives;
- Land Use Alternatives;
- Process Alternatives; and
- The 'No-Go' Alternative.

In the case of the Schanskraal Sporting Estate, the number of feasible alternatives is restricted for a number of reasons (refer to Section 3.3). Therefore, only the following layout alternative (in addition to the No-Go alternative) will be assessed in Sections 6.2 to 6.8:

- *Layout alternative 1:* Estate with 57 residential units and associated infrastructure and sporting facilities; and
- *Layout alternative 2:* Estate with 36 residential units and associated infrastructure and sporting facilities.

  The remaining aspects of the development, such as the golf course, roads and services, are essentially identical for each alternative, with limited differences related to the number of units.

6.1.4 No-Go Alternative

The No-Go alternative is considered to be no change in the site's current *status quo*, i.e. no development, rezoning or subdivision at the site. Sustainable livestock agriculture will continue at the site under this scenario (as it would with the development proposal. The No-Go alternative is evaluated more comprehensively in the impact assessment sections below.

6.1.5 Impact Rating Methodology

The assessment of impacts was based on specialists' expertise, SRK's professional judgement, field observations and desk-top analysis.

The significance of potential impacts that may result from the proposed project was determined in order to assist decision-makers (typically by a designated authority or state agency, but in some instances, the proponent).

The **significance** of an impact is defined as a combination of the **consequence** of the impact occurring and the **probability** that the impact will occur.

The criteria used to determine impact consequence are presented in the table below.

Table 6-1: Criteria used to determine the consequence of the impact

Rating	Definition of Rating	Score
A. *Extent* *– the area over which the impact will be experienced*		
Local	Confined to project or study area or part thereof (Schanskraal farm)	1
Regional	The region (District Municipality or Quaternary catchment)	2
(Inter) national	Nationally or beyond	3
B. ***Intensity*** *– the magnitude of the impact in relation to the sensitivity of the receiving environment, taking into account the degree to which the impact may cause irreplaceable loss of resources*		
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2

High	Site-specific and wider natural and/or social functions or processes are severely altered	3
C. ***Duration***– *the timeframe over which the impact will be experienced and its reversibility*		
Short-term	Up to 2 years and reversible	1
Medium-term	2 to 15 years and reversible	2
Long-term	More than 15 years and irreversible	3

The combined score of these three criteria corresponds to a **Consequence Rating**, as follows:

Table 6-2: Method used to determine the consequence score

***Combined Score* (A+B+C)**	3 – 4	5	6	7	8 – 9
Consequence Rating	Very low	Low	Medium	High	Very high

Once the consequence was derived, the probability of the impact occurring was considered, using the probability classifications presented in the table below.

Table 6-3: Probability classification

Probability– *the likelihood of the impact occurring*	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

The overall **significance** of impacts was determined by considering consequence and probability using the rating system prescribed in the table below.

Table 6-4: Impact significance ratings

		Probability			
		Improbable	Possible	Probable	Definite
Consequence	Very Low	**INSIGNIFICANT**	**INSIGNIFICANT**	**VERY LOW**	**VERY LOW**
	Low	**VERY LOW**	**VERY LOW**	**LOW**	**LOW**
	Medium	**LOW**	**LOW**	**MEDIUM**	**MEDIUM**
	High	**MEDIUM**	**MEDIUM**	**HIGH**	**HIGH**
	Very High	**HIGH**	**HIGH**	**VERY HIGH**	**VERY HIGH**

Finally the impacts were also considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The prescribed system for considering impacts status and confidence (in assessment) is laid out in the table below.

Table 6-5: Impact status and confidence classification

Status of impact	
Indication whether the impact is adverse (negative) or beneficial (positive).	+ ve (positive – a 'benefit')
	– ve (negative – a 'cost')
Confidence of assessment	
The degree of confidence in predictions based on available information, SRK's judgment and/or specialist knowledge.	Low
	Medium
	High

The impact significance rating should be considered by authorities in their decision-making process based on the implications of ratings ascribed below:

- **INSIGNIFICANT**: the potential impact is negligible and **will not** have an influence on the decision regarding the proposed activity/development.
- **VERY LOW**: the potential impact is very small and **should not** have any meaningful influence on the decision regarding the proposed activity/development.
- **LOW**: the potential impact **may not** have any meaningful influence on the decision regarding the proposed activity/development.
- **MEDIUM**: the potential impact **should** influence the decision regarding the proposed activity/development.
- **HIGH**: the potential impact **will** affect the decision regarding the proposed activity/development.
- **VERY HIGH**: The proposed activity should only be approved under special circumstances.

Practicable mitigation and optimisation measures are recommended and impacts are rated in the prescribed way both without and with the assumed effective implementation of mitigation and optimisation measures. Mitigation and optimisation measures are either:

- **Essential**: measures that must be implemented and are non-negotiable; and
- **Best Practice:** recommended to comply with best practice, with adoption dependent on the proponent's risk profile and commitment to adhere to best practice, and which must be shown to have been considered and sound reasons provided by the proponent if not implemented.

6.1.6 Integration of Studies into the EIA Report and Review

The completed specialist studies and their findings have been integrated into the EIA Report. The key findings of each specialist were evaluated in relation to each other to provide an overall and integrated assessment of the project impacts.

SRK has considered the suite of potential impacts in a holistic manner and in certain instances, based on independent professional judgment and this integrated approach, may have altered impact significance ratings provided by the specialist. Where this has been done it has been indicated in the relevant section of the report.

Specialists have made recommendations for the management of impacts, and the EIA team has assessed these recommendations. For the sake of brevity, only **key** (i.e. non-standard essential) mitigation measures are presented in impact rating tables (late in this section), with a collective summary of all recommended mitigation measures presented at the end of discipline.

6.1.7 Factors Informing the Impact Assessment

The impacts of a project are mostly linked to the sensitivity of the receiving environment and proximity or absence of receptors, the extent or footprint of the development and expected emissions and discharges, all of which are briefly summarised below.

- **Sensitivity of the biophysical environment:** The proposed development lies in a remote area that has experienced limited disturbance to date and is in good condition as a result. While sensitive vegetation and a number of SCC were identified on the site, the vegetation communities are not endemic to Schanskraal Farm and not considered regionally threatened. A number of fauna species were recorded in the area, some of which are linked to specific vegetation communities. The region is arid and groundwater is widely used as the main water source. Schanskraal Farm and surrounding areas are dominated by the Sneeuwberg mountain range, which gives the area a high visual quality.

- **Sensitivity of the social environment:** Schanskraal farm is located in a sparsely populated rural area. As such, there are very few sensitive social receptors in the immediate vicinity. Low income levels, unemployment and poverty characterise regional communities. The agricultural sector is an important employment generator in the area.

6.2 Less Significant (or Minor) Impact

More significant impacts are assessed later in this chapter. In addition, a minor, or less significant, impact associated with the project has been identified:

- Noise and vibration impact.

This impact is not expected to be significant nor long term and is discussed below.

6.2.1 Potential Impact N1: Increased Noise Levels and Vibration

Noise pollution results from unwanted or excessive noise with effects that range from causing a nuisance to more harmful effects such as sleep disturbance, high stress levels and impaired hearing. Vibration can cause damage to structures.

Existing noise levels in the area are typical of a remote location and both daytime and night time average noise levels are expected to be very low. Movement of vehicles and building activities during the construction phase are anticipated sources of noise and/or vibration.

The site is very remote and there are very few receptors that could be impacted by the activities, other than the proponents of the project and the staff on the farm who have a vested interest in the project. These receptors are thus not deemed sensitive. If the residential units are constructed over a period of time by the individual owners, then owners already resident on the farm may become sensitive receptors of later construction activities.

Noise and vibration attenuate over distance and will be restricted to the construction phase of the project. For these reasons the impact of increased noise levels and vibration, assuming mitigation measures are implemented, is assessed to be ***insignificant***.

6.2.1.1 Mitigation Measures: Potential Noise and Vibration Impacts

The following mitigation measures are recommended:

- Maintain construction machinery in order to minimise noise; and
- Limit the on-site speed limit to 40 km/h.

6.3 Potential Impacts on Soils

6.3.1 Introduction, Terms of Reference and Methodology

This assessment is based on the Terrestrial and Aquatic Ecology Study undertaken by Larissa Heyns of SRK (see Appendix B). The purpose of the study was to assess the potential impacts of the development alternatives on terrestrial and aquatic ecology, indicate their environmental acceptability and recommend practicable mitigation measures to minimise potential impacts and maximise potential benefits.

The ToR for the study were to:

- Describe the existing terrestrial and aquatic ecological characteristics, including habitats, corridors and linkages between the various ecological systems, and groundwater dependent ecosystems, of the Schanskraal Farm, with specific reference to the northern portion of the Elands Kloof property (i.e. the development site) and surrounds;

- Identify and assess potential ecological impacts and any potential benefits resulting from the development of the Sporting Estate, including impacts associated with the construction and operation phases of the project;
- Identify and assess potential cumulative ecological impacts resulting from the proposed development in relation to proposed and existing developments in the surrounding area;
- Recommend mitigation measures to avoid and/or minimise impacts associated with the proposed development, including the recommendation of setback lines for surface water features, and enhancement measures; and
- Recommend monitoring measures to ensure the correct implementation and adequacy of recommenced mitigation measures, if applicable.

An initial desktop study and literature review was conducted to compile baseline ecological information, which was groundtruthed during a site visit conducted on 18 July 2012 at the Schanskraal Farm. The knowledge of local people was incorporated as far as possible by documenting ecological information about the area generated during discussions with residents in the area. The relative sensitivity of each plant community / ecological unit was then rated according to the estimated tolerance of the plant community / ecosystem to disturbance (given existing and expected cumulative impacts) and mapped.

6.3.2 Assessment of Impacts

The main potential direct impact on the soil is increased erosion and the loss of topsoil. Potential cumulative soil impacts are discussed in Section 6.8.

6.3.2.1 Potential Impact S1: Increased Erosion

The soils in the development area are highly erodible. Lack of implementation of appropriate mitigation measures may result in erosion and the loss of topsoil, which is a scarce and critical resource.

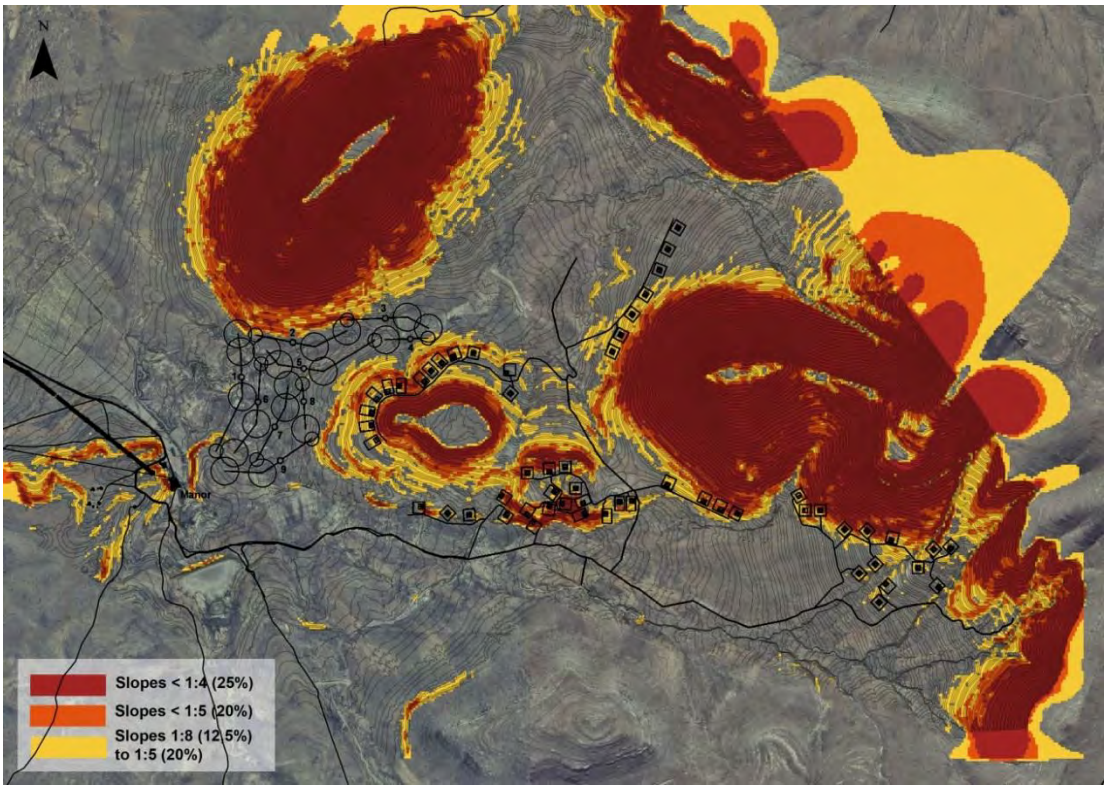
6.3.2.2 Potential Impact S1-C: Increased Erosion and resulting Loss of Topsoil during Construction

Construction activities will impact on topsoil and may increase erosion through the removal of vegetation and disturbance of the ground by construction vehicles, particularly where residential units are developed on steep slopes (particularly those steeper than 1:5).

In this highly erodible environment, the disturbance of steep slopes is likely to increase erosion and scarring of the landscape. If unmitigated, this will exacerbate the loss of topsoil, vegetation cover and habitat downslope of the development. In addition, construction on steep slopes may necessitate the use of heavier machinery that could cause additional ecological harm.

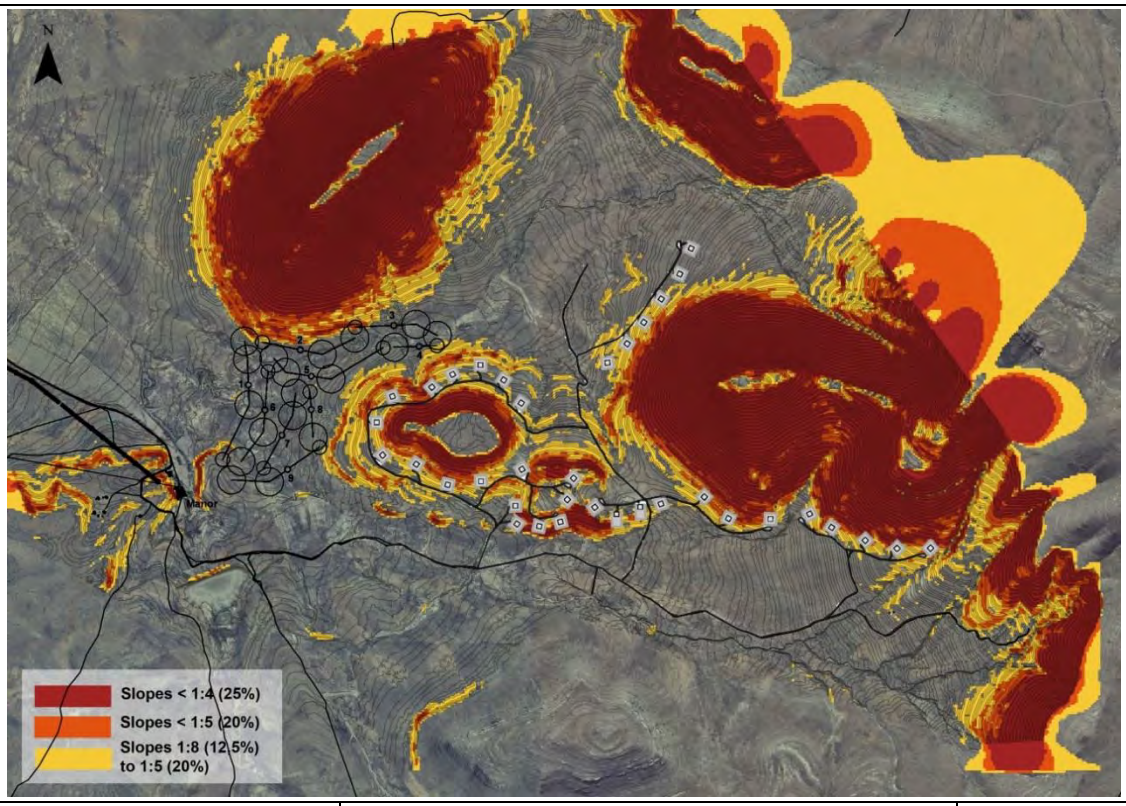
The project alternatives impact on slopes to a different extent:

- **Alternative 1** makes provision for 37 residential units on slopes steeper than 1:5 (Figure 6-1):
    - 23 are located on or very near slopes steeper than 1:4; and
    - 14 are located on or very near slopes steeper than 1:5.
- **Alternative 2** makes provision for 23 residential units on slopes steeper than 1:5 (Figure 6-2):
    - 15 are located on or very near slopes steeper than 1:4; and
    - 8 are located on or very near slopes steeper than 1:5.



srk consulting	**Schanskraal Sporting Estate** Location of Layout Alternative 1 relative to slopes	Project No. 424086

Figure 6-1: Location of Layout Alternative 1 relative to slopes



srk consulting	**Schanskraal Sporting Estate** Location of Layout Alternative 2 relative to slopes	Project No. 424086

Figure 6-2: Location of Layout Alternative 2 relative to slopes

The extent of the impact is rated as local as it will be contained within the development area. The intensity of the impact is rated as high as development is proposed on slopes steeper than 1:4, which are deemed unsuitable for development by various guidelines[12]. The duration of the impact is rated long-term as permanent structures will be installed on the hill sides.

