

**FINAL ENVIRONMENTAL
IMPACT ASSESSMENT REPORT**

**PROPOSED AGRICULTURAL
CULTIVATION**



**ON THE REMAINDER OF THE FARM
DOORNHOEK 451-KT,
GREATER TUBATSE FETAKGOMO
LOCAL MUNICIPALITY**

**ENVIRONMENTAL INVESTIGATION IN TERMS OF THE
NATIONAL ENVIRONMENTAL MANAGEMENT ACT
1998**

**SUBMITTED TO THE DEPARTMENT OF ECONOMIC
DEVELOPMENT ENVIRONMENT & TOURISM
LIMPOPO PROVINCE**

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AUGUST 2022

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR
THE PROPOSED CULTIVATION
ON THE REMAINDER OF THE FARM DOORNHOEK 451-KT
GREATER TUBATSE FETAKGOMO LOCAL MUNICIPALITY**

COMPILED BY

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EIR REPORT NO: FINAL

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PLEASE NOTE THAT NO CHANGES OR AMENDMENTS WERE MADE TO THE SPECIALIST STUDIES THAT WERE PREVIOUSLY SUBMITTED AS PART OF THE DRAFT ENVIRONMENTAL IMPACT REPORT DATED 27 JUNE 2022, THEREFORE THESE STUDIES ARE NOT DUPLICATED, THEREFORE ALL THE STUDIES AS PREVIOUSLY SUBMITTED MUST BE REGARDED AS FINAL REPORTS AND ALL REFERENCES IN THIS REPORT TO ANY OF THESE STUDIES, SIMILARLY REFER TO THE RELEVANT SPECIALIST STUDY THAT WAS PREVIOUSLY SUBMITTED UNDER APPENDIX G OF THE DRAFT ENVIRONMENTAL IMPACT REPORT (SEE BOOK 2 OF 2 APPENDIXES-G SPECIALIST REPORTS).

LIST OF APPENDIXES “G”

App No.	Specialist Name	Name of the Report / Document	Report Date	Report Reference
G1	<i>Insitu Consulting</i>	<i>Hydrogeological investigation on the Remainder of the farm Doornhoek 451 KT Hydrogeological report Version 2</i>	2022-10-25	20-AM-939
G2.1	<i>Koos De Wet Ecologists</i>	<i>Terrestrial Biodiversity Compliance Statement</i>	2022-03-08	App G2.1
G2.2	<i>Koos De Wet Ecologists</i>	<i>Terrestrial Animal Verification Report</i>	2022-03-23	App G2.2
G2.3	<i>Koos De Wet Ecologists</i>	<i>Terrestrial Plant Verification Report</i>	2022-03-23	App G2.3
G3.1	<i>Anton Linström Ecologists</i>	<i>Aquatic Biodiversity Compliance Statement</i>	2022-02-24	App G3.1
G3.2	<i>Anton Linström Ecologists</i>	<i>Aquatic Verification Report</i>	2021-03-25	App G3.2
G4	<i>Kudzala Antiquity CC</i>	<i>Heritage Impact Assessment</i>	2022-02-08	Kud/355
G5	<i>Prof Marion Bamford-Palaeontologist Consultant</i>	<i>Palaeontological Impact Assessment for the proposed clearing of vegetation for agriculture on Farms Doornhoek 451 and Kaspersnek 481, Ohrigstad, Mpumalanga Province</i>	2021-03-13	App G5

SEE BOOK 2 OF 2 APPENDIXES-G SPECIALIST REPORTS

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(i) ACRONYMS & DEFINITIONS

The following definitions apply to this report in line with the relevant Acts and Regulations.

Phrase	Definition Description	Ref
Activity	An activity identified in any notice published by the Minister or MEC in terms of section 24D(1)(a) of the Act as a listed activity or specified activity.	NEMA
Baseline information/data	Information derived from data that; records the existing elements and trends in a given environment; records the characteristics of a given project proposal.	IEMGS
Biophysical environment	That part of the environment that did not originate with and is not dependent on human activities (e.g. biological, physical and chemical objects and processes).	IEMGS
Buffer area	means, unless specifically defined, an area extending 10 kilometres from the proclaimed boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively, or that defined as such for a biosphere.	NEMA
Channel	An excavated hollow bed for running water.	NEMA
Climate Change	This means a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable periods.	DEA
Climate Change Vulnerability Assessment	<i>"Vulnerability to climate change is the degree to which geophysical, biological and socio-economic systems are susceptible to and unable to cope with, adverse impacts of climate change".</i> A vulnerability assessment lets you identify these adverse impacts of climate change that are most important to an area.	SDM CCVRP
Construction	According to the regulations this term is defined as – “the building, erection or expansion of a facility, structure or infrastructure that is necessary for the undertaking of activity but excludes any modification, alteration or upgrading of such facility, structure or infrastructure which does not result in a change to the nature of the activity being undertaken or an increase of the production, storage or transportation capacity of that facility, structure or infrastructure.	NEMA
Cumulative impact	In relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.	NEMA
Development	Means the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.	NEMA
Development footprint	This means any evidence of physical alteration as a result of the undertaking of any listed activity as part of a development. Also referred to a “Site”.	NEMA
Ecosystem	Means a system of relationships between animals and plants and their environment.	DEA
Environment	The external circumstances, conditions and objects affect the existence and development of an individual, organism or group. These circumstances include biophysical, social, economic, historic, cultural and political aspects.	IEMGS
General waste	Is waste that does not pose an immediate threat to man or the environment, i.e. household and garden waste, builders’ rubble and some dry industrial and business waste? It may, however, with decomposition and rain infiltration, produce leachate, which is unacceptable.	NEMWA
Hazardous waste	Is waste containing or contaminated by poison, corrosive agents, flammable or explosive substances, chemicals or any other substance which may pose detrimental or chronic impacts on human health and the environment.	NEMWA
Land	Any erf, agricultural holding or farm portion, and includes any improvement or building on the land and any real right in land.	SPLUMA

Continue in overleaf

Land development	The erection of buildings or structures on land, or the change of use of land, including township establishment, the subdivision or consolidation of land or any deviation from the land use or uses permitted in terms of an applicable land use scheme.	SPLUMA
Land use	The purpose for which land is or may be used lawfully in terms of a land use scheme, existing scheme or in terms of any other authorisation, permit or consent issued by a competent authority, and includes any conditions related to such land use purposes.	SPLUMA
Land use management system	The system of regulating and managing land use and conferring land use rights through the use of schemes and land development procedures.	SPLUMA
Linear activity	An activity that is arranged in or extending along with one or more properties and which affects the environment or any aspect of the environment along the course of the activity, and includes railways, roads, canals, channels, funiculars, pipelines, conveyor belts, cableways, power lines, fences, runways, aircraft landing strips, firebreaks and telecommunication lines.	NEMA
Mitigate	The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.	IEMGS
Project area	Refers to the application property and the combined area or development footprint of the selected sites.	SPLUMA
Riparian habitat	The physical structure and associated vegetation of the areas associated with a watercourse are commonly characterised by alluvial soils, which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with composition and physical structure distinct from those of adjacent land areas.	NWA
Run-off water	Excess surface water resulting from rain / also referred to as storm water in the NWA.	CARA
Servitude	Means a servitude registered against a title deed of land.	SPLUMA
Significant impact	An impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.	NEMA
Site	A selected area identified for purpose of implementing the development.	
Sustainable development	NEMA defines it as "Sustainable development means the integration of social, economic and environmental factors into planning, implementation and decision-making to ensure that development serves present and future generations."	NEMA
Waste	Any undesirable or superfluous by-product, emission, residue or remainder of any process or activity, any matter, gaseous, liquid or solid, or any combination thereof." The formal classification of waste is made according to the human health or environmental risk that it may pose, and consequently requirements for safe handling and disposal.	NEMWA
Wastewater	Any water whose pristine or potable quality has been altered by domestic, industrial or other use or process. Water containing waste, or water that has been in contact with waste material.	DWA
Watercourse	Is a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, pan, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998.	NWA
Waterway	An artificial flow path is constructed on land to carry away run-off water without causing excessive soil loss.	CARA
Zone	A defined category of land use is shown on the zoning map of a land use scheme.	SPLUMA

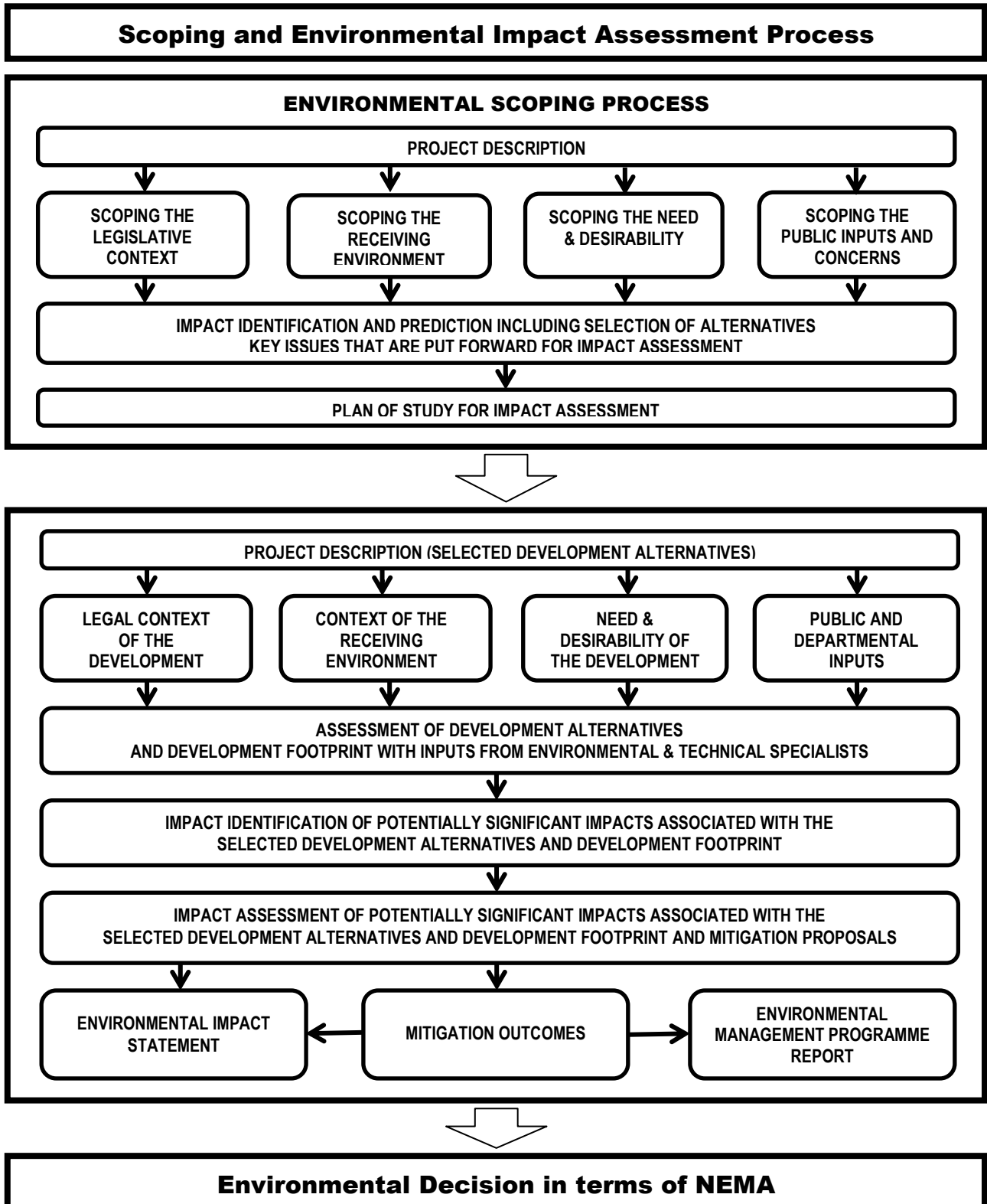
The following Acronyms apply to this report in line with the relevant Acts and Regulations.