The impact is assessed to be of ***high*** significance and with the implementation of mitigation is reduced to ***medium*** for Alternatives 1 and 2 (Table 6-6). **Layout Alternative 2 is preferred as it has a smaller footprint and thus affects fewer slopes.**

Table 6-6: Significance of increased erosion during construction

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Alternatives 1 and 2								
Without mitigation	Local 1	High 3	Long-term 3	**High** 7	Definite	**HIGH**	**– ve**	High
Essential mitigation measures: • Ensure that roads and tracks are constructed along contour lines; • Clearly demarcate construction areas and roads; do not permit any vehicles outside demarcated areas; • Remove topsoil (to a minimum depth of 200 mm) from cleared areas; • Stockpile removed topsoil and conserve for redistribution; • Designate and demarcate areas to be used for topsoil stockpiling; • Stockpile areas must be located close to removal sites and at least 50 m from watercourses; • Lay down a porous material (hessian / geofabric / high density shade cloth) before stockpiling; • Stockpile soils of different quality or composition (e.g. subsoil and topsoil) separately; • Protect stockpiled soils from erosion by covering with a porous material (hessian / geofabric / high density shade cloth) or through seeding; • Do not allow topsoil stockpiles to be higher than 1.5 m or steeper than 30 degrees; • Replace soils within the same area from which they were removed, as far as possible; • Rehabilitate areas that are disturbed during construction; • Ensure sufficient time is allowed for establishment of vegetation cover before the start of the rainy season. • Ensure that effective erosion control measures are put in place where slopes are steeper than 1:8; • Protect any cleared / disturbed areas from erosion by rehabilitating them with locally indigenous species or using anti-erosion measures such as biobarrier or soil saver; and • Preserve excavated stone and rocks and use them for anti-erosion/ rehabilitation / construction purposes.								
With mitigation	Local 1	Medium 2	Long-term 3	**Medium 6**	Definite	**MEDIUM**	**– ve**	High

If the layout is amended so that no development or construction activities take place on slopes with a gradient steeper than or equal to 1:5 (20%), the impact is reduced to ***very low****.*

6.3.2.3 Potential Impact S1-O: Increased Erosion and resulting Loss of Topsoil during Operation

Erosion may also result from activities associated with the operation phase of the development if:

- Erosion control structures are not maintained;
- Disturbed areas are not properly rehabilitated;
- Runoff is not controlled; and/or
- Vehicles access off road areas.

[12] Slopes with a gradient of 1:8 or more are subject to certain guidelines in terms of the Western Cape PSDF Rural Land use Planning and Management Guidelines, 2009. Slopes steeper than 1:5 are recognised in the Conservation of Agricultural Resources Act No. 42 of 1983 (CARA) as having a high erosion potential if ploughed. Slopes steeper than 1:4 are considered unsuitable for development in terms of the Guideline for the Management of Development on Mountains, Hills and Ridges of the Western Cape, 2001.

The extent of the impact is rated as local as it will be contained within the development area. The intensity of the impact is rated as medium as the potential for loss of topsoil and erosion is generally lower during the operation phase than during the construction phase since fewer intrusive activities take place. The duration of the impact is rated long-term as they will persist throughout the life-time of the development.

The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** for both Alternatives 1 and 2 (Table 6-7). **Layout Alternative 2 is preferred as it has a smaller footprint and thus affects fewer slopes.**

Table 6-7: Significance of increased erosion during operation

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Alternatives 1 and 2								
Without mitigation	Local 1	Medium 2	Long-term 3	**Medium** **6**	Definite	**MEDIUM**	– ve	High
Essential mitigation measures: • Put monitoring measures in place to identify and address any erosion problems; • Rehabilitate and rectify any observed erosion problems as soon as they occur; • Instruct vehicles to remain on demarcated roads at all times; • Seed / plant areas that have not been rehabilitated or that have not recovered adequately after the construction phase with indigenous vegetation; and • Do not disturb / alter any slopes with a gradient steeper than or equal to 1:5 (20%).								
With mitigation	Local 1	Low 1	Long-term 3	**Low** **5**	Probable	**LOW**	– ve	High

6.3.3 The No-Go Alternative

The No-Go alternative entails no change in the property's existing *status quo*, in other words no development, rezoning or subdivision. Sustainable livestock agriculture will continue at the site under this scenario (as it would with the development proposal).

As no new construction, particularly on slopes, would take place under the No-Go alternative, it is expected that site conditions will remain as per the current condition. There is thus no soil impact from the No-Go alternative.

6.3.4 Mitigation Measures: Potential Soil Impacts

Essential soil mitigation measures during **construction** are as follows:

- Ensure that roads and tracks are constructed along contour lines;
- Clearly demarcate construction areas and roads; do not permit any vehicles outside demarcated areas;
- Remove topsoil (to a minimum depth of 200 mm) from cleared areas;
- Stockpile removed topsoil and conserve for redistribution;
- Designate and demarcate areas to be used for topsoil stockpiling;
- Stockpile areas must be located close to removal sites and at least 50 m from watercourses;
- Lay down a porous material (hessian / geofabric / high density shade cloth) before stockpiling;
- Stockpile soils of different quality or composition (e.g. subsoil and topsoil) separately;
- Protect stockpiled soils from erosion by covering with a porous material (hessian / geofabric / high density shade cloth) or through seeding;

- Do not allow topsoil stockpiles to be higher than 1.5 m or steeper than 30 degrees;
- Replace soils within the same area from which they were removed, as far as possible;
- Rehabilitate areas that are disturbed during construction;
- Ensure sufficient time is allowed for establishment of vegetation cover before the start of the rainy season.
- Ensure that effective erosion control measures are put in place where slopes are steeper than 1:8;
- Protect any cleared / disturbed areas from erosion by rehabilitating them with locally indigenous species or using anti-erosion measures such as biobarrier or soil saver; and
- Preserve excavated stone and rocks and use them for anti-erosion/ rehabilitation / construction purposes.

Essential soil mitigation measures during **operation** are as follows:

- Put monitoring measures in place to identify and address any erosion problems;
- Rehabilitate and rectify any observed erosion problems as soon as they occur;
- Instruct vehicles to remain on demarcated roads at all times;
- Seed / plant areas that have not been rehabilitated or that have not recovered adequately after the construction phase with indigenous vegetation; and
- Do not disturb / alter any slopes with a gradient steeper than or equal to 1:5 (20%).

6.4 Potential Surface Water and Groundwater Impacts

6.4.1 Introduction, Terms of Reference and Methodology

This assessment is based on the Terrestrial and Aquatic Ecology Study undertaken by Larissa Heyns of SRK Consulting (see Appendix B), and the Groundwater Impact Assessment undertaken by Des Visser of SRK (see Appendix A). The purpose of the study was to assess the groundwater potential within an approximately 5 km radius of the proposed development area with a view to using groundwater and assessing the potential impacts of abstraction on the aquifers.

The following methodology was utilised for the Groundwater Impact Assessment:

- Extension of the 2009 hydrocensus to include neighbouring properties (~5 km radius);
- Mapping of potential groundwater-bearing structures and formations on satellite imagery and aerial photographs using ArcGIS desktop software, digitising and attributing the geological data of the area from published geological and other relevant maps where available and superimposing the boreholes and other relevant groundwater information on GIS maps for analysis;
- Site specific spatial and quantitative analysis on rainfall and groundwater recharge potential using ArcGIS and Spatial Analyst to determine the extent of the study area required to supply the anticipated water demand and to determine aquifers, groundwater flow directions and aquifer boundaries, e.g. structural and lithological;
- Compilation of a conceptual hydrogeological model;
- Compilation of detailed hydrogeological mapping and geophysical surveys (ground magnetic);
- Drilling of ten new boreholes under SRK supervision and control;

- Test pumping of six of the new boreholes and two of the existing boreholes, including:
  - Step drawdown test consisting of four to five steps of one hour duration each;
  - 48-hour (lower yielding boreholes) or 72-hour constant discharge test, during which groundwater levels in other nearby boreholes, if any, were also measured to determine the influence of pumping on them; and
  - Recovery tests after each of these tests;
  - Calibration test consisting of 4 x 15 min steps;
- Taking of a groundwater sample at the end of each constant discharge test for macro-chemical and selected trace element analysis at a SANAS accredited laboratory;
- Analysis of test pumping data by a senior hydrogeologist to determine the long-term sustainable yield of the boreholes and key aquifer parameters such as transmissivity and storativity. Parameters such as available drawdown, recharge and abstraction from other production boreholes located in the same aquifer, drought periods, etc. were taken into account during calculation of the safe yield; and
- Compilation of a hydrogeological report to compare the investigative results to the anticipated demand and other aspects such as the General Authorisation, groundwater recharge and exploitation potential for inclusion in the EIA.

6.4.2 Assessment of Impacts

Two potential direct impacts on water resources have been identified, namely:

- Abstraction and reduced availability of groundwater; and
- Potential contamination of surface water and/or groundwater.

Potential cumulative groundwater impacts are discussed in Section 6.8.

6.4.2.1 Potential Impact W1: Abstraction and Reduced Availability of Groundwater

Abstraction of groundwater could have a negative impact on the local aquifers, resulting in localised decline in groundwater levels and drying up of nearby springs and boreholes.

Effective mean annual aquifer recharge is estimated at 1.04 Mm^3/annum for Farm No. 121 Elands Kloof. Groundwater available under General Authorisation is 486 489 m^3/annum for Farm No. 121 Elands Kloof.

Future water demand at the Elands Kloof property, including the proposed development and existing groundwater usage, is estimated at between 237 292 m^3/annum for Alternative 1 and 221 962 m^3/annum for Alternative 2, which equates to 49% and 46% of the General Authorisation, respectively (see Table 6-8).

Table 6-8: Estimated water demand at Farm 121 Elands Kloof

Water demand	**m^3/a**	
	Alternative 1	Alternative 2
Total demand	237 292	221 962
Available water supply		
General Authorisation (75 m^3/ha/a) on Farm No 121 Elands Kloof	486 489	
% of GA allocation used	**49%**	**46%**
Groundwater Balance	**249 197**	**264 527**

Drilling and test pumping results indicate that 372 125 m^3/annum, can be abstracted from the new and existing boreholes on Farm No. 121 Elands Kloof without impacting on water levels or surrounding boreholes.

As such, estimated water demand is predicted to lie well within sustainable abstraction levels for both alternatives. The potential of any impact on other users is further minimised as there are no nearby boreholes other than those on Schanskraal Farm and the spring at the Manor House is upstream of the high yielding production boreholes and should not be impacted. However, approximately half of the water available under the GA, and an even larger portion of the sustainable abstraction volume of 372 125 m^3/annum indicated by pump testing, will be utilised for the development and not be available for other potential uses. This is a significant proportion.

The groundwater abstraction in Table 6-9 is deemed to be sustainable for each of the proposed new and existing boreholes.

Table 6-9: Recommended utilisation of boreholes

Property	Farm No. 121 Elands Kloof				Farm No 122 Ruigte Valey		
Borehole Number	**SKE5**	**SKE6**	**SKE8**	**SKL5**	**SKE7**	**SKE9**	**SKE10**
Depth (mbgl)	120.46	73.14	83.80	79.90	84.90	67.25	83.54
Rest water level (mbgl)	8.82	5.02	5.95	34.60	6.10	6.16	3.36
Safe abstraction rate (ℓ/s@24h/d)	2.2	1.5	6.5	1.6	0.7	3.5	8.5
Safe abstraction rate (m^3/day)	190	130	562	138	60	302	734
Safe abstraction (m^3/annum)	69 379	47 304	204 984	50 458	22 075	110 376	268 056
Depth of pump intake (mbgl)	100	60	70	70	54	42	45
Maximum allowable water level during pumping (mbgl)	75.0	25.0	51.0	40.0	25.0	30.0	35.0

Note: mbgl – metres below ground level, ℓ/s – Litres per second

Potential Impact W1-C: Abstraction and Reduced Availability of Groundwater during Construction

Water abstracted during construction will be used for construction activities as well as the irrigation of sporting facilities, such as the golf course.

The extent of the impact is rated as local as sufficient water is available from the Elands Kloof farm, and no impacts are expected to affect aquifers outside of Schanskraal Farm. Total water demand during construction is not expected to exceeded the estimated future water demand for the development. Although estimated water demand is within predicted sustainable abstraction rates, a significant proportion r will be utilised for the development. The intensity has therefore been rated medium. The duration of the impact will apply to the construction phase, which may extent over more than two years if residential units are built in phases, and is thus rated as medium-term. Implementation of mitigation measures will reduce the probability of an impact occurring.

The impact is assessed to be of ***very low*** significance and with the implementation of mitigation is reduced to ***insignificant*** for Alternatives 1 and 2 (Table 6-10). **Layout Alternative 2 is preferred as it has a lower water demand.**

Table 6-10: Significance of abstraction and reduced availability of groundwater during construction

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Alternatives 1 and 2								
Without mitigation	Local 1	Medium 2	Medium 2	**Low 5**	Probable	**LOW**	– ve	High

Essential mitigation measures: • Utilise boreholes in accordance with the sustainable abstraction rates determined in the EIA (Table 6-9); and • Monitor water levels and abstraction volumes on a weekly basis.								
With mitigation	Local 1	Medium 2	Medium 3	**Low** **5**	Possible	**VERY LOW**	– ve	High

Potential Impact W1-O: Abstraction and Reduced Availability of Groundwater during Operation

Water abstracted during operation will be used for domestic use as well as irrigation of the golf course and other sporting and associated facilities.

The extent of the impact is rated as local as sufficient water is available from the Elands Kloof Farm, and no impacts are expected to affect aquifers outside of Schanskraal Farm. Although estimated water demand is within predicted sustainable abstraction rates, a significant proportion will be utilised for the development. The intensity of the impact has therefore been rated medium. The duration of the impact is long-term, as water will be required for the life-time of the development. Implementation of mitigation measures will reduce the probability of an impact occurring.

The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** for Alternatives 1 and 2 (Table 6-11). **Layout Alternative 2 is preferred as it has a lower water demand.**

Table 6-11: Significance of abstraction and reduced availability of groundwater during operation

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Alternatives 1 and 2								
Without mitigation	Local 1	Medium 2	Long-term 3	**Medium** **6**	Probable	**MEDIUM**	– ve	High
Essential mitigation measures: • Minimise groundwater abstraction by implementing water saving methods and treatment and recycling of waste water where possible; • Utilise boreholes in accordance with the sustainable abstraction rates determined in the EIA (Table 6-9); • Monitor water levels and abstraction volumes on a weekly basis; and • Ensure that the monitoring data are annually assessed by an experienced hydrogeologist.								
With mitigation	Local 1	Medium 2	Long-term 3	**Medium** **6**	Possible	**LOW**	– ve	High

6.4.2.2 Potential Impact W2: Contamination of Surface Water and/or Groundwater

The development may contaminate surface water and groundwater resources in a number of ways:

- Contamination of groundwater by domestic wastewater discharges. This risk is deemed negligible due to the low density of the planned residential units and deep water levels (>30 m) in the higher lying areas where the units are to be located;
- Contamination of groundwater by accidental fuel and oil spills and use of fertilisers during the construction and operation phases;
- Siltation of surface water by eroded sediment; and
- Contamination of surface water by accidental spills of fuel, oil or sewage or use of fertilisers, conveyed by stormwater.

Potential Impact W2-C: Contamination of Surface Water and/or Groundwater during Construction

Potential water pollution potential during the construction phase stems predominantly from erosion and accidental fuel and oil spills. Surface water resources may also be affected by the construction of bridges / culverts and stormwater structures.

The extent of the impact is rated as regional due to the dispersion potential of water, which could transport contaminants off-site. The intensity of the impact is rated as medium due to the scarcity of water resources in the area, making even small spills potentially more significant. The management of stormwater runoff and erosion and pollution control is therefore important during the construction phase and can effectively mitigate impacts. The duration of the impact will apply to the construction phase, which may extent over more than two years if residential units are built in phases, and is thus rated as medium-term. Implementation of mitigation measures will reduce the probability of an impact occurring.

The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***insignificant*** for Alternatives 1 and 2 (Table 6-12). **Layout Alternative 2 is preferred as it has a smaller footprint and hence fewer potential sources of water contamination.**

Table 6-12: Significance of contamination of surface water and/or groundwater during construction

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Alternatives 1 and 2								
Without mitigation	Regional 2	Medium 2	Medium 2	**Medium** 6	Probable	**MEDIUM**	– ve	High
Essential mitigation measures: • Avoid construction within or near watercourses or surface water resources; • Install appropriate water diversion / erosion control structures on all roads and tracks used for construction; • Construct bridges and river crossings with the appropriate headwalls and erosion control measures; • Put erosion measures in place to limit soil loss and siltation of water courses; • Ensure that pipes and canals do not lead directly into watercourses (without the appropriate erosion measures and suitable outlet structures); • Do not release any pollutants, including sediment, sewage, cement, fuel, oil, chemicals, hazardous substances, waste water etc, into waterbodies; • Immediately remedy any pollutant spills and prevent spreading and contamination thereof; • Install drip trays for generators, pumps, etc. to prevent spillage and contamination of surface water resources and watercourses; • Compile and enforce a procedure for the storage, handling and transport of hazardous materials; • Maintain vehicles in good working order and train drivers; • Apply good housekeeping rules; • Select environmentally friendly on-site sanitation options and manage and maintain these facilities; • Apply fertilisers sparingly and according to specifications; • Use the most environmentally friendly type of pesticides and herbicides and apply these sparingly and according to specifications; and • Monitor and record groundwater and surface water quality regularly. Initiate monitoring before construction.								
With mitigation	Local 1	Low 1	Short-term 1	**Very Low 3**	Possible	**INSIGNIFI-CANT**	– ve	High

Potential Impact W2-O: Contamination of Surface Water and/or Groundwater during Operation

Water pollution potential during the operation phase stems from increased volumes of stormwater from sealed surfaces (roads and buildings) which may result in the erosion, siltation and ecological degradation of downstream water resources. Surface water resources may also be affected by

bridges and stormwater structures. Sewage treatment, if not managed appropriately, may contaminate water resources during the operation phase.

The extent of the impact is rated as regional due to the dispersion potential of water, which could transport contaminants off-site. The intensity of the impact is rated as medium due to the scarcity of water resources in the area, making even small spills potentially more significant. The management of stormwater runoff, erosion, pollution control and the sewerage system is therefore important during the operation phase and can effectively mitigate impacts. The duration of the impact has been rated medium-term as pollution will disperse in time. Implementation of mitigation measures will reduce the probability of an impact occurring.

The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***insignificant*** for Alternatives 1 and 2 (Table 6-13). **Layout Alternative 2 is preferred as it has a smaller footprint and hence fewer potential sources of water contamination.**

Table 6-13: Significance of contamination of surface water and/or groundwater during operation

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Alternatives 1 and 2								
Without mitigation	Regional 2	Medium 2	Medium 2	**Medium 6**	Probable	**MEDIUM**	**– ve**	High
Essential mitigation measures: • Ensure that pipes and canals do not lead directly into watercourses (without the appropriate erosion measures and suitable outlet structures); • Encourage onsite stormwater collection (i.e. collection of rainwater on roofs and parking areas); • Encourage onsite treatment of stormwater (through vegetated swales or treatment wetlands); • Minimize runoff speed as far as possible; • Monitor and maintain erosion and flood control measures to prevent erosion, siltation and flooding; • Ensure that packaged wastewater treatment plants are designed, constructed and maintained to prevent pollution of groundwater; • Apply good housekeeping practices; • Apply fertiliser sparingly and according to specifications; • Use the most environmentally friendly type of pesticides and herbicides and apply these sparingly and according to specifications; and • Monitor and record groundwater and surface water quality regularly.								
With mitigation	Local 1	Low 1	Short-term 1	**Very Low 3**	Possible	**INSIGNIFI-CANT**	– ve	High

6.4.3 The No-Go Alternative

The No-Go alternative will not require additional the abstraction of groundwater and the current *status quo* of the groundwater resources will remain, as will any existing sources of contamination, of which there are very few. As such, under the No-Go alternative it is expected that site conditions remain as per the current condition.

6.4.4 Mitigation Measures: Potential Surface Water and Groundwater Impacts

Essential water mitigation measures during **construction** are as follows:

- Utilise boreholes in accordance with the sustainable abstraction rates determined in the EIA (Table 6-9); and
- Monitor water levels and abstraction volumes on a weekly basis.
- Avoid construction within or near watercourses or surface water resources;

- Install appropriate water diversion / erosion control structures on all roads and tracks used for construction;
- Construct bridges and river crossings with the appropriate headwalls and erosion control measures;
- Put erosion measures in place to limit soil loss and siltation of water courses;
- Ensure that pipes and canals do not lead directly into watercourses (without the appropriate erosion measures and suitable outlet structures);
- Do not release any pollutants, including sediment, sewage, cement, fuel, oil, chemicals, hazardous substances, waste water etc, into waterbodies;
- Immediately remedy any pollutant spills and prevent spreading and contamination thereof;
- Install drip trays for generators, pumps, etc. to prevent spillage and contamination of surface water resources and watercourses;
- Compile and enforce a procedure for the storage, handling and transport of hazardous materials;
- Maintain vehicles in good working order and train drivers;
- Apply good housekeeping rules;
- Select environmentally friendly on-site sanitation options and manage and maintain these facilities;
- Apply fertilisers sparingly and according to specifications;
- Use the most environmentally friendly type of pesticides and herbicides and apply these sparingly and according to specifications; and
- Monitor and record groundwater and surface water quality regularly. Initiate monitoring before construction.

Essential water mitigation measures during **operation** are as follows:

- Minimise groundwater abstraction by implementing water saving methods and treatment and recycling of waste water where possible;
- Utilise boreholes in accordance with the sustainable abstraction rates determined in the EIA (Table 6-9);
- Monitor water levels and abstraction volumes on a weekly basis; and
- Ensure that pipes and canals do not lead directly into watercourses (without the appropriate erosion measures and suitable outlet structures);
- Encourage onsite stormwater collection (i.e. collection of rainwater on roofs and parking areas);
- Encourage onsite treatment of stormwater (through vegetated swales or treatment wetlands);
- Minimize runoff speed as far as possible;
- Monitor and maintain erosion and flood control measures to prevent erosion, siltation and flooding;
- Ensure that packaged wastewater treatment plants are designed, constructed and maintained to prevent pollution of groundwater;
- Apply good housekeeping practices;
- Apply fertiliser sparingly and according to specifications;

- Use the most environmentally friendly type of pesticides and herbicides and apply these sparingly and according to specifications; and
- Monitor and record groundwater and surface water quality regularly.

Best practice water mitigation measures during **operation** are as follows:

- Facilitate groundwater infiltration of stormwater runoff before allowing discharge into water courses; and
- Monitor the effect of erosion and construction activities on downstream water quality.

6.5 Potential Botanical Impacts

6.5.1 Introduction, Terms of Reference and Methodology

This assessment is based on the Terrestrial and Aquatic Ecology Study undertaken by Larissa Heyns of SRK Consulting (see Appendix B), as described in Section 6.3.1.

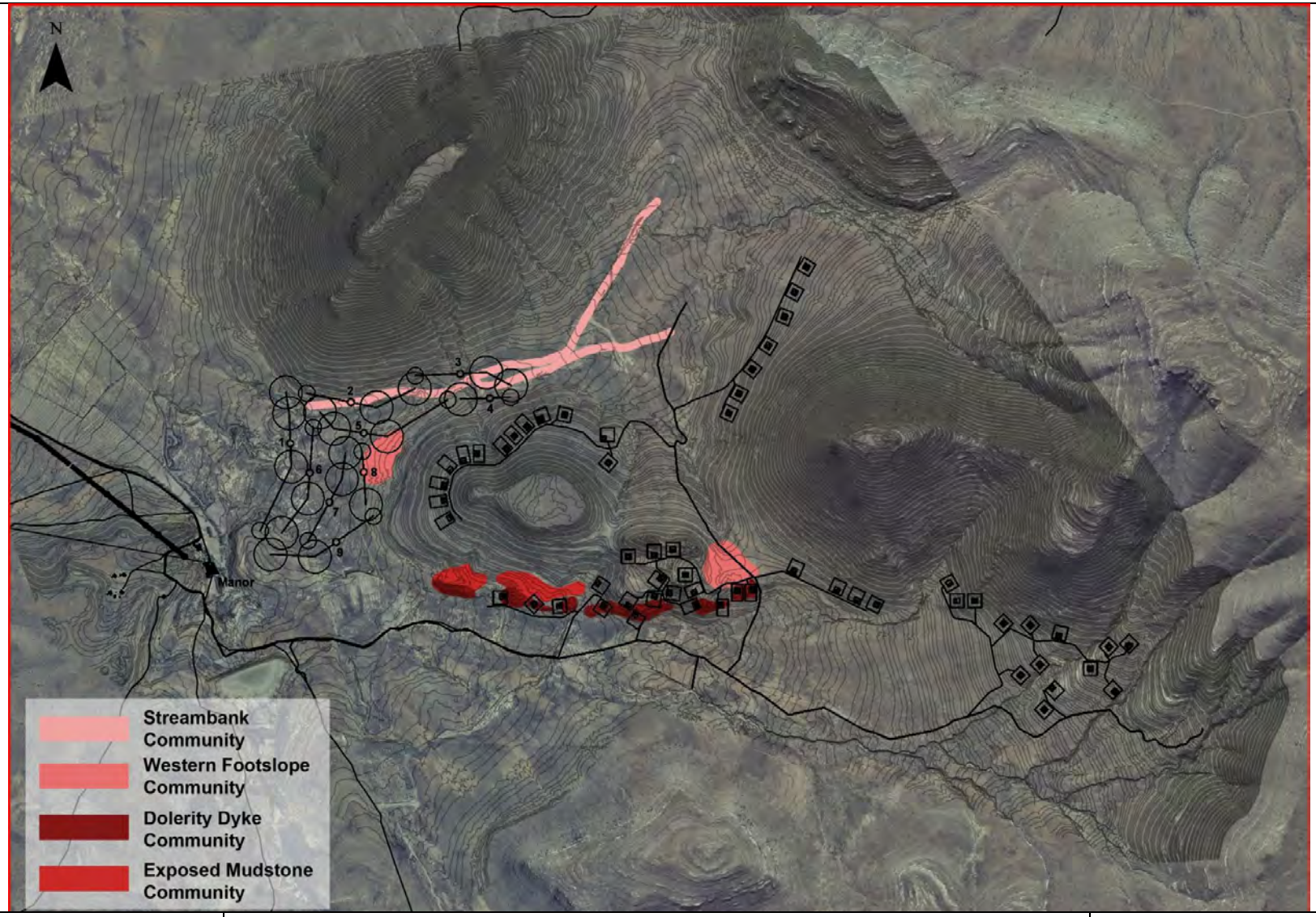
6.5.2 Assessment of Impacts

Three potential direct impacts on the flora of the area were identified, and each impact is assessed separately for the construction and operation phases, where applicable:

- B1: Loss of sensitive vegetation due to vegetation clearing;
- B2: Disturbance of sensitive vegetation communities; and
- B3: Land restoration due to increased availability of funding.

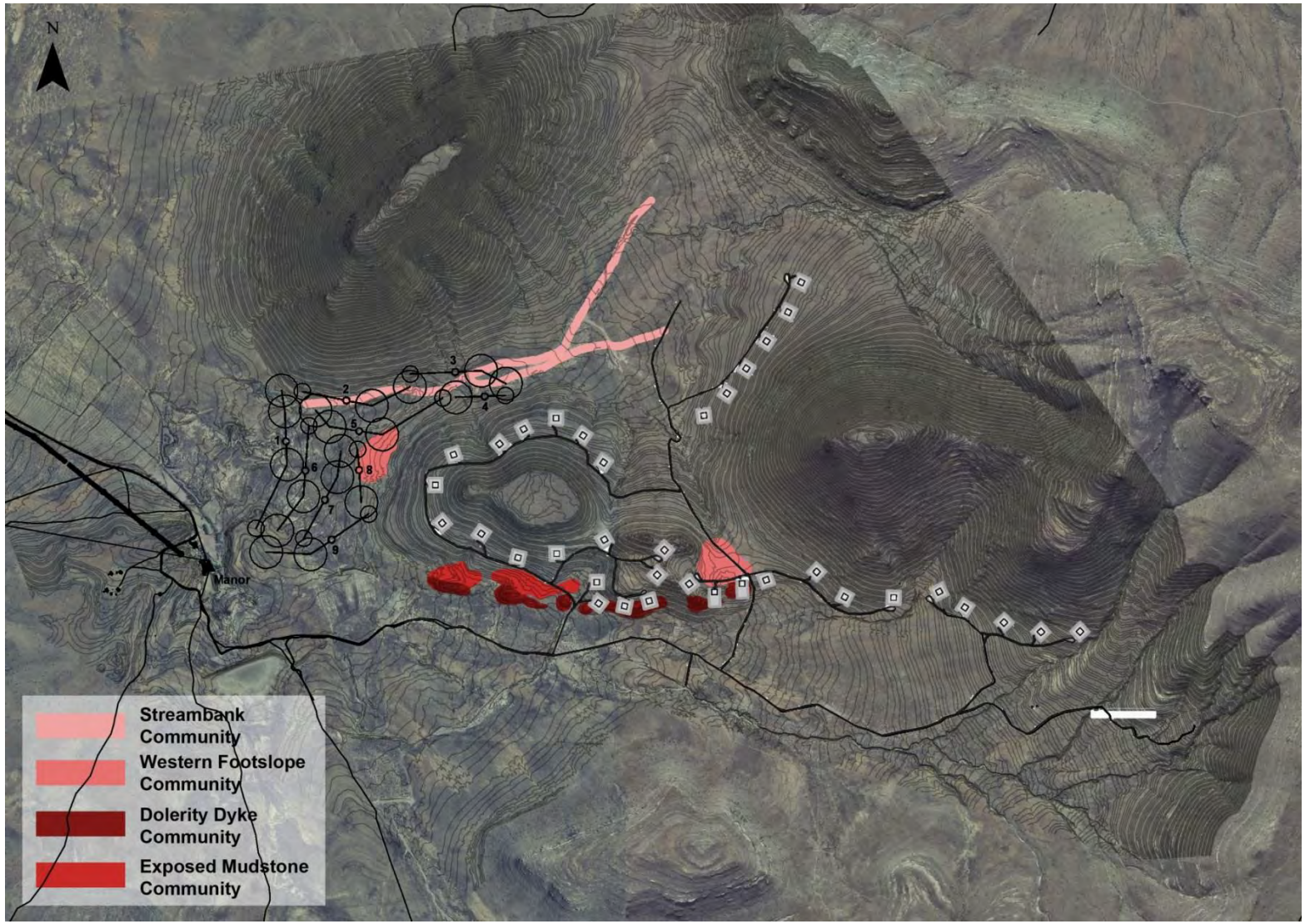
The assessment of botanical impacts is largely based on the location of residential units, infrastructure and the golf course relative to the vegetation communities, as shown in Figure 6-3 for Layout Alternative 1 and Figure 6-4 for Layout Alternative 2.

Potential cumulative botanical impacts are discussed in Section 6.8.



srk consulting	**Schanskraal Sporting Estate** Layout Alternative 1 relative to the distribution of highly sensitive plant communities	Project No. 424086

Figure 6-3: Layout Alternative 1 relative to the distribution of sensitive plant communities



srk consulting	**Schanskraal Sporting Estate** Layout Alternative 2 relative to the distribution of highly sensitive plant communities	Project No. 424086

Figure 6-4: Layout Alternative 2 relative to the distribution of sensitive plant communities

6.5.2.1 Potential Impact B1: Loss of Sensitive Vegetation due to Vegetation Clearing

Six plant communities were identified in the development area. Of these, the Streambank, Dolerite Dyke, Western Footslope and Exposed Mudstone communities were deemed to be the most sensitive communities on site (see Table 6-14).

Table 6-14: Plant communities, species richness and sensitivity rating

Plant Community	Sensitivity Rating
Southern Footslope community	Medium - Low
Northern Footslope community	Medium - Low
Streambank community	Medium - High
Dolerite Dyke community	High
Western Footslope community	High
Exposed Mudstone community	High

A minority of the proposed residential units overlap with sensitive vegetation communities in the southern portion of the development site, while the golf course overlaps with sensitive vegetation in the western portion of the site. Vegetation clearing during the construction phase of the project impacts on these more sensitive vegetation communities as follows:

- **Streambank:** This vegetation community will be affected by the proposed golf course development and not the residential units. The impact on this community is thus identical for Alternatives 1 and 2;
- **Dolerite Dyke:** This vegetation community will be affected by the construction of residential units. The percentage loss of vegetation cover is largest for this vegetation community:
    - Alternative 1 makes provision for 11 residential units to be constructed on dolerite outcrops that support Dolerite Dyke community vegetation and affects most of this vegetation type identified on the development site;
    - Alternative 2 makes provision for five residential units to be constructed on dolerite outcrops that support Dolerite Dyke community vegetation and affects approximately half of the extent of this vegetation type identified on the development site.
- **Western Footslope:** This vegetation community will be affected by the proposed golf course development, while three residential units encroach on the vegetation. The impact on this community is similar for Alternatives 1 and 2; and
- **Exposed Mudstone:** This vegetation community will be marginally affected by the construction of residential units:
    - Alternative 1 makes provision for three residential units that encroach on Exposed Mudstone vegetation;
    - Alternative 2 makes provision for one residential unit and one road that encroach on Exposed Mudstone vegetation; the latter will fragment a small portion of the community.