Acronym	Description
APAP	Agricultural Policy Action Plan
APVC	Annual Precipitation Variation Coefficient
ASTER GDEM	A Global Digital Elevation Model (GDEM), acquired by a satellite-borne sensor "ASTER".
CARA	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)
CBA	Critical Biodiversity Area (a biodiversity classification)
CBR	Critical Biodiversity River
CBW	Critical Biodiversity Wetlands
CSIR	The Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries (changed to DFFE or DALRRD)
DFFE	Department of Forestry, Fisheries and the Environment (National)
DALRRD	Department of Agriculture, Land Reform and Rural Development (National)
DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
DWS	Department of Water & Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMF	Environmental Management Framework
EMPr	Environmental Management Program report
ERSDAC	Earth Remote Sensing Data Analysis Centre is an implementing agency for the ASTER Science Project.
ESA	Ecological Support Area (a biodiversity classification)
FEPA	Freshwater Ecosystem Priority Assessment
FTLM	Fetakgomo Tubatse Local Municipality
GIS	Geographic Information System
GNR	Government Notice Regulation
GVAP	Gross Value Added Product
IDP	Integrated Development Plan
IEMGS	Integrated Environmental Management Guideline Series
IPAP	Industrial Policy Action Plan
LEDET	Limpopo Economic Development, Environment and Tourism (Limpopo province)
LNCA	Limpopo Nature Conservation Act, 1998 (Act 117 of 1998)
LUMS	Land Use Management Scheme (municipal)
MAP	Mean Annual Precipitation
MASMS	Mean Annual Soil Moisture Stress
MAT	Mean Annual Temperature
MFD	Mean Annual Frost Days
NDP	National Development Plan
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NEMAQA	National Environment Management: Air Quality Act, 2004 (Act 39 of 2004)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003)
NEMWA	National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003)
NFA	National Forests Act, 1998 (Act 84 of 1998)
NFEPA	National Freshwater Ecosystem Priority Assessment
NGP	New Growth Path
NHRA	National Heritage Resource Act, 1999 (Act 25 of 1999)
NNR	No Natural Habitat Remaining
NPAES	National Protected Area Expansion Strategy

NWA	National Water Act, 1998 (Act 36 of 1998)
OLRCA	Olifants and Letaba Rivers Catchment Areas
ONA	Other Natural Areas (a biodiversity classification)
PA	Protected Area
PES	Present Ecological State
RCIA	Rapid Cumulative Impact Assessment
SA	South Africa
SAACA	South African Atlas for Climatology and Agro-hydrology
SAHRA	South African Heritage Resources Agency
SANS	South African National Standard
SDF	Spatial Development Framework (municipal)
SDM	Sekhukhune District Municipality
SPLUMA	Spatial Planning Land Use Management Application
SSA	Statistics South Africa
SRTM	Shuttle Radar Topography Mission
VAC	Visual Absorption Capacity
VESC	Valued Environmental and Social Components
VU	Vulnerable Ecosystem

(ii) EIA PROCESS DIAGRAM

An environmental impact assessment process was initiated in terms of the EIA Regulations GNR 326 of 7 April 2017 for the proposed agricultural cultivation development on the Remainder of the farm Doornhoek 415-KT in the Fetakgomo Tubatse Local Municipal Area as indicated in the following diagram:



This final report constitutes the above Environmental Impact Assessment Process in support of decision-making by the Department of Economic Development, Environmental & Tourism of the Limpopo Provincial Government with regard to an application for Environmental Authorisation of the proposed agricultural cultivation on the Remainder of the Doornhoek 415-KT in the Fetakgomo Tubatse Local Municipal Area.

APPLICANT & EAP DETAILS

This section complies with GN R326 of 17 April 2017, Appendix 3, Section 3(1)(a).

A.1 APPLICATION REGISTRATION

File Reference No.:	12/1/9/2-GS73
Project Title:	REMAINDER OF DOORNHOEK CITRUS CULTIVATION
Responsible Official:	Ms. T.A. Kubaye

A.2 APPLICANT

Project applicant:	Kaspersnek Fruits (Pty) Ltd		
ID / Reg No:	N/A		
Contact person:	Mr. Cobus Redelinghuys		
Physical address:	The farm Kaspersnek along District Road 2538		
Postal address:	P.O.Box 398, Hoedspruit	Postal code:	1380
Telephone:	(-)	Cell:	082 457 1738
E-mail:	cobus@rederberg.co.za	Fax:	(086) 580 4156

A.3 ENVIRONMENTAL ASSESSMENT PRACTITIONER WHO PREPARED THE SCOPING REPORT

Firm name:	ECO-8 Environmental Planners		
Contact person:	Mr. Riaan Visagie		
Postal address:	3 Vuurvliegje Street, Nelspruit	Postal code:	1200
Telephone:	013-744 9468	Cell:	082 5200 461
E-mail:	eco8@vodamail.co.za	Fax:	-
Qualifications:	B(TRP), M(EM) Environmental Management		
Professional affiliations:	EAP: EAPASA IAIA _{SA}	Years experience:	22 years

A.4 EAP CONCISE CURRICULUM VITAE

Personal information	Name: Riaan Visagie Nationality: South African
Relevant Tertiary Education	M(EM) 2001 : Master's Degree in Environmental Management (post-graduate) Faculty of Natural and Agricultural Sciences, University Free State - Bloemfontein
Professional Affiliation	Registered as Environmental Assessment Practitioner (EAPASA reg. No. 2019/1069) Member of the International Association of Impact Assessment (SA)
Employment Record	1998 to current: Self-employed as Environmental Assessment Practitioner and practising as Principal of the firm ECO-8 ENVIRONMENTAL PLANNERS in Nelspruit, Mpumalanga.
Experience	More than 22 years experience in environmental impact assessment and project management with direct involvement in more than 420 individual development projects that include residential, commercial and industrial township developments, hotels and resorts developments, wildlife and agriculture developments as well as services and infrastructure projects. (A list of projects can be provided on request).
Specialisation	Environmental Planning for sustainable developments by way of incorporating ecological design methods into urban design, lodge and resort designs, services infrastructure designs and site rehabilitation designs.
Experience in the field of this specific project	Experienced in land use assessments, site assessment and impact assessment of several agricultural projects (A list of projects can be provided on request).

PROJECT LOCALITY

The aim of this Section is to indicate the locality of the land / site as required in terms of GN R326 App.3, Sec.3(1)(b)(i)-(iii)

B.1 SURVEYOR-GENERAL REFERENCE NUMBER

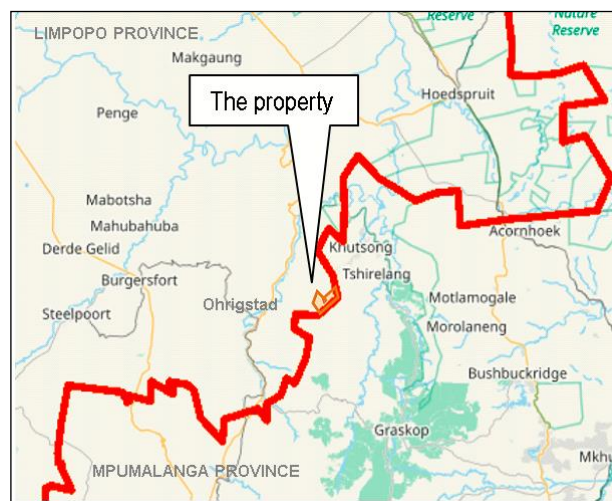
The 21 digit land identification number of the property.

T	0	K	T	0	0	0	0	0	0	0	0	0	0	4	5	1	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

B.2 REGISTERED LAND DESCRIPTION

Portion Number	Remainder of 451
Farm Name	Doornhoek
Registration division	KT

DISTRICT LOCATOR MAP



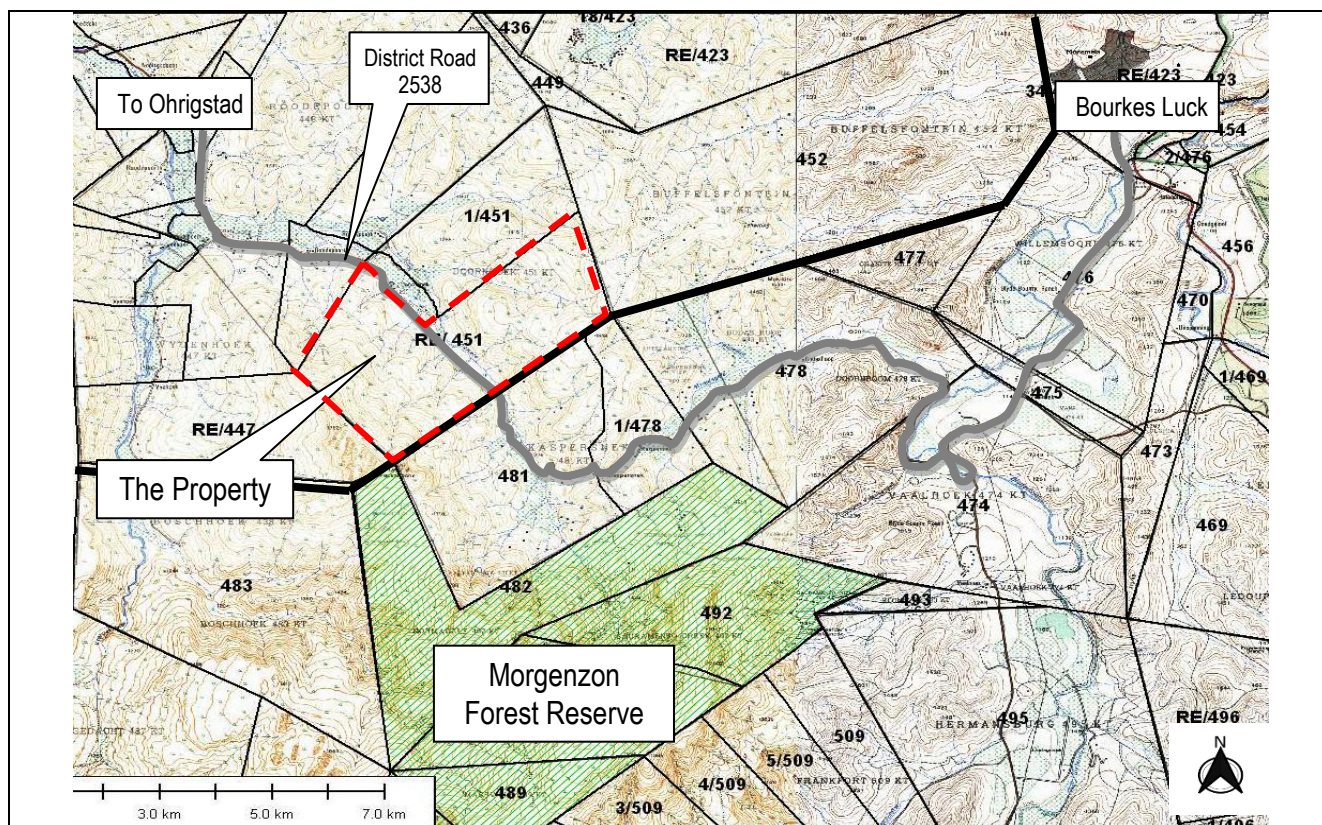
B.3 PHYSICAL ADDRESS OF THE LAND

Street / Road name & number	The farm Doornhoek along District Road 2538
Town / distance from town	The farm is located in the Kaspersnek Valley ±15km directly east of Ohrigstad and ±12km directly south-west of Bourkes Luck

B.4 COORDINATES OF THE PROPERTY

Projection (WGS84)	South	East
Geo Lat/Long (DDMMSS)	24° 43' 0"	30° 41' 30"

B.5 SITE LOCALITY MAP



Topographic Map 2430 Pilgrim's Rest

PROJECT DESCRIPTION

The aim of this Section is to provide a description of the project to be undertaken including associated structures and infrastructure as required in terms of GN R326 Appendix 3, Section 3(1)(d).

C1 PROJECT OBJECTIVE , SCOPE AND EXTENT

C1.1 Project objective

The objective of the Land User is to unlock the full economic potential of the property by way of proposed soft citrus cultivation on sites that are suitable for this purpose on the Remainder of the farm Doornhoek 451-KT.

C1.2 Background of historic and current land uses on the property

Existing use and activities on the property.

- *Historic cultivation and cattle farming occurred on the property from the late 1800s and specifically in the very arable valley sections of the Kaspersnek Valley.*
- *Although the property was historically utilised for the above purposes, cattle farming was at a time more favoured by the previous landowner and as a result, the previous cultivation lands became unutilised which resulted in large-scale bush encroachment that occur throughout the proposed new cultivation sites.*
- *Apart from small scale cattle farming that currently still occur on the property, it is otherwise vacant.*

Existing public infrastructure

- *The property is situated along District Road (2538), passing through the Kaspersnek Valley that connects to the R36 provincial road leading to Ohrigstad west of the property and connecting to the Vaalhoek District Road (5017) towards Bourkes Luck east of the property.*
- *District Road (2538) that services the property is situated within a road servitude that crosses over the property.*
- *Several storm water pipes underneath Road 2538 receives run-off that emanates from the road and the property.*
- *An Eskom distribution line (Ohrigstad-Rietvlei line) that conducts 22 kV is situated within a 4-meter wide servitude that runs parallel along Road 2538. Electrical supply to the property is therefore readily available.*

Existing farm infrastructure

The following farming infrastructure and land uses currently occur on the property:

- *Internal management roads and firebreaks.*
- *Fencing along district road.*
- *Internally fenced cattle camps.*
- *Existing cattle kraals.*
- *Existing buildings including sheds and storage rooms for general equipment and goods storage.*
- *Existing in-stream dam in the Kgwete River, historically used for irrigation water storage.*
- *Three boreholes are located on the property. The main borehole (No. GT-0236) will be used for irrigation while another borehole requires rehabilitation and the other is a backup borehole for farming use.*

Existing lawful water uses.

- *The property has no registered surface water allocation for irrigation with the Kaspersnek-Vygehoek Rivers Irrigation Board.*
- *However, the Applicant is in the process of applying for a water use license to use groundwater for the irrigation of the proposed cultivation project.*

C1.3 The scope of the proposed new cultivation project

The project implementation (construction phase) will include the following:

- *Vegetation clearing on ±68ha on selected cultivation sites for crop planting, including construction of management roads and irrigation infrastructure within and around cultivation lands.*
- *Construction of new and stabilisation of existing watercourse road crossings over ephemeral drainage lines and over the Kgwete River by way of installing where necessary, sufficiently sized pipes underneath the road surface of ±3m wide to ensure uninterrupted stream flow, and/or where necessary to install a ±3m wide strip of rock-bed for a road surface across the width of the watercourse, in both cases allowing for unimpeded stream flow and all-over to construct the necessary erosion protection structures along the banks and bed of watercourses affected by cuts-and-fills associated with the road crossings.*

- Installation of bulk irrigation infrastructure, including pump house and irrigation water storage dam (off-stream metal structure), underground installation of pipelines, pipe crossings over watercourses, and drip irrigation.
- Installation of perimeter fencing and firebreaks around all orchard sites.
- Construction of run-off waterways and off-stream and in-stream erosion protection structures in watercourses.
- The upgrading of an existing gauging weir and the construction of a new low-level gauging weir in the Kgwete River for river flow metering purposes.
- The repair of the eroded spillway and dam wall of the existing in-stream dam in the Kgwete River
- Small farm waste site.

The project operations and maintenance phase will include the following:

- Maintain the natural watercourses and in-stream dam by way of seasonal removal of silt and debris.
- Seasonal maintenance and repair of existing and installation of new in-stream and off-stream erosion protection structures and waterways.
- Ongoing maintenance of the dam wall and dam spillway.
- Ongoing maintenance of the existing and new gauging weirs in the Kgwete River.
- Seasonal vegetation clearing in firebreaks and servitudes.
- Ongoing maintenance of management roads and watercourse crossings.
- Seasonal control of bush encroachment and alien vegetation within vegetated buffer zones and watercourses.

C1.5 Extent and position of the proposed cultivation sites

The centre coordinates of the nine selected cultivation sites (S1-S9) are as follows:

Site	Area (ha)	Latitude (S)	Longitude (E)	Site	Area (ha)	Latitude (S)	Longitude (E)
S1	3.2586	24°42'29.33"S	30°41'40.46"E	S6	1.7739	24°42'43.86"S	30°41'36.62"E
S2	3.2200	24°42'58.01"S	30°42'4.75"E	S7	23.9670	24°42'22.32"S	30°41'15.11"E
S3	17.8740	24°42'55.88"S	30°41'53.75"E	S8	3.2779	24°42'4.01"S	30°41'0.95"E
S4	4.0395	24°43'11.48"S	30°42'1.81"E	S9	2.7573	24°41'50.07"S	30°40'52.44"E
S5	7.6260	24°42'58.01"S	30°41'47.12"E				

CULTIVATION FOOTPRINT (ORCHARD UNDER IRRIGATION)	±60 Hectare
ROADS & INFRASTRUCTURE FOOTPRINT	±8 Hectare
TOTAL DEVELOPMENT FOOTPRINT	±68 Hectare (6.1% of the property)

C1.6 The position of the existing dam and dam spillway that requires repair and maintenance

The centre coordinates are as follows:

Site	Size	Latitude (S)	Longitude (E)
Dam wall	±360m ²	24°42'47.04"S	30°41'53.17"E

Site	Size	Latitude	Longitude
Dam spillway	±10m ²	24°42'48.51"S	30°41'54.50"E

C1.7 The position of the existing spilt weir and construction of a new gauging weir for stream flow metering

The centre coordinates are as follows:

Site	Size	Latitude (S)	Longitude (E)
Maintain existing gauging weir No.1	±15m ²	24°42'39.13"S	30°41'40.84"E

Site	Size	Latitude	Longitude
Install new gauging weir No.2	±15m ²	24°43'4.56"S	30°42'9.72"E

Acceptable deviation of 15m to each side of the centre coordinates.

C1.8 The position of road and pipeline crossings over watercourses (Referto Site Plan Appendix A)

Management roads and pipelines will need to cross over ephemeral drainage lines at 39 points over the total project area. Some are existing crossings but most will be new crossings.

Management roads and pipelines will need to cross over the Kgwete River at three positions, two are existing crossings, and one crossing will be combined with the proposed gauging weir that needs to be constructed for metering river flow.

The suitable position of watercourse crossings was assessed along the total length of each ephemeral drainage line within each site. No preferred crossing points were identified. A centre position coordinate is determined for each road crossing but a deviation of up to 20m on both sides of the indicated position will remain acceptable if such deviation is necessary for practical implementation of the irrigation plan. The centre coordinates are indicated in the following tables:

Site 2 Watercourse crossings

Site	Size	Latitude (S)	Longitude (E)	Site	Size	Latitude	Longitude
S2.1	±10m ²	24° 42' 56.98" S	30°42'7.04"E	S2.2	±10m ²	24°42'57.95"S	30°42'5.51"E
S2.3	±10m ²	24°42'59.12"S	30°42'4.12"E	-	-	-	-

Site 3 Watercourse crossings

Site	Size	Latitude (S)	Longitude (E)	Site	Size	Latitude	Longitude
S3.1	±30m ²	24°42'40.92"S	30°41'41.92"E	S3.2	±30m ²	24°42'42.63"S	30°41'41.32"E
S3.3	±30m ²	24°42'43.64"S	30°41'39.70"E	S3.4	±30m ²	24°42'49.94"S	30°41'50.81"E
S3.5	±30m ²	24°42'51.65"S	30°41'49.94"E	S3.6	±30m ²	24°42'52.90"S	30°41'48.91"E
S3.7	±30m ²	24°42'59.46"S	30°42'0.68"E	S3.8	±30m ²	24°43'1.62"S	30°42'0.56"E
S3.9	±30m ²	24°43'3.91"S	30°41'59.99"E	WC1	±60m ²	24°42'39.13"S	30°41'40.84"E
WC2	±60m ²	24°42'56.75"S	30°42'0.19"E	WC3	±60m ²	24°43'4.56"S	30°42'9.72"E

Site 4 Watercourse crossings

Site	Size	Latitude (S)	Longitude (E)	Site	Size	Latitude	Longitude
S4.1	±30m ²	24°43'7.51"S	30°42'2.39"E	S4.2	±30m ²	24°43'10.11"S	30°42'2.05"E
S4.3	±30m ²	24°43'12.42"S	30°42'1.98"E	S4.4	±30m ²	24°43'16.02"S	30°42'1.95"E

Site 5 Watercourse crossings

Site	Size	Latitude (S)	Longitude (E)	Site	Size	Latitude	Longitude
S5.1	±30m ²	24°42'53.59"S	30°41'48.12"E	S5.2	±30m ²	24°42'55.79"S	30°41'46.90"E
S5.3	±30m ²	24°42'58.50"S	30°41'45.30"E	S5.4	±30m ²	24°43'1.31"S	30°41'42.67"E

Site 6 Watercourse crossings

Site	Size	Latitude (S)	Longitude (E)	Site	Size	Latitude	Longitude
S6.1	±10m ²	24°42'41.03"S	30°41'36.92"E	S6.2	±10m ²	24°42'42.79"S	30°41'35.77"E
S6.3	±10m ²	24°42'44.77"S	30°41'35.03"E	S6.4	±10m ²	24°42'43.91"S	30°41'39.18"E
S6.5	±10m ²	24°42'45.08"S	30°41'38.28"E				