Overall, while vegetation clearing will impact on a considerable portion of Dolerite Dyke and Streambank vegetation located on the development site, the ground-truthing of vegetation communities has focused on a narrow area; the vegetation communities are not deemed to be unique to the development site and are expected to be more widely distributed on Schanskraal Farm and the region.

The extent of the impact is deemed to be local, as the disturbance and clearing will be largely limited to the construction footprint. The intensity of the impact is deemed to be medium as some of the

sensitive communities are considerably affected within the construction footprint but not endemic. The duration of the impact is long-term and essentially irreversible, as residential units and infrastructure will be constructed on the cleared areas.

The intensity of the impact can be reduced effectively by restricting earthworks related to the golf course development to areas outside of the Streambank and Western Footslope Communities.

The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** for both Alternatives 1 and 2 (Table 6-15). **Layout Alternative 2 is preferred as it has a smaller footprint within sensitive vegetation communities.**

Table 6-15: Significance of loss of sensitive vegetation due to vegetation clearing

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Alternatives 1 and 2								
Without mitigation	Local 1	Medium 2	Long-term 3	**Medium** **6**	Definite	**MEDIUM**	– ve	High
Essential mitigation measures: • Clearly demarcate areas in which sensitive plant communities occur as off limits / 'No-Go' areas outside the construction footprint; • Restrict earthworks related to the golf course to areas that fall outside of the Streambank and Western Footslope Communities; • Carry out 'search and rescue' to remove any sensitive or useful species and SCC before construction starts. Keep plants in a nursery (established on site) and re-planted in suitable areas of the same vegetation type; • Only allow clearing in designated and clearly demarcated areas; • Keep clearing to a minimum and within the construction footprint; • Strictly prohibit the harvesting / collection of any plant species (including fuel wood) on site; • Discourage fires on site and only allow fires only in demarcated 'fire-safe' zones; • Avoid contamination of soils and vegetation with hazardous materials; • Store hazardous materials in the appropriate manner (refer to EMP); and • Clean any accidental contamination, chemical, fuel and oil spills immediately in the appropriate manner (in accordance with the nature of the contamination / spill).								
With mitigation	Local 1	Low 1	Long-term 3	**Low** **5**	Definite	**LOW**	– ve	High

If the layout is amended so that no development or construction activities take place within or near sensitive communities, the impact is reduced to ***insignificant***.

6.5.2.2 Potential Impact B2: Disturbance of Sensitive Vegetation Communities during Operation

The increased number activities on the site following the development of the Schanskraal Sporting Estate may lead to degradation of sensitive vegetation communities due to disturbance, e.g. trampling, and the proliferation of invasive species, e.g. through the introduction of exotic garden species.

The extent of the impact is deemed to be local, as the impact will likely be contained within the Estate. The intensity of the impact is deemed to be medium, as the vegetation communities are deemed to be sensitive. The duration of the impact may be long-term, as pressures will persist for the duration of the project, although the impacts are reversible to some extent.

Implementing measures to prevent the introduction of and/or continually remove aliens and to minimise disturbance will reduce the intensity of the impact.

The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** for both Alternatives 1 and 2 (see Table 6-16). **Alternative 2 is marginally preferred as fewer units and therefore residents on the farm are likely to cause less disturbance.**

Table 6-16: Significance of spread of invasive species and disturbance of Exposed Mudstone community during operation

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Alternatives 1 and 2								
Without mitigation	Local 1	Medium 2	Long-term 3	**Medium** 6	Probable	**MEDIUM**	**– ve**	High
Essential mitigation measures: • Clearly demarcate areas in which sensitive plant communities occur with appropriate signage to prevent disturbance by pedestrians and vehicular; • Control invasive species on an ongoing basis using the best practice methods; • Compile an invasive plant monitoring regime and management plan for this purpose; • Rehabilitate areas that were temporarily disturbed / cleared using locally indigenous species, taking soil conditions into consideration when planning replanting of species; and • Take soil conditions into consideration before commencing with rehabilitation efforts, as this will have an effect on the efficacy of the strategies employed; and • Place rocks and stones into the top 150 mm of the soil surface to improve water holding, increase percolation and reduce water speed and runoff and to serve as seedling germination micro- sites; and • Compile a species list to be used for landscaping purposes listing only non-invasive indigenous / endemic / locally occurring species and distribute this list to homeowners.								
With mitigation	Local 1	Low 1	Long-term 3	**Low 5**	Probable	**LOW**	**– ve**	High

6.5.2.3 Potential Impact B3: Land Rehabilitation

Ranor proposes to use some of the profit generated by the development to rehabilitate land on the remainder of Schanskraal Farm, where historic farming / grazing have led to some degradation of the botanical communities and proliferation of alien plants. Rehabilitation aims to ensure that the ecological characteristics of the development area reinstated, thereby increasing the value of the development, and may include measures to remove alien invasive species and prevent the spread of invasives to other parts of the farm.

The extent of the impact, which represents a benefit, is deemed to be local. The intensity of the impact depends on the amount of funding that is made available. It is deemed to be low without mitigation, but could be increased to medium intensity with mitigation, notably the effective implementation of projects and the allocation of a higher percentage of proceeds for rehabilitation activities. The duration of the impact depends on the ongoing maintenance of rehabilitation activities. Due to uncertainty in this regard, the duration is rated as medium-term without mitigation and long-term with mitigation that is aimed at ensuring that funds remain available over the long-term. The benefit is assessed to be of ***very low*** significance and with the implementation of optimisation measures is increased to ***low*** for both Alternatives 1 and 2 (Table 6-17).

Table 6-17: Significance of land rehabilitation during operation

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Alternatives 1 and 2								
Without mitigation	Local 1	Low 1	Medium 2	**Very Low 4**	Probable	**VERY LOW**	+ ve	High
Essential optimisation measures: • Determine what percentage of profit will be made available for land rehabilitation projects (including the rehabilitation and restoration of lakes, dams and existing watercourses); • Appoint a qualified specialist to develop a Rehabilitation Plan, in partnership with regional conservation authority(ies) or organisation(s). The Plan must, amongst others, identify: - Priority areas for rehabilitation; - Suitable rehabilitation methods; - Required resources and skills; and - Costs of initial rehabilitation and ongoing maintenance; and • Establish a fund to ensure that money is available on an ongoing basis, either from initial proceeds or contributions by homeowners, to sustain rehabilitation activities over the long-term, in line with the costs								

identified in the Rehabilitation Plan.								
With mitigation	Local 1	Medium 2	Long-term 3	**Medium 6**	Probable	**MEDIUM**	+ ve	High

6.5.3 The No-Go Alternative

The No-Go alternative entails no change in the property's existing *status quo*, in other words no development, rezoning or subdivision. Sustainable livestock agriculture will continue at the site under this scenario (as it would with the development proposal).

The ecological condition of the development site is good and the above mentioned activities, such as sustainable livestock farming, have not caused significant degradation of the site or vegetation loss to date, although other areas of Schanskraal Farm are partly degraded due to agricultural activities. Similarly, Invasive plants do not represent a threat in the development area at present but are a concern in other parts of the farm.

As such, under the No-Go alternative it is expected that site conditions remain largely as per the current condition, with some potential for deterioration due to grazing and associated agricultural activities. Under the No-Go scenario it is less likely that funds will be raised for rehabilitation of currently degraded sections of the farm. The No-Go alternative thus also has a potentially slight negative impact on the vegetation on the Schanskraal Farm.

6.5.4 Mitigation Measures: Potential Botanical Impacts

Essential botanical mitigation measures during **construction** are as follows:

- Clearly demarcate sensitive areas (Figure 6-3 and Figure 6-4) with appropriate signage as off limits / 'no- go' areas to prevent pedestrian / vehicular disturbance;
- Restrict earthworks related to the golf course to areas that fall outside of the Streambank and Western Footslope Communities;
- Implement a 20 m buffer zone around the Streambank community to maintain the functionality and sustainability of the water resource and its ecosystem;
- Do not allow any disturbance, clearing or construction within this 20 m buffer zone;
- Appoint a qualified botanist to carry out 'search and rescue' operation in all areas that will be disturbed to remove any sensitive or useful species and SCC before construction starts.
- Appoint a qualified technician to supervise the placement of rescued plants in a nursery established on site and the re-planting of specimens in suitable areas of the farm;
- Appoint a qualified specialist to remove any fauna that are directly threatened by the construction activities to a safe location;
- Only allow clearing in designated and clearly demarcated areas;
- Keep clearing to a minimum;
- Strictly prohibit the harvesting / collection of any plant species (including fuel wood) on site;
- Strictly prohibit the hunting, killing, collection or trapping of any fauna on site;
- Discourage fires on site and only allow fires only in demarcated 'fire-safe' zones;
- Avoid contamination of soils and vegetation with hazardous materials;
- Store hazardous materials in the appropriate manner (in accordance with the nature of the hazardous material); and
- Clean any accidental contamination, chemical, fuel and oil spills immediately in the appropriate manner (in accordance with the nature of the contamination / spill).

Essential botanical mitigation measures during **operation** are as follows:

- Clearly demarcate sensitive areas (Figure 6-3 and Figure 6-4) with appropriate signage as off limits / 'no- go' areas to prevent pedestrian / vehicular disturbance;
- Control invasive species on an ongoing basis using the best practice methods;
- Compile an invasive plant monitoring regime and management plan for this purpose;
- Rehabilitate areas that were temporarily disturbed / cleared using locally indigenous species, taking soil conditions into consideration when planning replanting of species;
- Rotate and mulch soil before hydroseeding or replanting in order to encourage plant establishment;
- Take soil conditions into consideration before commencing with rehabilitation efforts, as this will have an effect on the efficacy of the strategies employed;
- Place rocks and stones into the top 150 mm of the soil surface to improve water holding, increase percolation and reduce water speed and runoff and to serve as seedling germination micro- sites;
- Compile a species list to be used for landscaping purposes listing only non-invasive indigenous / endemic / locally occurring species and distribute this list to homeowners;
- Determine what percentage of proceeds will be made available for land rehabilitation projects (including the rehabilitation and restoration of lakes, dams and existing watercourses);
- Appoint a qualified specialist to develop a Rehabilitation Plan, in partnership with regional conservation authority(ies) or organisation(s). The Plan must, amongst others, identify:
  - Priority areas for rehabilitation;
  - Suitable rehabilitation methods;
  - Required resources and skills; and
  - Costs of initial rehabilitation and ongoing maintenance; and
- Establish a fund to ensure that money is available on an ongoing basis, either from initial proceeds or contributions by homeowners, to sustain rehabilitation activities over the long-term, in line with the costs identified in the Rehabilitation Plan.

Best practice botanical mitigation measures during **operation** are as follows:

- Collect seeds / cuttings from plants on site and use in nursery to grow plants for rehabilitation or landscaping purposes;
- Avoid the use of harmful pesticides, chemicals, fungicides, etc. that can cause environmental damage at all costs; and
- Compile a management plan for the use of the above and distribute it to homeowners.

6.6 Potential Impacts on Fauna

6.6.1 Introduction, Terms of Reference and Methodology

This assessment is based on the Terrestrial and Aquatic Ecology Study undertaken by Larissa Heyns of SRK (see Appendix B), with ToR as described in Section 6.5.1.

6.6.2 Assessment of Impacts

The main potential direct impact on the fauna is the disturbance or loss of fauna during construction and operation. Potential sources of the impact on fauna are:

- Disturbance or destruction of faunal habitat;
- Poaching or killing of fauna;
- Introduction of pets;
- Increased proximity to and conflict with problem animals, such as Chacma baboons and Black-backed jackals; and
- Fencing that obstructs faunal movement and fragments ecological corridors.

Potential cumulative faunal impacts are discussed in Section 6.8.

6.6.2.1 Potential Impact F1: Disturbance or Loss of Fauna

Wherever development takes place on undeveloped land, faunal habitats will be destroyed. Many of the animals associated with affected habitats will be killed at the time of site clearance. Some of those animals that are able to escape will establish themselves in similar habitats nearby, but their long-term prospects for survival will be poor because those habitats will most likely already be at carrying capacity for the relevant species.

At Schanskraal, no mammalian, reptilian or amphibian SCC were identified in the development area. The Dolerite Dyke community was identified as a sensitive habitat type, although it is not considered sensitive at a regional scale. The Blue Crane (*Anthropoides paradiseus*) is the only avifaunal SCC that may potentially be affected by the development. Blue Cranes are prone to fatal collisions with transmission lines.

Potential Impact F1-C: Disturbance or Loss of Fauna during Construction

Construction phase impacts on fauna are likely to result from the physical disturbance of faunal habitat during vegetation clearing, construction of project facilities and infrastructure, poaching, road kill and temporary fencing.

The extent of the impact is deemed to be local, as disturbance of fauna will likely be contained within Schanskraal Farm. Due to the considerable footprint and distribution of project facilities across the site and the wide-spread clearing of Dolerite Dyke vegetation, the intensity of the impact is deemed to be medium. Although the footprint of the project is smaller for Layout Alternative 2, particularly within on the Dolerite Dyke community, the intensity rating applies to both alternatives. The duration of the impact will apply to the construction phase, which may extent over more than two years if residential units are built in phases, and is thus rated as medium-term.

The impact is assessed to be of ***low*** significance and with the implementation of mitigation is reduced to ***very low*** (Table 6-18). **Layout Alternative 2 is preferred as it has a smaller footprint.**

Table 6-18: Significance of disturbance of faunal habitat and fauna during construction

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Alternatives 1 and 2								
Without mitigation	Local 1	Medium 2	Medium 2	**Low** 5	Definite	**LOW**	**– ve**	High
Essential mitigation measures: • Remove any fauna that are directly threatened by the construction activities to a safe location; • Strictly prohibit the hunting, killing, collection or trapping of any fauna on site; • Do not allow any food to be left out in the open (to avoid attraction of / conflict with problem animals); • Discourage fires on site and only allow fires only in demarcated 'fire-safe' zones; • Construct temporary fencing, where necessary, in such a way as to allow alternative movement routes for fauna and to avoid the trapping fauna; and • Attach visible tags to power lines, cables and infrastructure in order to limit potential deadly avifaunal collisions.								

With mitigation	Local 1	Low 1	Medium 2	**Very Low 4**	Definite	**VERY LOW**	**– ve**	High

Potential Impact F1-O: Disturbance or Loss of Fauna during Operation

Operation phase impacts on fauna are likely to result from increased conflict with problem animals, poaching and the increased presence of pets, vehicles and fencing. Vehicles, particularly if moving at speed or off-road, may kill or maim fauna. Pets such as cats and dogs often hunt wild fauna and can have a significant effect on faunal populations in an area. Fencing can trap fauna and restrict their movement.

The extent of the impact on fauna is deemed to be local, as the impact will likely be contained within Schanskraal Farm. The intensity of the impact is deemed to be low, as no faunal SCC are expected to occur in the study area. The duration of the impact may be long-term, as pressures will persist for the duration of the project, although the impacts are reversible to some extent. Implementing measures to reduce the likelihood of disturbance will reduce the probability of the impact occurring.

The impact is assessed to be of ***low*** significance and with the implementation of mitigation is reduced to ***very low*** for both Alternatives 1 and 2 (Table 6-19). **Alternative 2 is marginally preferred as fewer units and therefore residents on the farm are likely to result in less potential for disturbance.**

Table 6-19: Significance of disturbance or loss of fauna during operation

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Alternatives 1 and 2								
Without mitigation	Local 1	Low 1	Long-term 3	**Low 5**	Probable	**LOW**	**– ve**	High
Essential mitigation measures: • Provide homeowners with a short and concise environmental education document / management plan to ensure that no unnecessary hunting or killing of animals occurs; • Ensure the education document / management plan addresses the management of problem animals (such as Chacma baboons and Black-backed jackals); • Instruct drivers to remain on demarcated roads at all times; • Ensure that vehicles don't exceed the recommended speed limit; • Attach visible tags to power lines, cables and infrastructure to prevent bird collisions; • Keep fencing to a minimum; • Leave openings in fenced off areas to allow fauna to move through; and • Maintain alternative movement corridors intact for fauna in areas where fencing is unavoidable, or where areas need to be fenced off entirely. **Best practice mitigation measures:** • Ensure that adequate and secure fencing surrounds properties where pets (e.g. cats and dogs) are kept; • Ensure that pets are not allowed to roam free and unsupervised; • Use baboon proof bins to avoid conflict with Chacma baboons; • Implement pre-emptive actions to avoid future conflicts (e.g. electric fencing and baboon proof bins to avoid conflict with Chacma baboons); and • Ensure that electrical strands used in electric fences are at least 30cm off the ground (to avoid fatalities to tortoises and other small fauna).								
With mitigation	Local 1	Low 1	Long-term 3	**Low 5**	Possible	**VERY LOW**	**– ve**	High

6.6.3 The No-Go Alternative

The No-Go alternative entails no change in the property's existing *status quo*, in other words no development, rezoning or subdivision. Sustainable livestock agriculture will continue at the site under this scenario (as it would with the development proposal).