Site 7 Watercourse crossings

Site	Size	Latitude (S)	Longitude (E)	Site	Size	Latitude	Longitude
S7.1	±30m ²	24°42'20.94"S	30°41'20.77"E	S7.2	±30m ²	24°42'23.30"S	30°41'18.59"E
S7.3	±30m ²	24°42'26.83"S	30°41'15.70"E	S7.4	±30m ²	24°42'28.90"S	30°41'13.40"E
S7.5	±10m ²	24°42'27.80"S	30°41'26.58"E	S7.6	±10m ²	24°42'29.74"S	30°41'23.23"E
S7.7	±10m ²	24°42'32.59"S	30°41'22.35"E	S7.8	±10m ²	24°42'34.89"S	30°41'20.47"E

Site 8 Watercourse crossings

Site	Size	Latitude (S)	Longitude (E)	Site	Size	Latitude	Longitude
S8.1	±10m ²	24°42'4.38"S	30°41'2.82"E	S8.2	±10m ²	24°42'5.47"S	30°40'59.66"E
S8.3	±10m ²	24°42'6.95"S	30°40'56.52"E	-	-	-	-

Site 9 Watercourse crossings

Site	Size	Latitude (S)	Longitude (E)	Site	Size	Latitude	Longitude
S9.1	±10m ²	24°41'48.13"S	30°40'52.71"E	S9.2	±10m ²	24°41'50.59"S	30°40'51.60"E
S9.3	±10m ²	24°41'54.33"S	30°40'49.43"E	-	-	-	-

C1.9 The position of the watercourses, constructed waterways and buffer zones

Watercourses and their buffer zones as well as constructed waterways without buffer zones in and around the cultivation sites will (where needed) require the installation of erosion protection structures. The ongoing seasonal monitoring and management of soil erosion and vegetation composition within the buffer zones will also be required. The downstream and upstream position coordinates of the watercourses on the boundaries of each site are indicated in the following table:

The site references in the following Table corresponds with the Site Plan (Appendix A) and indicates the start/end-points of watercourses/drainage lines that will require installation and maintenance of erosion prevention structures.

Kgwete River watercourse buffer between points K1 and K2

Site	Latitude (S)	Longitude (E)	Site	Latitude	Longitude
K1	24°43'10.38"S	30°42'10.76"E	K2	24°42'38.75"S	30°41'41.20"E

Site 2 Watercourse & constructed waterway

Site	Latitude (S)	Longitude (E)	Site	Latitude	Longitude
S2.1	24° 42' 56.98" S	30°42'7.04"E	S2.3	24°42'59.12"S	30°42'4.12"E
S2.4	24°42'53.75"S	30°42'5.61"E	S2.5	24°42'55.78"S	30°42'0.79"E

Site 3 Watercourses

Site	Latitude (S)	Longitude (E)	Site	Latitude	Longitude
S3.1	24°42'40.92"S	30°41'41.92"E	S3.3	24°42'43.64"S	30°41'39.70"E
S3.4	24°42'49.94"S	30°41'50.81"E	S3.6	24°42'52.90"S	30°41'48.91"E
S3.7	24°42'59.46"S	30°42'0.68"E	S3.9	24°42'56.75"S	30°42'0.19"E

Site 4 Watercourse

Site	Latitude (S)	Longitude (E)	Site	Latitude	Longitude
S4.1	24°43'7.51"S	30°42'2.39"E	S4.4	24°43'16.02"S	30°42'1.95"E

Site 5 Watercourse

Site	Latitude (S)	Longitude (E)	Site	Latitude	Longitude
S5.1	24°42'53.59"S	30°41'48.12"E	S5.4	24°43'1.31"S	30°41'42.67"E

Site 6 Constructed waterways

Site	Latitude (S)	Longitude (E)	Site	Latitude	Longitude
S6.1	24°42'41.03"S	30°41'36.92"E	S6.3	24°42'44.77"S	30°41'35.03"E
S6.4	±10m ²	24°42'43.91"S	S6.5	24°42'45.08"S	30°41'38.28"E

Site 7 Watercourse & constructed waterway

Site	Latitude (S)	Longitude (E)	Site	Latitude	Longitude
S7.1	24°42'20.94"S	30°41'20.77"E	S7.4	24°42'28.90"S	30°41'13.40"E
S7.5	24°42'27.80"S	30°41'26.58"E	S7.8	24°42'34.89"S	30°41'20.47"E

Site 8 Constructed waterway

Site	Latitude (S)	Longitude (E)	Site	Latitude	Longitude
S8.1	24°42'4.38"S	30°41'2.82"E	S8.3	24°42'6.95"S	30°40'56.52"E

Site 9 Constructed waterway

Site	Latitude (S)	Longitude (E)	Site	Latitude	Longitude
S9.1	24°41'48.13"S	30°40'52.71"E	S9.3	24°41'54.33"S	30°40'49.43"E

IDENTIFICATION OF REGULATED ACTIVITIES

The aim of this Section is to provide a description of the scope of the proposed activity/ies, including all listed and specified activities triggered and being applied for; as required in terms of GN R326 Appendix 3, Section 3(1)(c)(i)&(ii).

ACTIVITY IDENTIFICATION (NEMA EIA GNR 983, 984 & 985 OF THE 2014 EIA LISTING NOTICES – AS AMENDED)				
PROJECT PLAN	DEVELOPMENT ACTIVITY	Notice / Activity	REGULATION DESCRIPTION	
	Site preparation for cultivation of ± 68 ha.	GNR 984 LN2-15	Vegetation clearance >20ha	Yes
	Infilling of road crossings and removal of erosion silt from watercourses and infilling of material for dam wall repair.	GNR 983 LN1-19	Removal / infilling of more than 10m ³ of material from / into a watercourse.	Yes
	Construction of road crossings, waterways, spill weir and erosion protection structures as well as repair of the dam	GNR 985 LN3-14	Development of structures of more than 10m ² , within watercourses and within 32m from the edge of watercourses.	Yes

D.2 DESCRIPTION OF THE NEMA-EIA REGULATED PROJECT ACTIVITIES

The following table provides the full description of the identified regulated activities and relevance to the project as identified in the relevant Listing Notices under the EIA Regulations which requires Environmental Authorisation.

Activity No.	REGULATED ACTIVITIES AS LISTED IN THE EIA REGULATIONS APPLICABLE TO THIS PROJECT	EXTENT OF ACTIVITIES TO BE UNDERTAKEN INCLUDING ASSOCIATED STRUCTURES AND INFRASTRUCTURE
GN R 983 Listing Notice 1 of 2014 (AS AMENDED)		
19	The infilling or depositing of any material of more than 10m ³ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m ³ from a watercourse.	Excavation and backfilling are expected to occur as part of the construction of management roads and irrigation water pipeline trenches across watercourses, including actions associated with the installation and repair of erosion prevention structures, construction of a gauging weir and repair of the dam wall and the periodic removal of soil and silt deposits within the dam basin and within watercourses and proposed buffer zones.
GN R 984 Listing Notice 2 of 2014 (AS AMENDED)		
15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The required clearing of vegetation for cultivation sites covers an area of ± 68 hectare and future veld management within buffer zones in and around the sites over an area larger than 20 hectare.
GN R 985 Listing Notice 3 of 2014 (AS AMENDED)		
14	The development of - infrastructure or structures with a physical footprint of 10m ² or more where such development will occur within or within a distance of 32m from the edge of a watercourse and <u>within 5km from a protected area.</u>	The construction, installation, repair, and future maintenance of road crossings, waterways, water pipeline crossings, gauging weir as well as any run-off management and erosion prevention structures within the watercourses and buffer zones in and around the cultivation sites that are associated with the initial establishment and future maintenance of the proposed cultivation lands, waterways, road and pipeline crossings, erosion prevention structures, gauging weir and existing dam wall and spillway.

LEGISLATIVE CONTEXT

In compliance with GN R326 Appendix 3, Section 3(1)(e) this section describes the policy and legislative context within which the cultivation project is proposed including identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that apply and which are considered in this assessment.

E.1 LEGISLATION

Title of legislation	Authority	Relevance	Response
<i>National Environmental Management Act (1998) (NEMA)</i>	LEDET	<i>An Application for Environmental Authorisation in terms of section 24 of the NEMA applies to the proposed cultivation project.</i>	<i>The Application for Authorisation was submitted to LEDET and is in process of review.</i>
<i>Environmental Impact Assessment Regulations 2014 (amended in 2017)</i>	LEDET	<i>Regulated activities that are as listed in the 2014 EIA Regulations will be 'triggered' by the proposed cultivation project.</i>	<i>See Section D2 for applicable regulated activities listed in the 2014 EIA Listing Notices. The Environmental Impact Report fulfils the requirements of the NEMA Regulations.</i>
<i>National Environmental Management: Biodiversity Act 2004 (NEMBA)</i>	DFFE	<i>The Threatened or Protected Ecosystem Regulations GN R 1002 of 9 December 2011 lists critically endangered, endangered, vulnerable ecosystems that require protection. The Northern Escarpment Dolomite Grassland (GM22) is listed as a vulnerable ecosystem within the project area (refer to Section F8.2).</i>	<i>An assessment by a Terrestrial Ecologist verified that the Northern Escarpment Dolomite Grassland (GM22) is located on the mountainous mid-slopes to crests in the local landscape (refer App G2.1). This ecosystem is not present in the valley-bottom areas of the local topography where the selected cultivation sites are located. The project will thus not impact on any threatened or protected ecosystem.</i>
		<i>The Threatened or Protected Species Regulations GN R 151 of 23 February 2007 (as amended) specify the legal obligations of landowners in respect of listed plant and animal species of conservation concern species that occur on their properties.</i>	<i>The National Environmental Screening identified several plants and animal species of conservation concern that may occur in the project area. An assessment by a Terrestrial Ecologist verified that no such species occur on the selected cultivation sites (refer App G2.2).</i>
		<i>The Alien and Invasive Species Regulations GN R 864 of 29 July 2016 (as amended) specify the legal obligations of landowners in respect of listed invasive plant and animal species that occur on their properties.</i>	<i>An assessment by a Terrestrial Ecologist verified that alien and invader plant species occur in and around the selected cultivation sites (refer App G2.3). A vegetation control programme is included in the EMPR.</i>
<i>National Environmental Management Waste Act 2008 (NEMWA)</i>	LEDET	<i>The NEMWA requires authorisation for any listed waste activity that exceeds the stipulated threshold as identified in GN R921 of 29 November 2013 (as amended). The cultivation activity is not expected to generate organic waste or general solid or liquid waste during the orchard establishment and operational phases in excess of the stipulated thresholds. The cultivation activity is not expected to generate hazardous waste during the orchard establishment and operational phases in excess of the stipulated thresholds.</i>	<i>The expected waste types generated due to the activity is identified in Section (F16). The activity would not require a Waste Licence for the generation, storage, treatment, recycling or disposal of organic waste, general waste or hazardous waste. Hazardous agricultural chemical waste shall be handled in terms of the requirements of SANS 10206. The relevant Norms and Standards for the composting of organic waste shall apply.</i>