The ecological condition of the site is good and the above mentioned activities, such as sustainable livestock farming, are not expected to cause significant degradation of the site or loss of fauna in the medium to long term. As such, under the No-Go alternative it is expected that site conditions remain as per the current condition. There is thus no fauna impact from the No-Go alternative.

6.6.4 Mitigation Measures: Potential Faunal Impacts

Essential fauna mitigation measures during **construction** are as follows:

- Remove any fauna that are directly threatened by the construction activities to a safe location;
- Prohibit the hunting, killing, collection or trapping of any fauna on site;
- Dispose of all organic waste into baboon-proof bins;
- Construct temporary fencing, where necessary, in such a way as to allow alternative movement routes for fauna and to avoid the trapping fauna; and
- Install visible tags to power lines, cables and infrastructure in order to limit potential deadly avifaunal collisions.

Essential fauna mitigation measures during **operation** are as follows:

- Provide homeowners with a short and concise environmental education document / management plan to prevent unnecessary hunting or killing of animals;
- Ensure the education document / management plan addresses the management of problem animals (such as Chacma baboons and Black-backed jackals);
- Provide all residential units and staff houses with baboon-proof bins;
- Instruct drivers to remain on demarked roads at all times;
- Ensure that vehicles travel at the recommended speed limit;
- Maintain visible tags on power lines, cables and infrastructure to prevent bird collisions;
- Keep fencing to a minimum;
- Leave openings in fenced off areas to allow fauna to move through; and
- Maintain alternate movement corridors intact for fauna in areas where fencing is unavoidable, or where areas need to be fenced off entirely.

6.7 Potential Socio-economic Impacts

6.7.1 Assessment of Impacts

Four potential direct socio–economic impacts have been identified, namely:

- Increased employment, income and skills development;
- Increased business sales;
- Increased incidence of anti-social behaviour; and
- Improved facilities at primary school in Richmond.

The impact of the development on the socio-economic environment will be largely indistinguishable during construction and operation, and therefore impacts of these phases are all considered as single impacts experienced in the long term.

6.7.1.1 Potential Impact SE1: Increased Employment, Income and Skills Development

The construction workforce is not expected to exceed 50 people at any given stage, while approximately 25 people will be *directly* employed at the estate in the long term (including 13 new jobs generated by the development). During construction mostly, unskilled construction workers and semi-skilled machine operators will be required; they will work under the supervision of a site manager.

A conservative estimate of ~25 new employment opportunities (direct, indirect and induced) will be created by the project at district level in the long term. With optimisation, it is anticipated that all of these positions will be filled by people currently living in the local municipality.

The Schanskraal Farm will continue to be run as an operational agricultural property, and the new residential development will not affect this.

The *benefit* of increased employment, income and skills development as a result the project during the construction and operation phases is therefore assessed to be of ***low*** significance with or without the implementation of recommended optimisation measures (see Table 6-20). **Alternative 1 is marginally preferred as more units and therefore residents on the farm are likely to result in more employment both during construction and operation.**

Table 6-20: Significance of increased employment, income and skills development during construction and operation

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Without mitigation	Regional 2	Low 1	Long-term 3	**Medium** **6**	Improbable	**LOW**	+ve	High
Key Mitigation Measures: • Employ local contractor(s) (i.e. from the Ubuntu Municipality) for all construction activities; • Source unskilled, semi-skilled and skilled labourers locally (i.e. from the Ubuntu Municipality), where possible; and • Encourage the training and promotion of unskilled and semi-skilled labourers during operations.								
With mitigation	Regional 2	Low 1	Long-term 3	**Medium** **6**	Possible	**LOW**	+ve	High

6.7.1.2 Potential Impact SE2: Increased Business Sales

As a result of the project it is possible that increased economic activity will be stimulated locally (i.e. within the Ubuntu Local Municipality) through demand for construction materials and labour. This will result in (direct) new business sales. Further, the estate may attract additional tourism to the area during operations, thereby increasing business sales locally (and further afield).

Local suppliers of goods and services will then spend their additional income, adding to the circulation of money. This secondary expenditure, or demand, results in indirect or induced new business sales. Total new business sales are calculated by adding direct, induced and indirect sales in the economy. The strength of the secondary increase in business sales is indicated by the mulitiplier.

Given the fairly modest scale of the development, the *benefit* of increased business sales during both construction and operation of the Schanskraal Sporting Estate is therefore assessed to be of ***low*** significance with and without mitigation (see Table 6-21). **Alternative 1 is marginally preferred as more units and therefore residents on the farm are likely to result in greater business sales.**

Table 6-21: Significance of increased business sales during construction and operation

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Without mitigation	Regional 2	Low 1	Long-term 3	**Medium** **6**	Improbable	**LOW**	+ve	High
Key Mitigation Measures: • Ensure maximum procurement of goods and services from local suppliers during construction,; • Facilitate opportunities for local retail and service industries to establish themselves or expand current services to meet the needs of new households; and • Award maintenance contracts to local companies.								
With mitigation	Regional 2	Low 1	Long-term 3	**Medium** **6**	Possible	**LOW**	+ve	High

6.7.1.3 Potential Impact SE3: Increased Incidence of Anti-social Behaviour

The construction workforce will be accommodated temporarily at the Schanskraal Farm without their families, but only during the working week week. A universal problem with large-scale construction activities is at times an increased incidence of anti-social behaviour. It is possible, although extremely unlikely given the scale of the development, that increased incidences of e.g. alcohol and drug abuse and prostitution may be experienced at Schanskraal if the workforce is not sourced from local communities.

It is also possible that persons who are not from the immediately surrounding area may become familiar with neighbouring properties. Consequently increased incidences of crime (e.g. stock theft), may be experienced if the workforce is not sourced from local communities.

While there is no guarantee that no crimes or antisocial behaviour may occur during the construction period purely as a result of the project, it is considered unlikely. The social impact of increased crime and incidence of anti-social behaviour during the construction and operations phases is assessed to be of ***low*** significance with or without the implementation of essential mitigation measures (see Table 6-22).

Table 6-22: Significance of increased incidences of anti-social behaviour

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Without mitigation	Regional 2	Low 1	Long-term 3	**Medium** **6**	Possible	**LOW**	-ve	High
Key Mitigation Measures: • Employ 24 hour security during all construction activities; • Instruct security to prevent labourers from entering neighbouring private properties; • Employ the workforce from local communities (i.e. within the Ubuntu Local Municipality); and • Compile a Code of Conduct for permanent employees dealing with (amongst others) social interaction with communities, HIV awareness and substance abuse.								
With mitigation	Regional 2	Low 1	Long-term 3	**Medium** **6**	Improbable	**LOW**	-ve	High

6.7.1.4 Potential Impact SE4: Improved Facilities at Primary School in Richmond

Ranor propose that, following the sale of the first two plots, 1% of all subsequent revenue from the sale of property at Schanskraal be donated to the Ikhaya Senior Primary School (or other suitable education facility located in Richmond as identified or agreed to by the local authority).

Although it is uncertain as to how this donation will be allocated and spent, it has been assumed that the social benefit of this donation will be of ***very low*** significance without optimisation and of ***low*** significance with the implementation of mitigation measures (see Table 6-23).

Table 6-23: Significance of improved facilities at a Richmond primary school

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Without mitigation	Regional 2	Low 1	Medium-term 2	**Low** **5**	Possible	**VERY LOW**	+ve	High
Key Mitigation Measures: • Seek guidance from the Ubuntu Local Municipality as to how the donation can be best directed to achieve maximum effect.								
With mitigation	Regional 2	Low 1	Medium-term 2	**Low** **5**	Probable	**LOW**	+ve	High

6.7.2 The No-Go Alternative

The No-Go alternative will bring none of the socio-economic benefits of the project such as wealth creation, employment and skills transfer. Conversely the negative impact – potentially increased crime and incidence of anti-social behaviour – will be avoided.

6.7.3 Mitigation Measures: Potential Socio-economic Impacts

Essential socio-economic mitigation measures during **construction** are as follows:

- Employ local contractor(s) (i.e. from the Ubuntu Municipality) for all construction activities;
- Ensure maximum procurement of goods and services from local suppliers during construction;
- Employ 24 hour security during all construction activities; and
- Instruct security to prevent labourers from entering neighbouring private properties.

Essential socio-economic mitigation measures during **operation** are as follows:

- Source unskilled, semi-skilled and skilled permanent labourers locally (i.e. from within the Ubuntu Municipality), where possible;
- Encourage the training and promotion of unskilled and semi-skilled labourers during operations;
- Facilitate opportunities for local retail and service industries to establish themselves or expand current services to meet the needs of new households;
- Award maintenance contracts to local companies;
- Employ the workforce from local communities (i.e. within the Ubuntu Local Municipality);
- Compile a Code of Conduct for permanent employees dealing with (amongst others) social interaction with communities, HIV awareness and substance abuse; and
- Seek guidance from the Ubuntu Local Municipality as to how the donation can be best directed so as to achieve maximum effect.

6.8 Potential Heritage Impact

6.8.1 Introduction, Terms of Reference and Methodology

This assessment is based on the Heritage Impact Assessment undertaken by Cobus Dreyer and Johan Loock (see Appendix B). The purpose of the study was to assess the potential impacts of the development on heritage resources, indicate their acceptability and recommend practicable mitigation measures to minimise potential impacts and maximise potential benefits.

The ToR for the study were to:

- Compile a brief comment / letter report discussing the heritage (archaeology and palaeontology) baseline of the region, including specific reference to the site, if possible;
- Identify and describe any potential heritage resources (including paleontological resources) expected to occur in the area;
- Recommend mitigation / management measures to minimise impacts and / or optimize benefits associated with the proposed development (e.g. recommending a search and rescue of visible heritage resources prior to site clearing by a registered professional and guidelines for their discovery during intrusive work); and
- Advise on regional heritage authorisation requirements and procedures in the Northern Cape.

A desktop study and literature review, based on research and other heritage assessments conducted in the area was conducted to compile baseline archaeological and paleontological information, as well as assess impacts of the project on heritage resources.

6.8.1 Assessment of Impact

The main potential direct impact on the heritage resources is the destruction of, or damage to, archaeological and paleontological resources.

6.8.1.1 Potential Impact H1: Destruction of, or Damage to, Archaeological or Paleontological Artefacts during Construction

The Schanskraal Farm lies within a region known for terrestrial fossil finds from the 45-million-year period spanning the Permian and Triassic and it is possible that some exposed or buried fossils may be disturbed and destroyed during construction.

There are remnants of Xam San archaeology found throughout the area, and Xam Sam rock art has been found and preserved at Schanskraal. Kraal complexes associated with the Koenkoen people are found in the region. It is possible that surface scatters of archaeological material associated with these people will be disturbed as a result of the development at Schanskraal.

While the farm contains structures of great historical significance, e.g. the Burgersrust Lodge, their use, structure and function within the environment will not be changed by the proposed development.

The heritage impact of the damage to or loss of, fossils and archaeological artefacts is assessed to be of ***low*** significance without mitigation and of ***very low*** significance with the implementation of mitigation measures (see Table 6-24). **Alternative 2 is marginally preferred as a smaller footprint would reduce the possibility of the disturbance of sensitive features.**

Table 6-24: Significance of damage to or loss of heritage resources during construction

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Without mitigation	Local 1	Low 1	Long-term 3	**Low** **5**	Probable	**LOW**	-ve	High
Key Mitigation Measures: • Inform employees and contractors that archaeological or paleontological artefacts, including human skeletal remains, might be exposed during construction activities; • Advise contractors and workers of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in the NHRA, Section 51 (1); • Employ a suitably qualified heritage practitioner to undertake a search and rescue operation for archaeological or paleontological artefacts on all development footprints prior to clearing to satisfy the requirements of the NHRA; • Cease work immediately and notify SAHRA should any archaeological or paleontological artefacts be found in the development footprint during the search and rescue, or exposed during site clearing or other site activities. Do not remove, destroy or interfere with any artefacts on the site; and • Accommodate an evaluation of heritage resources if deemed necessary by SAHRA and apply recommended preservation /								

collection of resources as recommended.								
With mitigation	Local 1	Low 1	Long-term 3	**Low 5**	Improbable	**VERY LOW**	-ve	High

6.8.2 The No-Go Alternative

The No-Go alternative will bring none of the socio-economic benefits of the project such as wealth creation, employment and skills transfer. Conversely the negative impact – increased incidence of anti-social behaviour – will be avoided.

6.8.3 Mitigation Measures: Destruction of, or Damage to, Archaeological or Paleontological Artefacts

Essential visual mitigation measures during **construction** are as follows:

- Inform employees and contractors that archaeological or paleontological artefacts, including human skeletal remains, might be exposed during construction activities;
- Advise contractors and workers of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in the NHRA, Section 51 (1);
- Employ a suitably qualified heritage practitioner to undertake a search and rescue operation for archaeological or paleontological artefacts on all development footprints prior to clearing to satisfy the requirements of the NHRA;
- Cease work immediately and notify SAHRA should any archaeological or paleontological artefacts be found in the development footprint during the search and rescue, or exposed during site clearing or other site activities. Do not remove, destroy or interfere with any artefacts on the site; and
- Accommodate an evaluation of heritage resources if deemed necessary by SAHRA and apply recommended preservation / collection of resources as recommended.

6.9 Potential Visual and Sense of Place Impacts

6.9.1 Assessment of Impacts

The main potential direct impact on the visual environment is the alteration of the visual character of the site and the sense of place.

Potential cumulative visual impacts are discussed in Section 6.8.

6.9.1.1 Potential Impact V1: Altered Visual Character and Sense of Place

The visual characteristics of the area are linked to the rugged topography and undisturbed nature of the landscape, which in many places is largely devoid of signs of human intervention. Typical existing visual intrusions are associated with homesteads, power and phone lines, windmills and some low intensity agricultural infrastructure. As such, the sense of place has only been minimally altered by the existing activities on the farm.

The site is deemed to have a relatively high Visual Absorption Capacity (VAC), or potential for the area to conceal visual impacts, as the topography is varied and rugged, and the backdrop to the site is dramatic and draws views. Aspects that lower the VAC of the area include the generally low vegetation and limited scale of existing development.

Potential Impact V1-C: Altered Visual Character and Sense of Place during Construction

Visual impacts during the construction phase will result from construction activities such as earthworks, which can cause scarring, landscaping and the construction of residential units as well as from construction infrastructure, plant and materials on site (e.g. site camp, cranes and stockpiles). Loss of sense of place is likely to occur since the nature of construction sites and the change in the state of the site are incongruent with the current rural nature of the site.

The site is not located near a significant population centre or on a major route, and there are very few visual receptors that could be impacted by the activities, other than the proponents of the project and the staff on the farm who have a vested interest in the project. These receptors are thus not deemed sensitive.

The potential direct impact of on the visual character and altered sense of place caused by the construction activities during the construction phase is of local extent over the medium term, if units are built over a period of time by owners. The impact is assessed to be of ***low*** significance and with the implementation of mitigation is reduced to ***very low*** for both Alternatives 1 and 2 (Table 6-25). **Layout Alternative 2 is preferred as it has a smaller footprint.**

Table 6-25: Significance of alteration of visual character and sense of place during construction

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Alternatives 1 and 2								
Without mitigation	Local 1	Medium 2	Medium 2	**Low** **5**	Probable	**LOW**	– ve	High
Essential mitigation measures: • Restrict the construction footprint and retain as much vegetation as possible; • Implement erosion prevention measures and on-site stormwater management to prevent additional scarring; • Implement dust suppression measures if dust impacts exceed South African air quality standards; • Locate the site camp away from sensitive receptors in areas screened by vegetation or buildings as much as possible; and • Minimise the use of night-lighting and use only down-lighting, no spot lighting at night.								
With mitigation	Local 1	Low 1	Medium 2	**Very Low** **4**	Probable	**VERY LOW**	– ve	High

Potential Impact V1-O: Altered Visual Character and Sense of Place during Operation

The proposed development will change the character of the site from a largely unbuilt rural area to low-density residential area. The relatively low density of the proposed residential erven will minimize the level of visual change, and designing the units in line with the predominantly rural architectural style of the area will further contribute to a good integration of the development into the visual environment and maintenance of the visual character and sense of place.