Title of legislation	Authority	Relevance	Response
National Environmental Management Air Quality Act 2004 (NEMAQA)	SDM	The Activity is not listed/regulated in terms of the Act. However, the National Dust Control Regulation under GN R 827 of 1 November 2013 specifies dust-fall rates for non-residential areas.	Precautionary measures must be employed by the Applicant to minimise dust-fall during orchard establishment/preparation and this aspect is addressed in the EMPR.
National Water Act (1998) (NWA)	DWS	The property has no registered surface water allocation with the Kaspersnek-Vygehoek Rivers Irrigation Board. The Applicant is in process of obtaining a water use license for the use of groundwater for irrigation purposes (NWA Section 21(a)).	A hydro-geological study was conducted and confirmed sustainable groundwater availability for the cultivation project. The Applicant is in process of applying for a Water Use License for abstracting and storing of groundwater for irrigation of the cultivation project. Downstream water users were considered and the study shows that such users will not be negatively impacted. Refer to Appendix Section G.1 for more detail.
		In addition to the above, the Applicant notes that the following activities will trigger Section 21 water uses in terms of the National Water Act, which should be authorised by the Department of Water and Sanitation by way of a Water use License.	<ul style="list-style-type: none"> Section 21(b) for storage of water. Section 21(c)&(i) for the position of the existing spill weir and construction of a new gauging weir for stream flow metering in Kgwete River. Section 21(c)&(i) for the position of road and pipeline crossings over water courses (Kgwete River and ephemeral drainage lines).
The National Forest Act (1998) (NFA)	DAFF now DALRRD	The Act provides for the protection of certain listed tree species.	An assessment by a Terrestrial Ecologist verified that protected tree species may occur on the selected cultivation sites. If such species are identified during the project establishment phase a permit shall be obtained for the removal of such tree species.
National Environmental Management Protected Areas Act 2003 (NEMPA)	LTA	The activity is not located in a protected area or within 10km of a National Park. The activity is not located within the National and Provincial Protected Area Expansion Strategy Focus Area. The activity is located within a 5km protected area buffer of the proclaimed Morgenson State Forest Reserve.	The Morgenson State Forest Reserve that is situated ±2km south of the property does not provide any form of tourism activity and therefore it is not expected that the proposed cultivation project would pose any negative visual impact that may directly or indirectly affect the State Forest Reserve.
Conservation of Agricultural Resources Act (1983) (CARA)	DAFF now DALRRD	The Act regulates the : <ul style="list-style-type: none"> utilization of land for cultivation purposes, limitations for the cultivation of land on steep slopes, the responsibility of the landowner regarding the prevention of soil erosion, restoration of eroded land, protection of wetlands and watercourses, and; responsibilities to combat weeds and invader plants and bush encroachment 	The Applicant shall obtain a cultivation permit from DAFF (now DALRRD) after obtaining a positive decision from LEDET. The Applicant shall implement soil conservation methods to combat soil erosion. The Applicant shall implement vegetation control methods to combat weeds and invader plants and bush encroachment in and around the cultivation sites and on the remainder of the farm. The EMPR includes a plan for soil erosion and vegetation management.
The National Veld and Forest Fire Act (1998)	DAFF now DALRRD	Requires a landowner to prevent veld fires and maintain fire breaks in conjunction with a Local Fire Protection Agency.	The Applicant shall maintain its membership with the local Fire Prevention Agency and employ measures to prevent and combat uncontrolled veld fires.

Title of legislation	Authority	Relevance	Response
<i>Agricultural Pests Act (1983) GN-R442 of 6 June 2015 - Control Measures</i>	<i>DAFF now DALRRD</i>	<i>DALRRD regulates the manufacture, distribution, sale and use of pesticides, fertilisers and agricultural remedies to ensure the health and safety of people, livestock, crops and the environment.</i>	<i>The Applicant shall only use pesticide and fertiliser products that are legally registered. Product application of agricultural pesticides and fertilisers shall be in accordance with a product safety data sheet is provided with each chemical and all relevant guidelines will be adhered to (see guidelines in E4 below).</i>
<i>Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (1947)</i>	<i>DAFF now DALRRD</i>		
<i>The National Heritage Resources Act (1999) (NHRA)</i>	<i>SAHRA</i>	<i>Provides for the protection of heritage resources.</i>	<i>A Heritage Impact Assessment revealed that no important heritage resources occur on the selected sites. A chance find procedure is included in the EMPR.</i>
<i>Limpopo Environmental Management Act (2003)</i>	<i>LEDET</i>	<i>Provides for the protection of certain plant and animal species.</i>	<i>An assessment by a Terrestrial Ecologist verified that protected plant or animal species potentially occur on the selected cultivation sites. If such species are identified during the project establishment phase a permit shall be obtained for the correct removal of such tree species.</i>
<i>Civil Aviation Act (2009)</i>	<i>SACAA</i>	<i>All proposed developments or activities that potentially could affect civil aviation military aviation or military areas of interest must be assessed by SACAA, in terms of the SACARs and South African Civil Aviation Technical Standards (SA-CATS) to ensure aviation safety.</i>	<i>The selected cultivation areas are not located near an airfield or aerodrome and the development would not constitute an aviation obstacle. Thus, the proposed cultivation project will not require a request for permission by the SACAA.</i>
<i>Fencing Act (1963)</i>	<i>DAFF now DALRRD</i>	<i>Regulations regarding fencing near servitudes and clearing of bush for boundary fencing has to be followed.</i>	<i>Clearing bush for the boundary fencing shall not be extended beyond legislative restrictions. The Applicant will allow reasonable ingress and egress to any electrical infrastructure of Eskom on the established servitude.</i>

E.2 POLICIES AND PLANS

Title of policy /plan	Authority	Relevance	Response
<i>National Development Plan (NDP)</i>	<i>-</i>	<i>The national policy recognises the potential of commercial agriculture for job creation.</i>	<i>The NDP was considered in this assessment - refer to need and desirability Section G.</i>
<i>Industrial Policy Action Plan (IPAP) 2018/19 – 2020/21</i>	<i>DTI</i>	<i>The IPAP features fruit export development as one of the key action programmes for the country.</i>	<i>The IPAP was considered in this assessment - refer to need and desirability assessment – Section G.</i>
<i>Agricultural Policy Action Plan (APAP)</i>	<i>DAFF now DALRRD</i>	<i>The APAP takes its cue from the NDP and the IPAP. It suggests that the citrus fruit production should increase plantings to increase employment opportunities.</i>	<i>The APAP was considered in this assessment -refer to need and desirability assessment – Section G.</i>
<i>Policy on sustainable agriculture development</i>	<i>DAFF now DALRR</i>	<i>The policy identifies strategies, guidelines, and practices that constitute the South African concept of sustainable agriculture. Environmental: protection of the natural resources; prevention of water and soil erosion and biodiversity conservation.</i>	<i>The sustainability parameters were considered in this assessment and the proposed cultivation activities are in line with the national sustainability requirements for agricultural practices. Refer to sustainability in the need and desirability assessment – Section G.</i>

Title of policy /plan	Authority	Relevance	Response
See above	DAFF now DALRRD	<i>Economic: assurance of a safe and high - quality supply of agricultural products. Social: contribution to social well-being.</i>	See above
<i>Pesticide Management Policy GN-R 1120 of 2010</i>	DAFF now DALRRD	<i>The policy promotes better protection from health and environmental risks posed by pesticides.</i>	<i>The Applicant shall abide by the regulation and guidelines concerning the handling and application of pesticides on the property (see guidelines in E4 below).</i>
<i>Fetakgomo Greater Tubatse Municipal Integrated Development Plan (IDP) 2016-2021</i>	FTLM	<i>Relevant to this assessment, the IDP aims at strengthening the agricultural sector to enhance established commercial markets and utilise local labour and skill resources.</i>	<i>The proposed cultivation project is in line with the economic growth objectives of the municipal IDP.</i>
<i>Sekhukhune District Municipality IDP 2018/2019</i>	SDM	<i>The IDP focuses on aspects that include sustainable agriculture, food security, efficient use of agricultural water.</i>	<i>The proposed cultivation project is focused on sustainable agricultural and efficient water use.</i>
<i>Limpopo Conservation Plan v2 Plan 2013</i>	LEDET	<i>Replaced by the Sekhukhune District Bioregional Plan (2019) (see below)</i>	See below.
<i>Sekhukhune District Bioregional Plan (SDBP) 2019</i>	LEDET	<p><i>The Sekhukhune District Bioregional Plan (2019) combines the terrestrial and aquatic conservation priorities applicable to the project sites as follows:</i></p> <ul style="list-style-type: none"> ▪ <i>All the selected cultivation sites are largely situated in an Ecological Support Area (ESA) level 1.</i> ▪ <i>Selected cultivation site S7-S9 are partially located partially in an “ESA 2”.</i> ▪ <i>Selected cultivation site S9 is partially located in an area with “No natural vegetation remaining”.</i> 	<ul style="list-style-type: none"> ▪ <i>The National Environmental Screening Tool indicates that the sites pose potentially HIGH terrestrial biodiversity in line with an Ecological Support Area (ESA1) category. The Tool further indicates a LOW aquatic biodiversity sensitivity.</i> ▪ <i>The SDBP provides a more accurate assessment of both terrestrial and aquatic biodiversity sensitivities.</i> ▪ <i>Terrestrial and Aquatic Ecologists conducted assessments of the selected sites and confirmed LOW biodiversity sensitivity for both Terrestrial and Aquatic Biodiversity on the selected sites (See App G2 & G3.)</i> ▪ <i>The cultivation project would thus not impact detrimentally on on-site biodiversity and off-site biodiversity priorities.</i>

E.3 PROVINCIAL, MUNICIPAL & OTHER DEVELOPMENT PLANNING FRAMEWORKS

Municipal planning Frameworks	Authority	Relevance	Response
<i>Municipal Land Use Management System (LUMS) 2020</i>	FTLM	<i>The LUMS specifies land use zones unique to each property. The property has an Agricultural land-use zoning.</i>	<i>The proposed cultivation project is in line with the land use zoning and does not require an application for a change in land use.</i>
<i>Municipal Local Economic Development Strategy (LEDS)</i>	FTLM	<i>The Municipal LEDS aims at increasing intensive agricultural development on potential arable land.</i>	<i>The proposed cultivation project is in line with the LEDS.</i>

Municipal planning Frameworks	Authority	Relevance	Response
<i>Sekhukhune District Municipal Spatial Development Framework (SDF)</i>	<i>SDM</i>	<i>The Sekhukhune District Municipal SDF 2018 propose spatial integration of complementary land uses.</i>	<i>The property is located in an agricultural zone and the proposed cultivation project is complementary to surrounding agricultural land uses.</i>
<i>World Heritage Convention Act, 1999</i>	<i>DEA</i>	<i>The project area is not located in a World Heritage Area or a UNESCO Man and the Biosphere Programme Area.</i>	<i>N/A</i>
<i>Environmental Management Framework (EMF)</i>	<i>(DEA/ DWS)</i>	<i>An EMF is a guideline to assist land use and development planning and decision-making processes. The EMF for the Olifants and Letaba Rivers Catchment Areas (OLRCA EMF) applies to the proposed cultivation project as the property is located within Blyde River Sub- Catchment (Zone F) of the OLRCA EMF.</i>	<i>Water management objectives of the EMF states included the following :</i> <ul style="list-style-type: none"> ▪ <i>Water quantity objectives: Irrigation allocations must not pose a negative impact on the ecological reserve of any part of the river system in the EMF area.</i> ▪ <i>Water quality objectives: Ensure that water that is released back into the system from any activity must comply with the relevant quality standards.</i> ▪ <i>Water sources conservation objectives: All natural wetlands, riparian areas and river systems that occur in Zone F must be maintained.</i> ▪ <i>Sections F, K & L address achievement of the above-mentioned objectives.</i>
<i>Limpopo Protected Area Expansion Strategy</i>	<i>LEDET</i>	<i>In terms of the Sekhukhune Bioregional Plan 2019, the project sites are not located in an area earmarked for the expansion of protected areas.</i>	<i>N/A</i>
<i>National Protected Area Expansion Strategy (NPAES) 2019</i>	<i>DEA</i>	<i>The NPAES identified a small portion the proposed cultivation sites as part of the “Priority focus areas”, but on the condition that the valley sections are excluded. As the delineation does not include valley areas from GIS layers, the overlap onto the proposed sites was not taken into consideration in terms of the NPAES 2019 priority areas.</i>	<i>The proposed cultivation sites were evaluated in terms of the NPAES 2019. The mountainous areas are ecologically sensitive. The cultivation sites are located in the less sensitive and previously modified valley bottom areas. The NPAES 2019 objectives would thus not be compromised by the proposed cultivation development.</i>