Lighting is presently used only at the farm buildings dotted on the site, and extensive lighting at the development may result in light pollution at night or increase skyglow[13] in the area that would alter night-time sense of place. Skyglow cannot always be avoided and is always more noticeable in a previously unlit area, but is compounded by poor external lighting design and lighting fixtures that allow the upward spread of light into the atmosphere.

The golf course and other sporting facilities are likely to stand out in the current landscape which is dominated by bushy and arid vegetation and would thus not be in keeping with the existing natural character of the site. However, since the sporting facilities are one of the attractions of the estate,

[13] Skyglow is a form of light pollution and refers to the brightening of the sky above populated areas. This phenomenon diminishes the clarity of the nightscapes and constellations which are so often an amenity of a rural landscape (SEF, 2007).

they might not be perceived as intrusive, but rather as visually appealing elements by the future residents on the estate.

As the site is not located near a significant population centre or on a major route, there are very few visual receptors that could be impacted by the activities, other than the proponents of the project and the staff and future residents on the farm who have a vested interest in the project. These receptors are thus not deemed sensitive.

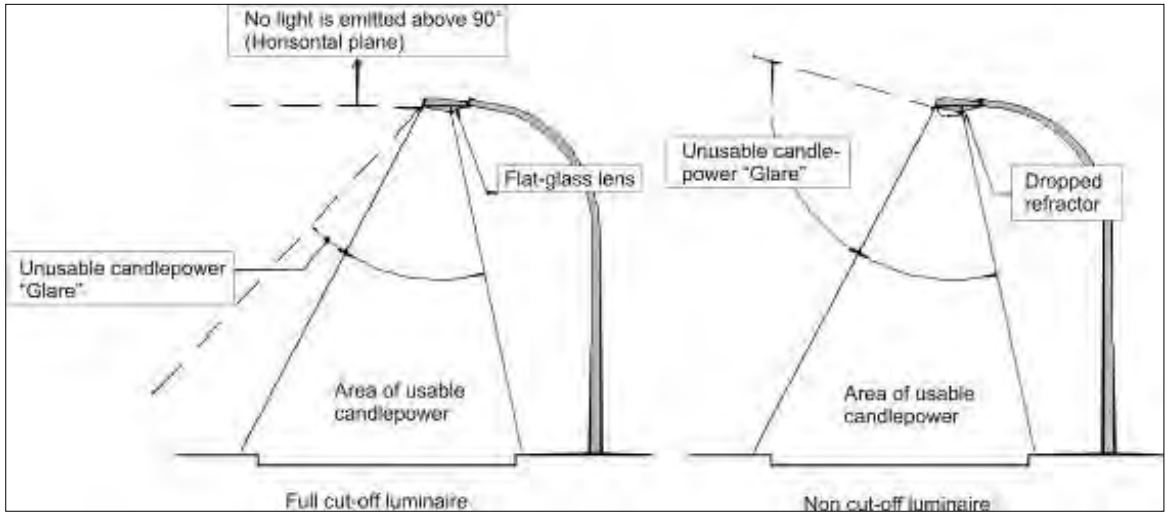
Any visual impact of the proposed development will be greatest within the foreground (<1km), where there are few if any sensitive receptors. Visual (and sense of place) impacts of the proposed development will be greatly reduced beyond 1 km due to the limited scale of the project (e.g. limited footprint and height of buildings) and the VAC (particularly the screening effect of topography) of the surrounding area.

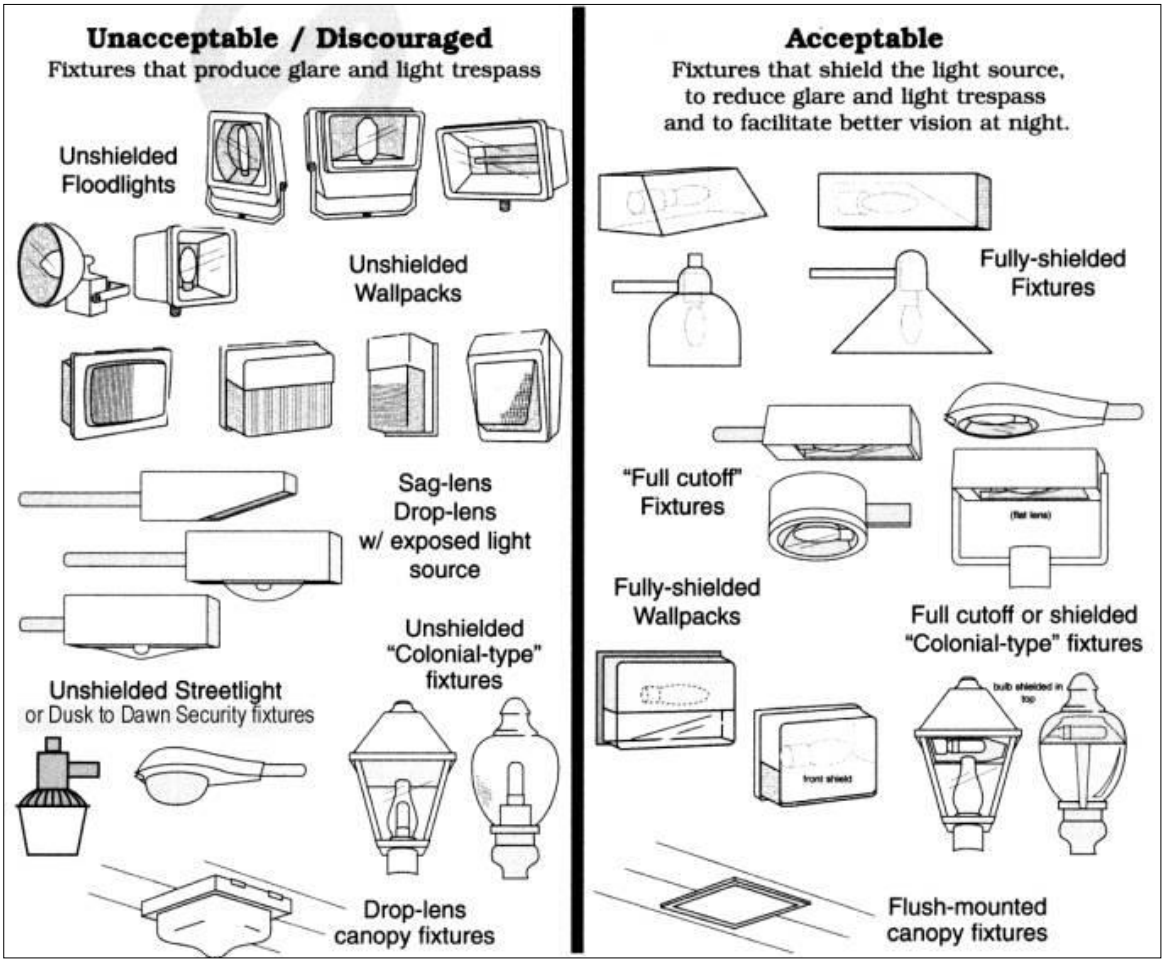
The potential direct visual impact caused by the proposed development during the operation phase is of local extent over the long term. Due to the higher number of units for Alternative 1, the intensity for this alternative is deemed to be medium. The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** for Alternative 1 (Table 6-26).

Due to the lower number of units for Alternative 2, the intensity for this alternative is deemed to be low. The impact is assessed to be of ***low*** significance and with the implementation of mitigation is reduced to ***very low*** for Alternative 2 (Table 6-26).

Table 6-26: Significance of alteration of visual character and sense of place during operation

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Alternative 1								
Without mitigation	Local 1	Medium 2	Long-term 3	**Medium** **6**	Definite	**MEDIUM**	– ve	High
Essential mitigation measures: • Develop architectural guidelines. Built structures should follow the local rural architectural vernacular and be similar to the surrounding houses. The architectural guidelines should include requirements for outdoor street furniture and materials to be used; • Be sensitive towards the use of glass or material with a high reflectivity in building designs which may cause glare and increase visual impacts. Consider large roof overhangs to minimise the potential of glare occurring; • Where necessary use visually permeable green or black fencing which may be incorporated into low walls (i.e. palisade); • Encourage the use of indigenous vegetation for landscaping and gardening; • Limit lighting to essential points; • Refrain from installing permanent lighting where light is required intermittently. Lighting can be switched on manually or through timer / motion sensor switches; • Direct lighting inwards and downwards to avoid light spillage and trespass. External lights should be fitted with reflectors ("full cut-off" luminaires) to direct illumination downward and inward to the specific illuminated areas; • Install down light luminaires to illuminate vertical structures or surfaces such as signs; • Make use of low-level lighting fixtures to avoid light spillage; and • Reduce the height of lighting masts to a minimum.								
With mitigation	Local 1	Low 1	Long-term 3	**Low** **5**	Probable	**LOW**	– ve	High
Alternative 2								
Without mitigation	Local 1	Low 1	Long-term 3	**Low** **5**	Definite	**LOW**	– ve	High
Essential mitigation measures: • As for Alternative 1.								
With mitigation	Local 1	Low 1	Long-term 3	**Low** **5**	Possible	**VERY LOW**	**– ve**	High





srk consulting	**Schanskraal Sporting Estate** Luminaire fixtures	Project No. 424086

Figure 6-5: Luminaire fixtures

6.9.2 The No-Go Alternative

The No-Go alternative entails no change in the property's existing *status quo*, in other words no development. Sustainable livestock agriculture will continue at the site under this scenario and the site will retain its current visual characteristics and sense of place. There is no visual impact.

6.9.3 Mitigation Measures: Potential Visual Impacts

Essential visual mitigation measures during **construction** are as follows:

- Restrict the construction footprint and retain as much vegetation as possible;
- Implement erosion prevention measures and on-site stormwater management to prevent additional scarring;
- Implement dust suppression measures if dust impacts exceed South African air quality standards;
- Locate the site camp away from sensitive receptors in areas screened by vegetation or buildings as much as possible; and
- Minimise the use of night-lighting and use only down-lighting, no spot lighting at night (see Figure 6-5).

Essential visual mitigation measures during **operation** are as follows:

- Develop architectural guidelines. Built structures should follow the local rural architectural vernacular and be similar to the surrounding houses. The architectural guidelines should include requirements for outdoor street furniture and materials to be used;
- Be sensitive towards the use of glass or material with a high reflectivity in building designs which may cause glare and increase visual impacts. Consider large roof overhangs to minimise the potential of glare occurring;
- Where necessary use visually permeable green or black fencing which may be incorporated into low walls (i.e. palisade);
- Encourage the use of indigenous vegetation for landscaping and gardening;
- Limit lighting to essential points;
- Refrain from installing permanent lighting where light is required intermittently. Lighting can be switched on manually or through timer / motion sensor switches;
- Direct lighting inwards and downwards to avoid light spillage and trespass. External lights should be fitted with reflectors (“full cut-off” luminaires) to direct illumination downward and inward to the specific illuminated areas (see Figure 6-5);
- Install down light luminaires to illuminate vertical structures or surfaces such as signs;
- Make use of low-level lighting fixtures to avoid light spillage (see Figure 6-5); and
- Reduce the height of lighting masts to a minimum.

6.10 Cumulative Impacts

6.10.1 Introduction

Anthropogenic activities can result in numerous and complex effects on the natural and social environment. While many of these are direct and immediate, the environmental effects of individual activities (or projects) can combine and interact with other activities in time and space to cause incremental or aggregate effects. Effects from disparate activities may accumulate or interact to cause **additional** effects that may not be apparent when assessing the individual activities one at a time (Canadian Environmental Protection Agency, n.d.). Cumulative effects can also be defined as the total impact that a series of developments, either present, past or future, will have on the

environment within a specific region over a particular period of time (DEAT IEM Guideline 7, Cumulative effects assessment, 2004).

The International Finance Corporation (IFC) states that environmental assessment should include consideration of *"… cumulative impacts of existing projects, the proposed project and anticipated future projects".* For the purposes of this report, cumulative impacts are defined as 'direct and indirect impacts that act together with current or future potential impacts of other activities or proposed activities in the area/region that affect the same resources and/or receptors'.

To define the level of cumulative impact, it is critical to look beyond the geographical boundaries and environmental impacts of a single development on the environment and consider the area of influence of the specific project as well as other developments currently in or proposed in the area and their understood impacts and area of influence. It may be that impacts experienced as a result of a single development are not considered to be significant, but when considered as part of a cumulative impact assessment, these require mitigation.

Key considerations for the assessment of cumulative impacts as part of the environmental impact assessment are:

- The cumulative impact assessment will need to give consideration to developments that may have contributed to cumulative effects in the past, may be contributing or are anticipated to contribute in the foreseeable future. This needs to be relevant to the timeframe within which impacts are to be experienced as a result of the project itself (i.e. all phases for which the project specific impact assessment is being undertaken). Given that the baseline environment will already be impacted on by the historical and current contributors to the cumulative impact, it is only necessary when undertaking the cumulative impact assessment to place an emphasis on an identified future cumulative baseline environment;
- Cumulative impacts may not be applicable to all aspects, as project related impacts may be confined to the project area and not subject to or contributing to impacts in the broader area of influence as a whole. For example, if the project area is confined to a water catchment which is not anticipated to be impacted on by other developments (past, present or foreseeable future) then a cumulative impact assessment need not be considered for this environmental aspect;
- A cumulative impact assessment will consider a specific area of influence which will be determined by the impact itself and the baseline environment in which it is proposed; e.g. where one or more projects affect the same ecosystem, the whole area in which the ecosystem is found may be considered the area of influence for the cumulative assessment. This will vary across project aspects and therefore a single area of influence for the cumulative impact assessment cannot be set; and
- The cumulative impact assessment can only be undertaken where information is readily available and as such will only be an initial assessment of the likely cumulative impact in terms of knowledge available at the time of the assessment. It is critical to understand the information sources and limitations that exist.

For the most part, cumulative effects or aspects thereof are too uncertain to be quantifiable, due mainly to a lack of data availability and accuracy. This is particularly true of cumulative effects arising from potential or future projects, the design or details of which may not be finalised or available and the direct and indirect impacts of which have not yet been assessed. Given the limited detail available regarding such future developments, the analysis will be of a more generic nature and focus on key issues and sensitivities for the project and how these might be influenced by cumulative impacts with other activities.

6.10.2 Scope of the Analysis

Schanskraal is very remote and generates impacts that are mostly of local extent. The spatial scope of this analysis is generally aligned with the zone of influence of the project and potential projects in the vicinity that may have impacts overlapping with the proposed estate.

The temporal scale of the contribution of project's impacts is likely to be medium to long term, although of limited intensity.

Cumulative impacts can be distinguished as follows:

- **Cumulative impacts of existing activities:** It is reasonably straightforward to identify significant past and present projects and activities that may interact with the project to produce cumulative impacts, and in many respects, these are taken into account in the descriptions of the biophysical and socio-economic baseline (see respective sections in Chapter 4);
- **Potential cumulative impacts of future activities:** Relevant future projects that will be included in the assessment are defined as those that are 'reasonably foreseeable', i.e. those that have a high probability of implementation in the foreseeable future; speculation is not sufficient reason for inclusion. Such projects may include those for which authorisations have already been granted, that are currently subject to environmental assessment processes or that have been identified in planning documents.

Projects that fall in the above categories and that may result in cumulative impacts with the proposed development and therefore have been considered in the cumulative impact analysis are listed below:

- **Past and present projects / activities**:

  Schanskraal is located in a remote, arid and sparsely populated area, and few other developments or activities are present in the region. Farming, particularly extensive livestock farming, is the main land use in the region at present, while some limited tourism activities take place at Schanskraal.

- **Future projects / activities:**

  Relevant future projects that are included in the assessment are those that are 'reasonably foreseeable', i.e. those that have a high probability of being implemented in the foreseeable future. For the purposes of this analysis the only known project that is considered is *Shale gas exploration.* A number of shale gas exploration applications have been submitted in recent years for various areas of the Karoo basin. The north-eastern portion of Shell's application area overlaps with Schanskraal (see Figure 6-6). This does not, however, imply that any exploration activities will necessarily take place on or in the immediate vicinity of Schanskraal Farm. Exploration can take a range of forms, including geological surveys, seismic surveys or exploratory fracking. All applications are currently pending; the Government of South Africa has, however, announced plans to move ahead with exploration activities.

  In addition, the following activities have also been considered, but are determined to fall outside the Schanskraal biophysical Area of Influence:

  - *Development of a renewable energy industry in the wider region:* The Independent Energy Independent Power Producer (IPP) Procurement Programme aims to secure a total of 3 725 MW generated with renewable energy from 2016 onwards. 64 preferred bidders were selected during three rounds of bidding in 2013 to provide predominantly solar and wind energy projects. Half of these projects are located in the Northern Cape, with the closest projects lying within approximately 60-80 km of Schanskraal (see Figure 6-7); and

- *Square Kilometer Array (SKA):* Portions of the SKA will be built at various sites in several countries and two continents. The main SKA site in South African lies approximately 300 km west of Schanskraal (see Figure 6-7). Construction of infrastructure for the SKA has already commenced.