E.4 REGULATIONS, GUIDELINES, NORMS & STANDARDS

Title of guideline, norms or standard	Relevance	Response
<i>Dept. of Agriculture Guideline: A Primer on Soil Conservation (1984)</i>	<i>The document provides guidelines to agricultural engineers and farmers on measures to prevent soil erosion and measures to rehabilitate existing erosion on farms.</i>	<i>Basic soil erosion prevention methods derived from these guidelines are incorporated in the mitigation proposals of this assessment and in the EMPR.</i>
<i>Dept. of Agriculture Various guidelines on the use of Agricultural Chemicals</i>	<i>A Guide for the Control of Plant Diseases (2003), A Guide for the Control of Plant Pests (2002), A Guide to Use of Herbicides (2000),</i>	<i>The Applicant must implement where applicable, the guidelines published by the Dept. of Agriculture (which are updated from time to time).</i>

Title of guideline, norms or standard	Relevance	Response
<i>Dept. of Agriculture Various guidelines on the use of Agricultural Chemicals</i>	<i>A Guide for the Control of Household and Industrial Pests (2000).</i>	<i>The Applicant must implement where applicable, the guidelines published by the Dept. of Agriculture (which are updated from time to time).</i>
<i>Dept. of Agriculture Standard: The handling, storage and disposal of pesticides (SANS 10206)</i>	<i>This standard specifies procedures and requirements for handling, storage and disposal of pesticides on farms (amongst others) to minimise risk to health and safety, property and environment.</i>	<i>The Applicant must implement the standard as published by the Dept. of Agriculture (and updated from time to time).</i>
<i>Guideline: Management of the risk of agricultural remedies on insect pollinators (2017)</i>	<i>Recommends actions that can be taken in terms of Act 36 of 1947, and suggestions on other measures that can be taken to preserve and protect insect pollinators.</i>	<i>The Applicant must implement the guideline published by the Dept. of Agriculture (and updated from time to time).</i>
<i>DEA (2017), Guideline on Need and Desirability</i>	<i>The EIA Regulations stipulates that “Need & Desirability” of a project must be considered in the EIA process. The Guideline aims to ensure that all the relevant sustainability considerations have been taken into account.</i>	<i>A Need & Desirability assessment according to the Guideline is incorporated into Section G of this report.</i>
<i>DEA (2010) IEM Guideline 7 Public Participation</i>	<i>The EIA Regulations stipulates that “Public Participation” must be incorporated in the EIA process. The Guideline aims to ensure that a fair Public Participation Process is followed.</i>	<i>A Public Participation Process according to the Guideline is incorporated into Section K and Appendix E of this report.</i>
<i>SANS 0103:2008 The measurement and rating of environmental noise.</i>	<i>The Standard provides a guiding method for environmental noise impact assessments and to predict noise impacts at a certain noise level distance from noise.</i>	<i>A basic noise assessment is incorporated in Section F15 of the Report. It found that potential noise impacts due to the project is expected to be very low.</i>
<i>NEMAQA: Minimum Emission Standards 2007 (as amended).</i>	<i>Any development must incorporate the minimum emission standard if the activity produce a listed or regulated emission.</i>	<i>No activity as part of the proposed cultivation will produce a listed / regulated emission.</i>
<i>NEMAQA: Ambient Air Quality Standards 2009.</i>	<i>The development should not change the characteristics of the ambient air quality above the minimum air quality standards.</i>	<i>No activity as part of the proposed cultivation is expected to change the ambient air quality above the listed standards.</i>
<i>NEMWA: Guidelines on separation of waste at source (2018)</i>	<i>The guideline provides methods for waste separation on-site before waste removal and disposal activities occur in line with the proposed waste management hierarchy.</i>	<i>The implementation of waste separation on-site is a feasible and reasonable waste management activity – refer to Section I3 of the Report.</i>
<i>NEMWA: Norms and standards for the remediation of contaminated land and soil (2014).</i>	<i>The correct remediation procedures must be followed when soil is contaminated by a hazardous product to ensure the prevention of further contamination and the correct method of disposal.</i>	<i>In the event of soil contamination due to accidental spillage, e.g. excess spillage of pesticide chemicals, these norms, and standards shall apply.</i>
<i>NEMA: Relevant Specialist protocols GNR 320 & GNR 1150 (2020)</i>	<i>The Protocol provides Guidelines for Specialist Studies and the level of such studies.</i>	<i>All Specialist Verification and Compliance Reports included in this assessment are appropriate according to the Protocols (refer to App G).</i>
<i>NEMWA. Norms and Standards for organic waste composting (2021)</i>	<i>The Norms and Standards apply to an organic waste composting facility without obtaining a Waste Management License.</i>	<i>Organic waste that may emanate from the cultivation practice will be managed in terms of the Norms and Standards.</i>

THE RECEIVING ENVIRONMENT

In compliance with GN R326 Appendix 3 Section 3(h)(iv), this section provides information on the environmental attributes associated with the development footprint alternatives. Where necessary, the information provided in the scoping report has been verified by specialist / technical professionals and this report is brought in line with the findings of such professionals (see attached reports Appendix G). This section thus highlights any potential impact that the selected development alternatives may pose on the receiving environment. The methods used to assess the environmental attributes of the site were done by way of specialist terrain survey, GIS map overlay analysis, and secondary verifiable data analysis.

F.1 CADASTRAL DESCRIPTION AND LAND-USE ZONING

F1.1 PROPERTY DESCRIPTION		SELECTED PROPERTY	ALTERNATIVE PROPERTY
Property description or physical address of the study area	Province	<i>Limpopo</i>	<i>No alternative property is considered in this assessment.</i>
	District Municipality	<i>Sekhukhune DM</i>	
	Local Municipality	<i>Fetakgomo Tubatse LM</i>	
	Ward Number(s)	<i>Ward 1</i>	
	Farm name and number	<i>Doomhoek KT</i>	
	Erf / Portion number	<i>Remainder</i>	
	Size of the study area	<i>± 68 ha</i>	

F1.2 PROPERTY LAND-USE ZONING	SELECTED LAND USE	ALTERNATIVE LAND USE
Current zoning as per local municipality LUMS.	<i>Agricultural</i>	<i>No alternative land use is considered in this assessment.</i>
Earmarked zoning Local Municipality SDF	<i>Agricultural</i>	
Is a change of land-use/consent use required?	<i>No</i>	
Registered servitudes	<i>Servitudes for District Road 2538 and ESKOM's Ohrigstad-Rietvlei 22kV overhead distribution power line cross over the property.</i>	

F1.3 LOCALITY OF THE PROPOSED CULTIVATION SITES OF THE PROPERTY
<i>The proposed cultivation sites covers ±68 ha of the property as more clearly indicated on the Sites Plan (Refer to Appendix A of this report).</i>

F1.4 LAND-USE SUITABILITY, IMPACTS, AND RISKS
<i>The property was previously used mainly for cattle farming but aerial photo evidence indicates more extensive crop farming in the valley earlier than the 1970's and historic records indicate cultivation agriculture occurred in the Kaspersnek valley since the late 1800's. The proposed new citrus cultivation would thus not compromise the current land-use zoning and the earmarked land use of the property as indicated in the Municipal SDF.</i>

F.2 TOPOGRAPHY

F2.1 REGIONAL LOCALITY AND LANDFORM
<i>The property is situated in the Kaspersnek Valley that occurs on the western slopes of the Drakensberg Escarpment near Ohrigstad in a region also known as the Middle-veld being situated at altitudes between that of the Highveld towards the west and the Lowveld towards the east. The topography made this valley historically known for cultivation farming.</i>

F2.2 BROAD LANDFORM(S) THAT BEST DESCRIBES THE AREA IN WHICH THE SITES ARE LOCATED

LANDFORM DESCRIPTION		COMMENT
Plateau / Ridgeline	<i>No</i>	<i>Cultivation development may be subject to limitations in the local landscape.</i>
Side slope of mountain/valley	<i>No</i>	<i>Cultivation development may be subject to cut-and-fill land stability limitations.</i>
Valley bottom	<i>Yes</i>	<i>Cultivation development is subject to landform and slope (see below).</i>
Closed valley	<i>Yes</i>	<i>Cultivation development is subject to landform and slope (see below).</i>
Undulating plains country	<i>No</i>	<i>Cultivation development may be subject to limitations in the local landscape.</i>