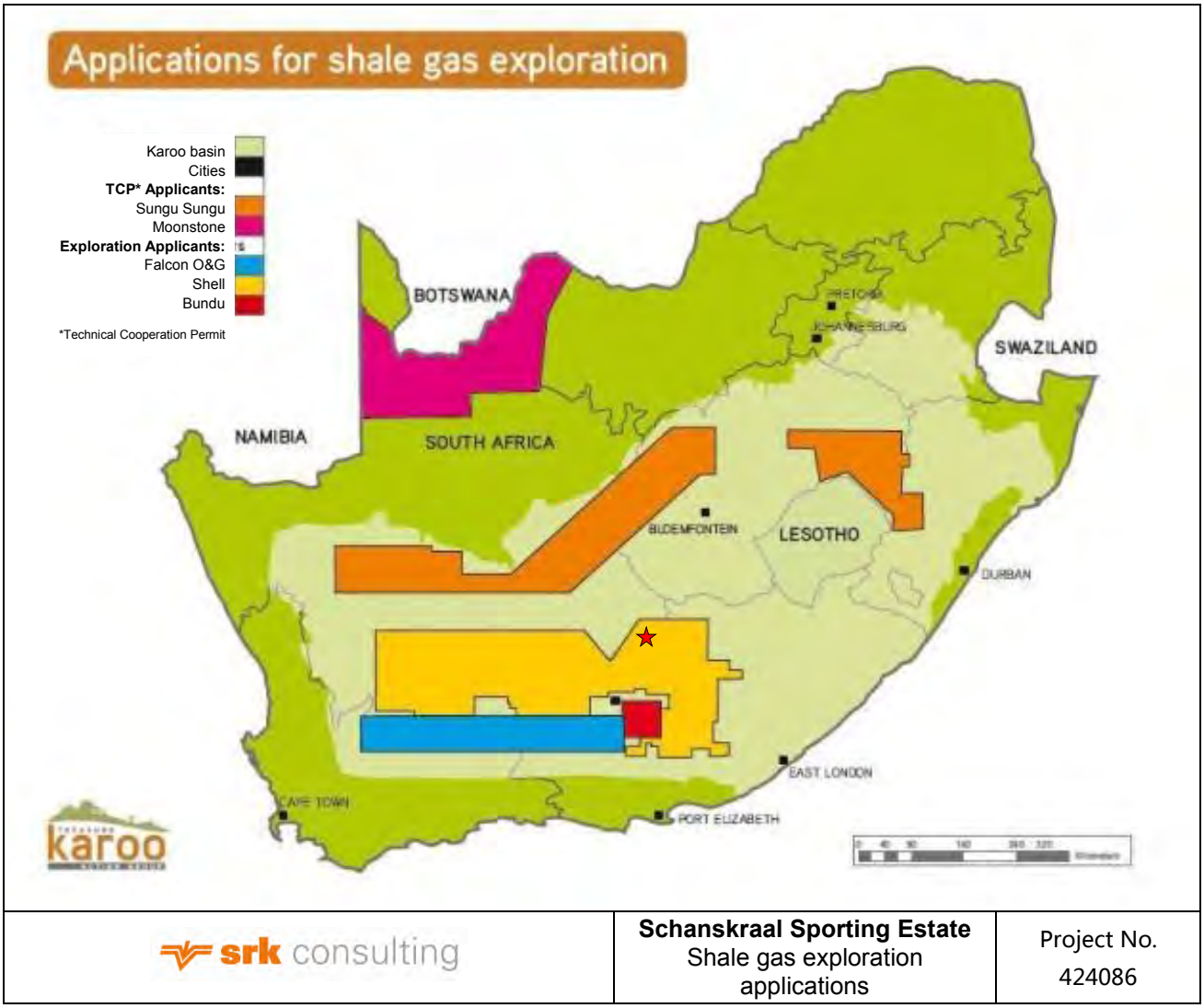


Figure 6-6: Shale gas exploration applications

Source: www.karoospace.co.za

Note: *Star indicates approximate location of Schanskraal*

srk consulting	**Schanskraal Sporting Estate** Approximate location of some of the planned renewable energy projects and the SKA	Project No. 424086

Figure 6-7: Approximate location of some of the planned renewable energy projects and the SKA

Source: Energy Blog (2014)

Note: *Yellow symbols indicate solar energy facilities, Blue symbols indicate wind farms*

6.10.3 Cumulative Impacts Analysis

For the most part, cumulative impacts or aspects are too uncertain to be quantifiable, mainly due to lack of (accurate) data. This is particularly true of cumulative impacts arising from potential or future projects. In addition, many of the projects discussed above are beyond the area of influence of the proposed Schanskraal development and, consequently, have very limited potential to create cumulative impacts.

As such, the analysis that follows is of a generic nature and also touches on key issues and sensitivities for the Schanskraal development and how these might be influenced by cumulative impacts with other activities. Only qualitative assessment of cumulative impacts was possible, i.e. they are not formally rated.

6.10.3.1 Cumulative Botanical Impacts

The development site falls within the semi-arid Nama Karoo Biome, which has remained largely untransformed by land uses that threaten natural diversity in other regions, such as cultivation, dams and industry. The biome's flora is not particularly species rich compared to other South African biomes and contains no centre of endemism. There are very few plant SCC in the region and the biome is categorised as being Least Threatened (Golder Associates 2011a, Mucina & Rutherford 2006). Existing disturbance factors include grazing (by domestic livestock, wild herbivores and insects), fire, rainfall and runoff (which results in erosion).

The proposed Schanskraal development will disturb less than 100 ha of land, and botanical impacts of the project are largely related to the disturbance or loss of vegetation that belongs to the Exposed Mudstone and the Western Footslope communities, which are not widely distributed in the region, and the Dolerite Dyke and the Streambank Communities, which are regionally represented.

Existing grazing on Schanskraal Farm as well as neighbouring properties can impact on the very same vegetation types that are also affected by the development, thus creating a cumulative impact. However, grazing has taken place over long periods of time and appears to be sustainably managed at Schanskraal.

The establishment of large numbers of renewable energy projects and the SKA in the wider region will require clearance of cumulatively considerable areas of vegetation. However, the projects are distributed across vast areas and will thus affect a number of different vegetation types.

Consequently, the contribution of the Schanskraal Sporting Estate development to any cumulative botanical impacts of development in this area will probably be ***insignificant***.

6.10.3.2 Cumulative Faunal Impacts

Historically large herds of indigenous migratory ungulates and predators have now been mostly replaced by domestic livestock, but a number of medium to large mammal species are still known to occur in the study area, in addition to smaller mammals, reptiles, amphibians and birds.

The Schanskraal development will impact on fauna through the destruction of habitat, disturbance through human activity and restriction of movement through fencing and other structures. However the overall project specific impact is expected to be ***very low***.

The establishment of large numbers of renewable energy projects and the SKA in the wider region will result in similar impacts on fauna as the Schanskraal development through habitat destruction and disturbance and restriction of movement through fencing and other structures. In addition, panels and dishes used in solar power production and at the SKA may have a more significant

impact on avifauna through the reflection of sunlight. These projects are, however, considered to fall outside the Schanskraal project's Area of Influence.

Consequently, the contribution of the Schanskraal Sporting Estate development to any cumulative faunal impacts of development in this area will probably be ***insignificant***.

6.10.3.3 Cumulative Surface Water and Groundwater Impacts

The region is generally arid and water is therefore limited in supply. While the Schanskraal development will use groundwater, the anticipated demand is lower than supply, and the development is not expected to have significant off-site or inter catchment impacts on water resources.

Existing agricultural and small-scale tourist activities on Schanskraal Farm draw water from the same source as the proposed development, but existing water use is minimal and has been taken into account in the calculation of total water demand.

The renewable energy projects and SKA that are in planning or construction in the wider region also require water, although demand is expected to be relatively low. The impact on water resources will depend on abstraction levels and characteristics of the water resources.

The contribution of the Schanskraal Sporting Estate development to any cumulative impacts on water resources by development in this area will probably be ***insignificant***.

6.10.3.4 Cumulative Socio-Economic Impacts

Socio-economic impacts of the Schanskraal development are mostly related to local job creation, limited local provision of services such as accommodation for staff and education and recreation opportunities to the immediately surrounding community.

The renewable energy projects and SKA planned for the Northern Cape and, to a lesser extent, surrounding provinces, represent a completely new industry for the area, which is currently dominated by low-intensity agriculture and mining. The proposed renewable energy projects represent large investments and job creation and associated business opportunities. In-migration into the area may represent both concerns and opportunities. Exploration for shale gas may further amplify the above socio-economic impacts, or sustain or prolong them.

Consequently, the cumulative impacts of development on the socio-economic environment in the region may be considerable, with developments other than Schanskraal contributing mostly to the cumulative impact.

The contribution of the Schanskraal Sporting Estate development to any cumulative socio-economic impacts from development in this area will probably be ***insignificant***. Development in the region and a resulting increase in incomes might boost demand for units at the Schanskraal Sporting Estate.

7 Conclusions and Recommendations

This chapter evaluates the impact of the proposed Schanskraal Sporting Estate development based on work undertaken to date. The principal findings are presented in this chapter, followed by a discussion of the key factors NCDENC will have to consider in order to take a decision in the interests of sustainable development.

As is to be expected, the Schanskraal development has the potential to cause impacts, both negative and positive. However, since the development is largely congruent with existing land use and anticipated resource requirements are sustainable, very few of the impacts of the project are predicted to be of major concern.

The EIA has examined the available project layout information and drawn on both available (secondary) and specifically collected (primary) baseline data to identify and evaluate environmental (biophysical and socio-economic) impacts of the proposed project. The EIA Report aims to inform decision-makers of the key considerations by providing an objective and comprehensive analysis of the potential impacts and benefits of the project and has created a platform for the formulation of mitigation measures to manage these impacts, presented in the EMP provided in Appendix F.

This chapter presents the general conclusions that have been drawn from the S&EIR process and which should be considered in evaluating the project. It should be viewed as a supplement to the detailed assessment of individual impacts presented in Chapter 6.

7.1 Environmental Impact Statement

The EIA Regulations, 2010 prescribe the required content of an EIA Report, including, *inter alia*, an EIS, which is presented in the section below.

7.1.1 Evaluation and Assessment

The evaluation is undertaken in the context of:

- The information provided to date;
- The assumptions made for this EIA Report;
- The assumption that the recommended (essential) mitigation measures will be effectively implemented; and
- The assessments provided by specialists.

This evaluation aims to provide answers to a series of key questions posed as objectives at the outset of this report, which are repeated here:

- Assess in detail the environmental and socio-economic impacts that may result from the project;
- Identify environmental and social mitigation measures to address the impacts assessed; and
- Produce an EIA Report that will assist NCDENC to decide whether (and under what conditions) to authorise the proposed development.

The evaluation and the basis for the subsequent discussion are represented concisely in Table 7-1, which summarises the potentially significant impacts and their significance ratings before and after application of mitigation and/or optimisation measures.

Table 7-1: Summary of potential impacts of the Schanskraal Sporting Estate development

*Potential negative impacts are shaded in reds, benefits are shaded in greens. White indicates an insignificant impact. Only **key** mitigation/optimisation measures are presented.*

ID #	Impact	Significance rating		Preferred Layout Alternative	Key mitigation/optimisation measures
		Before mitigation/ optimisation	After mitigation/ optimisation		
BIOPHYSICAL IMPACTS					
N1	***Increased noise levels and vibration***				
N1	- during construction	Insignificant	Insignificant	N/A	• Maintain construction machinery in order to minimise noise; and • Limit the on-site speed limit to 40 km/h.
S1	***Increased erosion and loss of topsoil***				
S1C	- during construction	High	Medium	Alt. 2	• Ensure that roads and tracks are constructed along contour lines; • Remove topsoil (to a minimum depth of 200 mm) from cleared areas; • Protect stockpiled soils from erosion by covering with a porous material (hessian / geofabric / high density shade cloth) or through seeding; • Rehabilitate areas that are disturbed during construction; • Ensure sufficient time is allowed for establishment of vegetation cover before the start of the rainy season. • Ensure that effective erosion control measures are put in place where slopes are steeper than 1:8; • Protect any cleared / disturbed areas from erosion by rehabilitating them with locally indigenous species or using anti-erosion measures such as biobarrier or soil saver; and • Preserve excavated stone and rocks and use them for anti-erosion/ rehabilitation / construction purposes.
S1O	- during operation	Medium	Low	Alt. 2	• Put monitoring measures in place to identify and address any erosion problems; • Rehabilitate and rectify any observed erosion problems as soon as they occur; • Instruct vehicles to remain on demarcated roads at all times; • Seed / plant areas that have not been rehabilitated or that have not recovered adequately after the construction phase with indigenous vegetation; and • Do not disturb / alter any slopes with a gradient steeper than or equal to 1:5 (20%).

ID #	Impact	Significance rating		Preferred Layout Alternative	Key mitigation/optimisation measures
		Before mitigation/ optimisation	After mitigation/ optimisation		
W1	***Abstraction and reduced availability of groundwater***				
W1C	- during construction	Low	Very Low	Alt. 2	• Utilise boreholes in accordance with the sustainable abstraction rates determined in the EIA (Table 6-9); and • Monitor water levels and abstraction volumes on a weekly basis.
W1O	- during operation	Medium	Low	Alt. 2	• Minimise groundwater abstraction by implementing water saving methods and treatment and recycling of waste water where possible; • Utilise boreholes in accordance with the sustainable abstraction rates determined in the EIA (Table 6-9); • Monitor water levels and abstraction volumes on a weekly basis; and • Ensure that the monitoring data are annually assessed by an experienced hydrogeologist.
W2	***Contamination of surface water and/or groundwater***				
W2C	- during construction	Medium	Insignificant	Alt. 2	• Avoid construction within or near watercourses or surface water resources; • Install appropriate water diversion / erosion control structures on all roads and tracks used for construction; • Construct bridges and river crossings with the appropriate headwalls and erosion control measures; • Put erosion measures in place to limit soil loss and siltation of water courses; • Maintain vehicles in good working order and train drivers; • Apply good housekeeping rules; • Select environmentally friendly on-site sanitation options and manage and maintain these facilities; • Use the most environmentally friendly type of pesticides and herbicides and apply these sparingly and according to specifications; and • Monitor and record groundwater and surface water quality regularly. Initiate monitoring before construction.
W2O	- during operation	Medium	Insignificant	Alt. 2	• Ensure that pipes and canals do not lead directly into watercourses (without the appropriate erosion measures and suitable outlet structures); • Encourage onsite stormwater collection (i.e. collection of rainwater on roofs and parking areas); • Encourage onsite treatment of stormwater (through vegetated swales or

ID #	Impact	Significance rating		Preferred Layout Alternative	Key mitigation/optimisation measures
		Before mitigation/ optimisation	After mitigation/ optimisation		
					treatment wetlands); • Minimize runoff speed as far as possible; • Monitor and maintain erosion and flood control measures to prevent erosion, siltation and flooding; • Ensure that packaged wastewater treatment plants are designed, constructed and maintained to prevent pollution of groundwater; • Apply good housekeeping practices; • Apply fertiliser sparingly and according to specifications; • Use the most environmentally friendly type of pesticides and herbicides and apply these sparingly and according to specifications; and • Monitor and record groundwater and surface water quality regularly.
B1	***Loss of Sensitive Vegetation***				
B1C	- during construction	Medium	Low	Alt. 2	• Clearly demarcate areas in which sensitive plant communities occur as off limits / 'No-Go' areas outside the construction footprint; • Restrict earthworks related to the golf course to areas that fall outside of the Streambank and Western Footslope Communities; • Carry out 'search and rescue' to remove any sensitive or useful species and SCC before construction starts. Keep plants in a nursery (established on site) and re-planted in suitable areas of the same vegetation type; • Store hazardous materials in the appropriate manner (refer to EMP); and • Clean any accidental contamination, chemical, fuel and oil spills immediately in the appropriate manner (in accordance with the nature of the contamination / spill).
B1O	- during operation	Medium	Low	Alt. 2	• Clearly demarcate areas in which sensitive plant communities occur with appropriate signage to prevent disturbance by pedestrians and vehicular; • Control invasive species on an ongoing basis using the best practice methods; • Rehabilitate areas that were temporarily disturbed / cleared using locally indigenous species, taking soil conditions into consideration when planning replanting of species; • Place rocks and stones into the top 150 mm of the soil surface to improve water holding, increase percolation and reduce water speed and runoff and to serve as seedling germination micro- sites; and