F2.3 TERRAIN WITHIN THE LOCAL LANDFORM THAT BEST DESCRIBES THE SITES

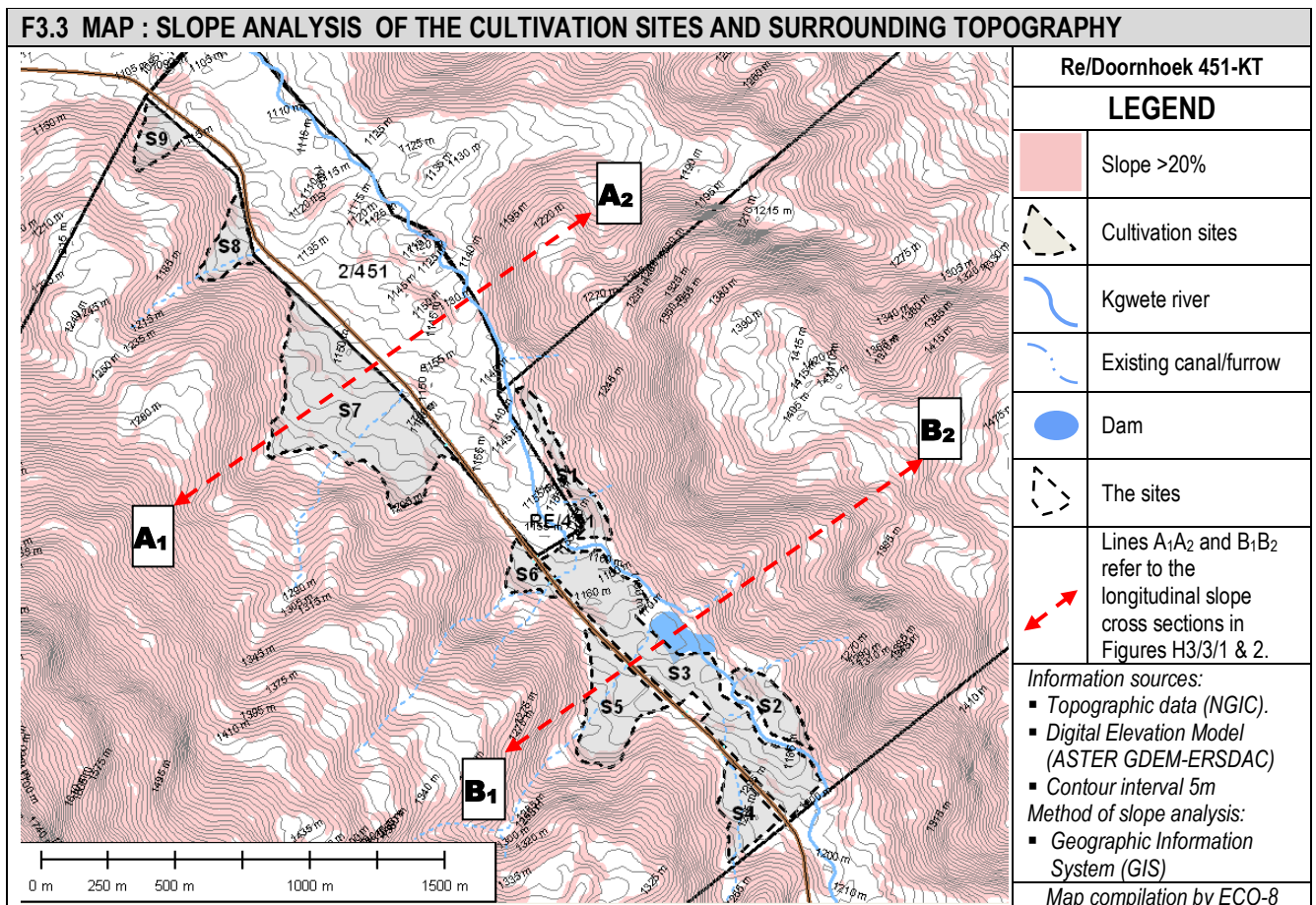
TERRAIN UNITS	Cultivation suitability	S1	S2	S3	S4	S5	S6	S7	S8	S9
(1) Crest (C)	Mostly unsuitable									
(2) Upper mid-slope (UMS)	Potentially hazardous									
(3) Lower Mid-slope (LMS)	Overall suitable				X		X			X
(4) Foot-slope (FS)	Overall suitable	X	X		X	X	X	X	X	X
(5) Valley bottom (VB)	Overall suitable		X	X						
(5) Floodplain (FP)	Mostly unsuitable									

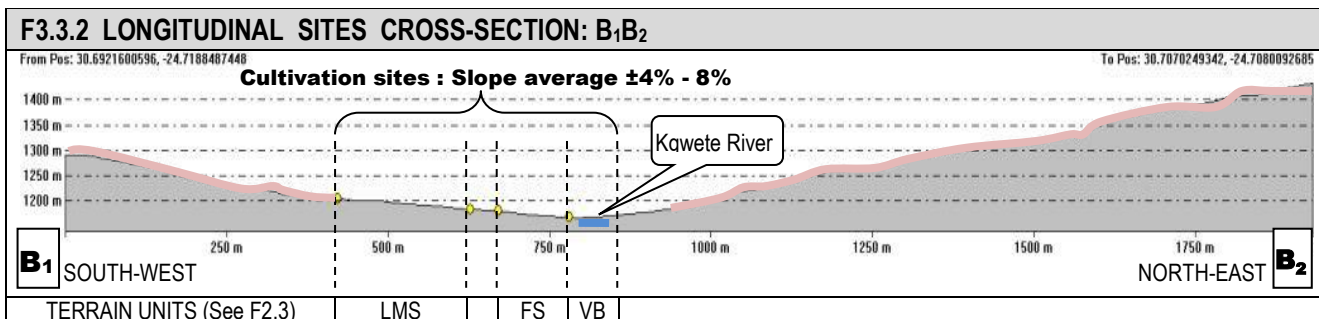
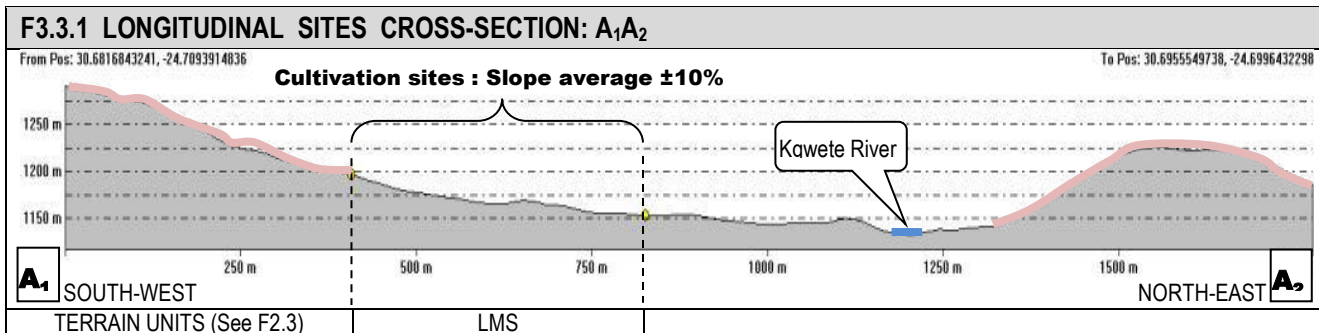
F2.4 TERRAIN UNIT SUITABILITY IMPACTS AND RISKS
 The terrain position of the proposed sites within the foot slope to lower-mid-slope terrain units of the locally closed valley landform would not pose a potential hazard or risk of slope instability and flooding.

F.3 ALTITUDE, GRADIENT / SLOPE

F3.1 AVERAGE GRADIENT	S1	S2	S3	S4	S5	S6	S7	S8	S9
Highest elevation – meters (m)	1163	1195	1186	1224	1211	1181	1198	1158	1139
Lowest elevation – meters (m)	1150	1181	1180	1205	1180	1164	1149	1125	1105
Elevation difference (m) (E)	13	14	6	19	31	17	49	33	34
Elevation distance (D)	75	105	148	273	386	131	513	280	245
Slope % (E/Dx100)	17.3	13.33	4.05	6.95	8.03	12.9	9.55	11.78	13.9

F3.2 GRADIENT / SLOPE OF THE SITES			Gradient / slope								
Height : horizontal distance (m)	Slope % or gradient	Cultivation suitability	S1	S2	S3	S4	S5	S6	S7	S8	S9
1:20 – 1:15	1-5%	Overall very good			X						
1:15 – 1:10	5-10%	Overall good				X	X		X		
1:10 – 1:7,5	10-15%	Overall moderate		X				X		X	X
1:7,5 – 1:5	15 – 20%	Overall limited	X								
Steeper than 1:5	>20%	Overall unsuitable									





F3.4 ALTITUDE AND SLOPE SUITABILITY, IMPACTS, AND RISKS

The proposed cultivation sites are situated at altitudes ranging from 1105m to 1224m above sea level and fall within the acceptable altitude range for citrus cultivation. The Conservation of Agricultural Resources Act, 1983 (CARA) stipulates that no land user shall cultivate any land on a slope of more than 20%. The initial slope analysis was verified on site and some discrepancies were detected compared to the Digital Elevation Model in Section 3.3 above. This is mainly due to the data used to compile the Model with spot-heights taken 30m apart. It is therefore good practice to verify the topography and slope on site and to make corrections where necessary. The final slope analysis indicates that with all the sites (S1-S9) located within the valley footslopes (FS) to lower mid-slopes (LMS) as indicated in Sections 3.3.1 and 3.3.2 above, pose suitable slopes for cultivation.

F4 GEOLOGY AND SOIL CONDITIONS

F4.1 UNDERLYING GEOLOGY

According to the Geological Map (1:250 000, 2430 Pilgrims Rest), the immediate geology that underlay the property and cultivation sites is a sedimentary rock and predominantly shale of the Malmani Sub-group (Chuniespoort Group).

F4.2 BROAD SOIL FORM

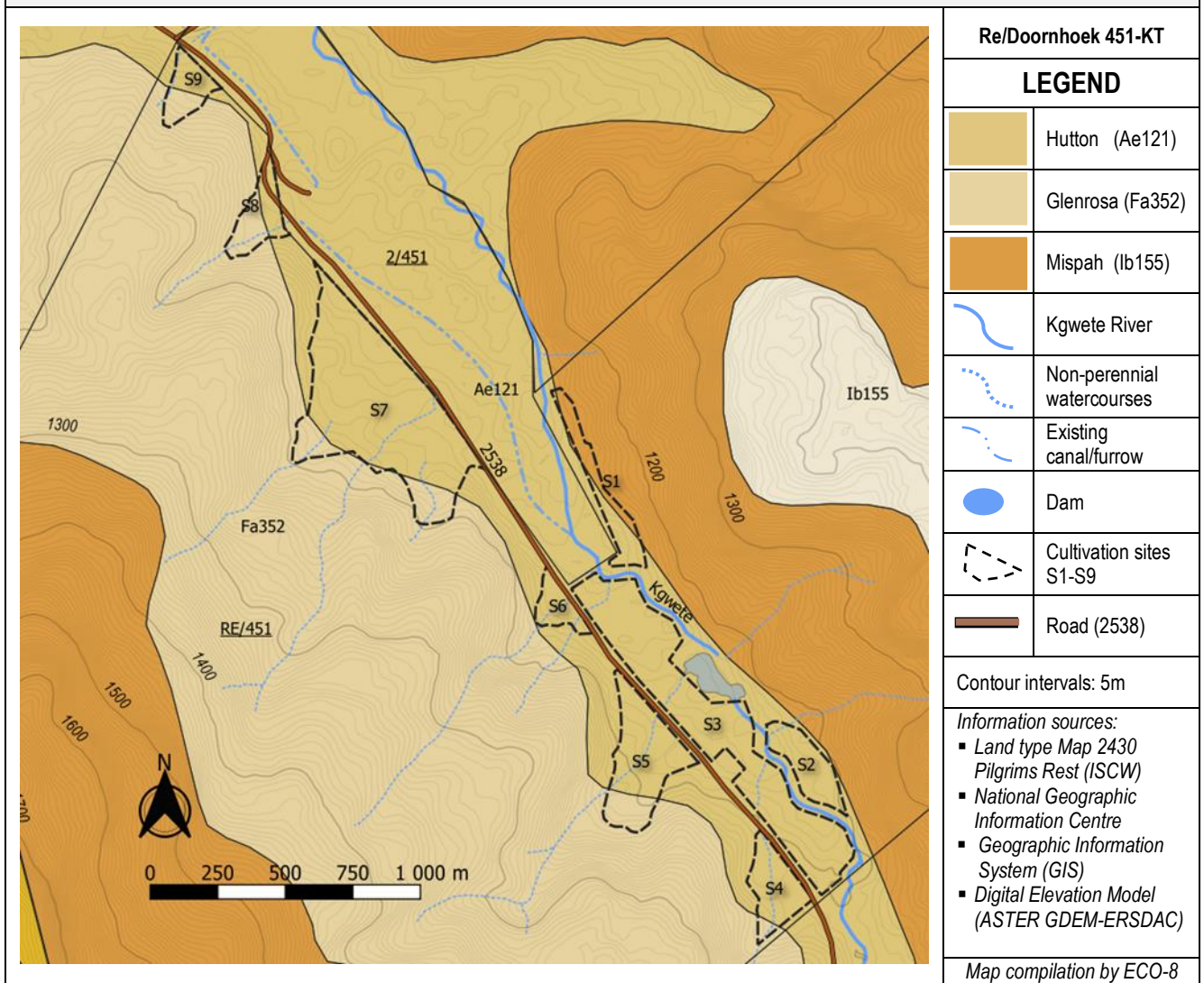
According to the National Land Type survey (Schoeman et al, 1984) map sheet 2430 Pilgrim's Rest, the valley bottom to foot-slope terrain unit is classified as Land Type Ae121 which consists mainly of red freely drained, structureless soils and alluvium (clay, sand, gravel) predominantly of the Hutton soil form. Weathered gravelly shale of the Glenrosa soil form characterise Land type Fa352 and occurs mainly along the lower to mid-slope areas. The shallow soils and rock outcrop along the steeply inclined valley slopes represent the Mispah soil form of Land Type Ib155.