ID #	Impact	Significance rating		Preferred Layout Alternative	Key mitigation/optimisation measures
		Before mitigation/ optimisation	After mitigation/ optimisation		
					• Compile a species list to be used for landscaping purposes listing only non-invasive indigenous / endemic / locally occurring species and distribute this list to homeowners.
B2	***Land rehabilitation due to increased available funding***				
B2	- during operation	Very Low	Medium	N/A	• Determine what percentage of profit will be made available for land rehabilitation projects (including the rehabilitation and restoration of lakes, dams and existing watercourses); • Appoint a qualified specialist to develop a Rehabilitation Plan, in partnership with regional conservation authority(ies) or organisation(s). The Plan must, amongst others, identify: o Priority areas for rehabilitation; o Suitable rehabilitation methods; o Required resources and skills; and o Costs of initial rehabilitation and ongoing maintenance; and • Establish a fund to ensure that money is available on an ongoing basis, either from initial proceeds or contributions by homeowners, to sustain rehabilitation activities over the long-term, in line with the costs identified in the Rehabilitation Plan.
F1	***Disturbance or loss of fauna***				
F1C	- during construction	Low	Very Low	Alt. 2	• Remove any fauna that are directly threatened by the construction activities to a safe location; • Strictly prohibit the hunting, killing, collection or trapping of any fauna on site; • Do not allow any food to be left out in the open (to avoid attraction of / conflict with problem animals); • Discourage fires on site and only allow fires only in demarcated 'fire-safe' zones; • Construct temporary fencing, where necessary, in such a way as to allow alternative movement routes for fauna and to avoid the trapping fauna; and • Attach visible tags to power lines, cables and infrastructure in order to limit potential deadly avifaunal collisions.
F1O	- during operation	Low	Very Low	Alt. 2	• Provide homeowners with a short and concise environmental education document / management plan to ensure that no unnecessary hunting or killing

ID #	Impact	Significance rating		Preferred Layout Alternative	Key mitigation/optimisation measures
		Before mitigation/ optimisation	After mitigation/ optimisation		
					of animals occurs; • Ensure the education document / management plan addresses the management of problem animals (such as Chacma baboons and Black-backed jackals); • Instruct drivers to remain on demarcated roads at all times; • Ensure that vehicles don't exceed the recommended speed limit; • Attach visible tags to power lines, cables and infrastructure to prevent bird collisions; • Keep fencing to a minimum; • Leave openings in fenced off areas to allow fauna to move through; and • Maintain alternative movement corridors intact for fauna in areas where fencing is unavoidable, or where areas need to be fenced off entirely.
SOCIO-ECONOMIC, VISUAL AND HERITAGE IMPACTS					
SE1	***Increased Employment, Income and Skills Development***				
SE1	- during construction and operation	Low	Low	Alt. 1	• Employ local contractor(s) (i.e. from the Ubuntu Municipality) for all construction activities; • Source unskilled, semi-skilled and skilled labourers locally (i.e. from the Ubuntu Municipality), where possible; and • Encourage the training and promotion of unskilled and semi-skilled labourers during operations.
SE2	***Increased Business Sales***				
SE2	- during construction and operation	Low	Low	Alt. 1	• Ensure maximum procurement of goods and services from local suppliers during construction; • Facilitate opportunities for local retail and service industries to establish themselves or expand current services to meet the needs of new households; and • Award maintenance contracts to local companies.
SE3	***Increased Incidence of Anti-social Behaviour***				
SE3	- during construction	Low	Low	Alt. 2	• Employ 24 hour security during all construction activities; • Instruct security to prevent labourers from entering neighbouring private properties;

ID #	Impact	Significance rating		Preferred Layout Alternative	Key mitigation/optimisation measures
		Before mitigation/ optimisation	After mitigation/ optimisation		
					• Employ the workforce from local communities (i.e. within the Ubuntu Local Municipality); and • Compile a Code of Conduct for permanent employees dealing with (amongst others) social interaction with communities, HIV awareness and substance abuse.
SE4	***Improved Facilities at Primary School in Richmond***				
SE3	- during operation	Very Low	Low	Alt. 2	• Seek guidance from the Ubuntu Local Municipality as to how the donation can be best directed so as to achieve maximum effect.
V1	***Altered Visual Character and Sense of Place***				
V1C	- during construction	Low	Very Low	Alt. 2	• Restrict the construction footprint and retain as much vegetation as possible; • Implement erosion prevention measures and on-site stormwater management to prevent additional scarring; • Implement dust suppression measures if dust impacts exceed South African air quality standards; • Locate the site camp away from sensitive receptors in areas screened by vegetation or buildings as much as possible; and • Minimise the use of night-lighting and use only down-lighting, no spot lighting at night.
V1O	- during operation	Alternative 1 Medium	Low	Alt. 2	• Develop architectural guidelines. Built structures should follow the local rural architectural vernacular and be similar to the surrounding houses. The architectural guidelines should include requirements for outdoor street furniture and materials to be used; • Be sensitive towards the use of glass or material with a high reflectivity in building designs which may cause glare and increase visual impacts. Consider large roof overhangs to minimise the potential of glare occurring; • Where necessary use visually permeable green or black fencing which may be incorporated into low walls (i.e. palisade); • Encourage the use of indigenous vegetation for landscaping and gardening; • Limit lighting to essential points; • Refrain from installing permanent lighting where light is required intermittently. Lighting can be switched on manually or through timer / motion sensor switches;
		Alternative 2 Low	Very Low		

ID #	Impact	Significance rating		Preferred Layout Alternative	Key mitigation/optimisation measures
		Before mitigation/ optimisation	After mitigation/ optimisation		
					• Direct lighting inwards and downwards to avoid light spillage and trespass. External lights should be fitted with reflectors ("full cut-off" luminaires) to direct illumination downward and inward to the specific illuminated areas; • Install down light luminaires to illuminate vertical structures or surfaces such as signs; • Make use of low-level lighting fixtures to avoid light spillage; and • Reduce the height of lighting masts to a minimum.
H1	***Destruction of, or damage to, archaeological or paleontological artefacts***				
H1	- during construction	Low	Very Low	Alt. 2	• Inform employees and contractors that archaeological or paleontological artefacts, including human skeletal remains, might be exposed during construction activities; • Advise contractors and workers of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in the NHRA, Section 51 (1); • Employ a suitably qualified heritage practitioner to undertake a search and rescue operation for archaeological or paleontological artefacts on all development footprints prior to clearing to satisfy the requirements of the NHRA; • Cease work immediately and notify SAHRA should any archaeological or paleontological artefacts be found in the development footprint during the search and rescue, or exposed during site clearing or other site activities. Do not remove, destroy or interfere with any artefacts on the site; and • Accommodate an evaluation of heritage resources if deemed necessary by SAHRA and apply recommended preservation / collection of resources as recommended.

Relevant observations with regard to the overall impact ratings, assuming mitigation measures are effectively implemented, are:

- The predicted *erosion* impact rated as *medium* during construction, as several units will be built on slopes steeper than 1:5.
- The predicted impact on *groundwater availability from water abstraction* is rated as *low*, as predicted water demand is sustainable, though it accounts for a considerable proportion of groundwater on Elands Kloof Farm.
- The predicted impact of possible *contamination of surface water or groundwater* is rated as *insignificant*, as contamination can be effectively controlled with the implementation of mitigation.
- The predicted *botanical* impacts are rated as *low,* which assumes that earthworks for the golf course will avoid Streambank and Western Footslope communities, as these would otherwise be significantly impacted.

  Further amendment of the layout to avoid development or construction activities in or near sensitive vegetation communities would reduce the impact to *insignificant*.
- The predicted benefit from *rehabilitation* of land on Schanskraal Farm using proceeds from the development is rated as *medium*, provided that rehabilitation activities are adequately funded and maintained in the long-term.
- The predicted *faunal* impact is rated as *very low* as the development is expected to have a limited impact on movement and mortality of fauna in the area.
- The predicted *economic* benefits are rated as *low* as the development is relatively modest in scale, and is unlikely to stimulate major economic activity regionally.
- The predicted *social* impact of increased incidences of anti-social behaviour is considered *low* with adequate mitigation. A *low social* benefit from donations to a local school in Richmond has also been considered.
- The predicted *heritage* impact can be reduced to *very low* significance provided that a search and rescue for heritage artefacts is undertaken prior to site clearing.
- The predicted *visual* impact is rated as *low* for Layout Alternative 1 and *very low* for Layout Alternative 2, as the development is largely congruent with the existing visual character of the area, although it will introduce a more residential quality to the area. Layout Alternative 1 has a higher impact due to the larger number and higher density of residential units.

Cumulative impacts in the region may derive from existing extensive agricultural activities in the area as well as the establishment of large numbers of renewable energy projects and the SKA in the wider region. However, these projects are located far from the proposed development and the contribution of the Schanskraal Sporting Estate to those cumulative impacts is deemed *insignificant.*

7.1.2 Principal Findings

The development of the Schanskraal Sporting Estate will entail so-called triple bottom line costs, i.e. social, environmental and economic costs. The triple bottom line concerns itself with environmental (taken to mean biophysical) sustainability, social equity and economic efficiency and is typically employed by companies seeking to report on their performance. The concept serves as a useful construct to frame the evaluation of environmental impacts at Schanskraal.

The challenge for NCDENC is to take a decision which is sustainable in the long term and which will probably entail trade-offs between social, environmental and economic costs and benefits. The trade-offs are documented in this report, which assesses environmental impacts and benefits and

compares these to the No-Go alternative. SRK believes it will be instructive to reduce the decision factors to the key points which the authorities should consider. These points constitute the principal findings of the EIA:

1. Schanskraal is a working farm on which a number of residential buildings are located. The Manor House is occupied by the owner or guests, while the Burgersrust Lodge is used as a guesthouse. As such, tourism activities as well as sporting events are already taking place on the property. A number of farm workers live on the farm.
2. Ranor proposes to develop the Schanskraal Sporting Estate on the property, comprising between 57 (Layout Alternative 1) and 36 (Layout Alternative 2) residential units for sale, in addition to 12 units for staff accommodation and sporting facilities, including a nine-hole golf course, sporting clay arena and tennis courts. The total development footprint will be less than 100 ha.
3. The site is in a very remote, sparsely populated area within a portion of the semi-arid Nama Karoo Biome that has remained largely untransformed and is not considered threatened.
4. The potential environmental impacts associated with the proposed Schanskraal Sporting Estate considered in the S&EIR process include botanical, faunal, soil, surface water, groundwater, socio-economic, heritage and visual impacts. Assuming that the recommended mitigation measures will be effectively implemented, the proposed development is not projected to have unacceptably significant adverse impacts, while socio-economic benefits are also fairly modest.
5. Important and essential mitigation in this regard is that the earthworks related to the golf course are restricted to areas outside of the Streambank and Western Footslope vegetation communities.
6. Based on the assessment of potential impacts the proposed development, including both Layout Alternatives, is not considered fatally flawed and development of the Estate would be acceptable. Layout Alternative 2 is preferred from an environmental point of view, as it entails fewer units and thus has a smaller footprint and a lower water demand.
7. The No-Go alternative implies no change to the *status quo* and would generate fewer positive and negative impacts. Sustainable livestock agriculture would continue at the site under this scenario (as it would with the development proposal). It is expected that site conditions would remain largely unchanged, with some potential for deterioration due to grazing and associated agricultural activities, and it is less likely that funds will be raised for rehabilitation of degraded sections of the farm.
8. The EIA Report has also considered the cumulative impacts of the proposed project together with other existing activities and projects planned or proposed in the region. The large-scale renewable energy and SKA projects proposed for the region, as well as the potential exploration of shale gas, are likely to have significant cumulative impacts on fauna, water, socio-economic and visual resources. As the potential impacts of the Schanskraal Sporting Estate are limited in extent and significance, the contribution of the Schanskraal Sporting Estate to the overall cumulative impact is very small or insignificant.
9. A number of mitigation and monitoring measures have been identified to avoid, minimise and manage potential environmental impacts associated with the proposed development. These are further laid out in the EMP.

7.2 Recommendations

The specific recommended mitigation and optimisation measures are presented in Chapter 6 and the EMP (Appendix F) and key measures are summarised in Table 7-1 above. Ranor would need to

implement them to demonstrate compliance and adherence to best practice. Although it is in theory possible that the potential impacts (or unintended consequences) of implementing mitigation and optimisation measures could offset their intended effect, the majority of the recommendations made in this EIA Report are procedural and/or can be implemented without resulting in any physical effects. The potential for such unintended consequences in the case of the Schanskraal Sporting Estate is therefore considered negligible.

Key recommendations, which are considered essential, are:

1. Implement the EMP to guide construction and operations activities and to provide a framework for the ongoing assessment of environmental performance.
2. Minimise clearing and disturbance in sensitive vegetation, particularly the Exposed Mudstone, Western Footslope, Dolerite Dyke and Streambank vegetation communities, during construction and operation.
3. Compile a management plan to minimise disturbance of fauna, e.g. by avoiding fencing as far as possible and providing baboon proof bins.
4. Minimise construction on slopes equal to or steeper than 1:5 to minimise the erosion potential.
5. Monitor groundwater abstraction volumes, levels and quality on an ongoing basis to ensure that groundwater resources are used sustainably.
6. Inspect infrastructure, including the sanitation system, regularly and address any leaks and spills immediately to prevent contamination of groundwater and surface water.
7. Procure construction materials and labour locally (i.e. within the Ubuntu Local Municipality).
8. Employ 24 hour security during construction activities.
9. Seek guidance from the Ubuntu Local Municipality as to how a donation to an education facility can be best directed so as to achieve maximum effect.
10. Develop a Rehabilitation Plan in partnership with regional conservation authority(ies) or organisation(s) and establish a fund to ensure that money is available on an ongoing basis. Conduct yearly audits of rehabilitation progress.
11. Obtain other permits and authorisations as may be required, including, but not limited to, water use and land use planning.

7.3 Conclusion and Authorisation Opinion

This Draft EIA Report has identified and assessed the potential biophysical and socio-economic impacts associated with the proposed Schanskraal Sporting Estate some 60 km south-east of Richmond in the Northern Cape.

In terms of Section 31 (n) of NEMA, the environmental practitioner is required to provide an opinion as to whether the activity should or should not be authorised. In this section, a qualified opinion is ventured, and in this regard SRK believes that sufficient information is available for NCDENC to take a decision.

The Schanskraal Sporting Estate will result in unavoidable adverse environmental impacts, though the relatively modest scale of the development limit the significance of these impacts. Consequently and also because the development is located in an area that is not considered particularly sensitive or vulnerable from a biophysical perspective, none of these adverse impacts are considered unacceptably significant and all can be managed to tolerable levels through the effective implementation of the recommended mitigation measures. In addition, the project will to a very

limited extent benefit the local economy and provides a vehicle to rehabilitate agricultural land degraded as a result of previous farming at the site.

SRK believes that the specialist studies have shown that the development of the Schanskraal Sporting Estate is generally acceptable. The EIA has also assisted in the identification of essential mitigation measures that will mitigate the impacts associated with these components to within tolerable limits.

In conclusion SRK is of the opinion that on purely 'environmental' grounds (i.e. the project's potential socio-economic and biophysical implications) the application as it is currently articulated should **be approved,** provided the essential mitigation measures are implemented. Ultimately, however, the NCDENC will need to consider whether the project benefits outweigh the potential impacts.

7.4 Way Forward

This Draft EIA Report is now available for public comment and we invite stakeholders to review the report and to participate in the final phase of the public consultation process. An Executive Summary of this report has been distributed to registered stakeholders and is available from SRK on request (details below).

The EIA Report is available for public viewing at the following locations:

- Ntsikelelo Tida Library (Richmond);
- Victoria West Municipal Office; and
- Office of SRK Consulting in Rondebosch, Cape Town.

Electronic copies of the EIA Report and Executive Summary are available on the SRK website: www.srk.co.za (via the 'Library' and 'Public Documents' link).

Comments on the EIA Report can be submitted to:

Matthew Law

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Comments must be submitted by 20 April 2015 to be incorporated into the Final EIA Report.

This EIA Report may be amended based on comments received from stakeholders. Stakeholders' comments on the EIA Report will also assist NCDENC in making a decision regarding the application. The public is therefore urged to submit comment. If you require assistance in compiling and submitting comments, please contact us, and we will ensure that you receive appropriate support.

Once stakeholders have commented on the information presented in the EIA Report, the Final EIA Report will be prepared and submitted to NCDENC for approval. Once a decision is taken by NCDENC, this decision will be communicated to registered IAPs.

Prepared by

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

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Appendices

Appendix A:

Groundwater Specialist Study

Appendix B:

Terrestrial and Aquatic Ecology Specialist Study

Appendix C:

Archaeological, Paleontological and Heritage Specialist Study

Appendix D:

Stakeholder Database

Appendix E:

Stakeholder Comments during the Scoping Phase

Appendix F:

Environmental Management Programme

SRK Report Distribution Record

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