F4.3 BROAD SOIL FORM CHARACTERISTICS

Soil form	Colour	Infiltration rate	Internal drainage	Water supplying capacity		Limiting conditions for root penetration	Depth mm	Erosion hazard (disturbed)	Nutrient status and fertility	Mechanical limitations	Topsoil texture	Average Clay %
				A Hor	B Hor							
Hutton	Red	Moderate	Slow to Moderate	Low	Low	None	300-600	Moderate to high	Mod/high	None	SACILm	20-30
Glenrosa	Red-brown	Slow to moderate	Slow to Moderate	Low	Very low	Weathered rock	200-300	Low	Low to mod/high	Weathered gravel	SaLm-SaCILm	15-25
Mispah	Brown	Slow to moderate	Slow	Low	N/A	Shallow rock	50-250	Very low	Low to mod/high	Shallow rock	LmSa-SaCILm	10-20

Soil type; soil depth (mm); soil texture: sand (Sa)/clay (Cl) /loam (L), Clay content (%)

F4.4 BROAD SOIL MAP OF THE PROJECT SITES



Citrus can be grown in a wide range of soil types provided they are well drained. In the case of soil suitability, soil factors such as effective depth, texture, clay content, soil colour (internal drainage) and mechanical limitations are important issues that need to be considered. The table below indicates the cultivation suitability of each site in terms of soil properties.

F4.5 SOIL SUITABILITY CRITERIA FOR CITRUS CULTIVATION

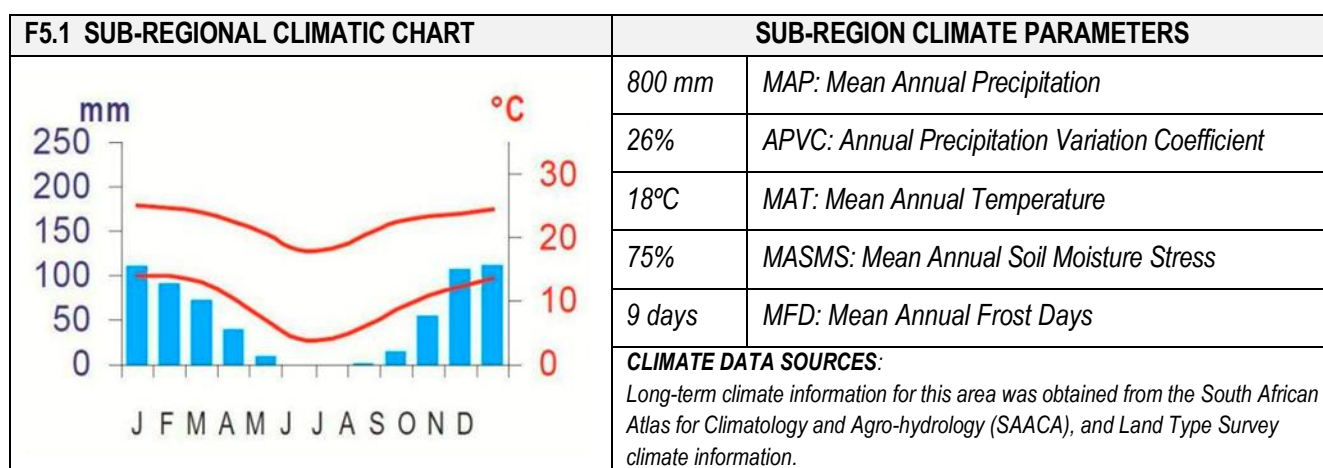
PROPOSED CULTIVATION SITES	Effective soil depth (m)			Soil clay content %				Soil colour (drainage)			Factors that could limit root development	
	Optimal	Good to marginal	Not suitable	Optimal	Good to marginal	Marginal or less favourable	Not suitable	Optimal	Marginal or less favourable	Not suitable		
	>1.0	1.0 - 0.5	<0.5	10-40	5-20	20-40	>40	Red or brown	Yellow & dark	Grey & blue	Hard layers	Saturated soils
S1	50%	50%	-	X	X	-	-	X	-	-	X	-
S2	100%	-	-	X	X	X	-	X	-	-	-	-
S3	100%	-	-	X	X	X	-	X	-	-	-	-
S4	90%	10%	-	X	X	X	-	X	-	-	-	-
S5	75%	25%	-	X	X	X	-	X	-	-	-	-
S6	100%	-	-	X	X	X	-	X	-	-	-	-
S7	80%	20%	-	X	X	X	-	X	-	-	-	-
S8	50%	50%	-	X	X	X	-	X	-	-	-	-
S9	50%	50%	-	X	X	X	-	X	-	-	-	-

F.4.6 SOIL SUITABILITY, IMPACTS, AND RISKS

- The Hutton soils on suitable slopes that are dominantly present on sites are very favourable for cultivation while the Glenrosa soils on suitable slopes are good to marginal for cultivation.
- The Hutton soil was found to be deeper than 600 mm indicating good root development potential, whereas ridging on Glenrosa soils will provide the necessary soil depth for root establishment on Sites 4,5,7,8 & 9. Areas of hard rock of the Mispah soil form with limiting excavation potential that can occur on Site 1 must be avoided.
- The overall red to brown colour of the soil indicates a good drainage character and the optimal clay content would ensure good moisture retention.
- The Hutton soils are moderate to highly susceptible to erosion and soil conservation measures must be applied as indicated in the EMPR (Appendix F).
- The overall soil characteristics of the sites indicate good to moderate soil suitability for citrus cultivation along all identified terrain units.

F.5 CLIMATE

This property is situated in the western rain shadow of the Drakensberg Escarpment, where the climate is much drier than along the eastern face of the escarpment and where fairly infrequent frost occur during the winter. The region receives 90% of its total annual rainfall during the period October to April with the highest rainfall in January and February. The following climate diagram indicates a range of climatic conditions in the project area:



Climate change predictions are expected to affect rainfall and drought events over South Africa. The CSIR's emerging climate change predictions for the project area, projected towards the year 2050 are summarised in the following table:

F.5.2 EMERGING BASELINE CLIMATE CHANGE VARIANCES FOR THE PROJECT AREA			
Climatic factors (Average / Annum)	Baseline	2050 Projection	
		Change	Impact***
Temperature	18°C	▲ ±2. °C	Low
Very Hot Days*	25 days	▲ ±0 days	Low
Average Rainfall	±800 mm	Neutral	Low
Extreme Rainfall**	Not Available	1 event/annum	Low

Data Source: Le Roux *et al.*, 2019 (CSIR)
 *A very hot day is a day when the max temperature exceeds 35°C.
 **An extreme rainfall event (including severe thunderstorms) is defined as 20 mm of rain occurring within 24 hours over the 8 x 8 km grid point.
 ***Impacts are predicted as low, moderate or extreme.

F.5.3 EMERGING CLIMATE CHANGE INDUCED HAZARDS POTENTIAL OF THE PROJECT AREA			
Hazards	Current Status	Projected Status (2050)	Trend
Likelihood of increase Fire	Low	Low	Low increase
Likelihood of increase Flooding	Moderate	Moderate	Low increase
Likelihood of increase Drought	Low	Moderate	Low increase
Likelihood of increase Heat Stress	Low	Low	Neutral

Data Source: Le Roux *et al.*, 2019 (CSIR)

F5.4 BROAD CLIMATE CHANGE VULNERABILITIES THAT CAN BE EXPECTED IN THE PROJECT AREA			
Vulnerability Aspect	Current Status	Expected Vulnerability	Project Vulnerability
Surface Water Quantity	<i>The project area is located in a high potential surface water recharge zone with high surface water use dependency.</i>	<i>Climate change projections do not indicate a major change in rainfall with no expected change to the surface water potential.</i>	Low
Groundwater Quantity	<i>The project area is located within a high potential groundwater recharge zone with low groundwater use dependency.</i>	<i>Climate change projections do not indicate a major change in rainfall with no expected change in groundwater recharge.</i>	Low
Surface water quality	<i>The present ecological state of the watercourses in the local catchment is classified as largely modified (Class D).</i>	<i>A low increase in flood events may result in soil erosion with resultant silt deposition, which may further affect the freshwater ecology of local rivers.</i>	Low
Agricultural crop resilience to temperature and droughts	<i>The area undergoes low occurrences of cyclic droughts. Existing citrus production within the Kaspersnek Valley confirms the suitability of the local climate for the proposed crop.</i>	<i>A low increase in drought periods combined with low increase temperatures is not expected to affect the cultivation of citrus. The proposed citrus cultivar is resilient to high temperatures.</i>	Low
Agricultural crop resilience to pests	<i>The relatively cold winters in the area contribute to the natural control of pests that may affect crop production.</i>	<i>A low increase in temperature in the area is not expected to increase crop exposure to temperature-induced pests.</i>	Low

Data Source: Le Roux *et al.*, 2019 (CSIR) / Sekhukhune District Municipality: Climate Change Vulnerability Assessment and Response Plan

*GVAP: Gross Value Added Product to the national economy.

F5.5 CLIMATE AND CLIMATE CHANGE IMPACTS AND PROJECT ADAPTABILITY
<ul style="list-style-type: none"> ▪ <i>The local climate is very favourable for citrus cultivation.</i> ▪ <i>When considering the local climatic conditions within the project area and the projected sub-regional climate change vulnerabilities for agriculture, it is not expected that climate change would significantly affect the proposed citrus cultivation.</i> ▪ <i>The proposed citrus cultivation is less vulnerable to climate change compared to livestock farming and other crops due to the overall resilience of citrus orchards against heat and water stress when compared to livestock and other crops.</i> ▪ <i>Potential temperature increases and heat stress impacts on agricultural cultivation can be mitigated by shade netting that has a dual purpose in protection against temperature fluctuations, soil moisture evaporation and storms.</i> ▪ <i>Potential impacts on water quality and freshwater ecology due to soil erosion by expected increasing storm events can be mitigated by the introduction of soil conservation and erosion protection measures within the proposed orchards.</i> ▪ <i>Overall, the climate of the project area is suitable for citrus cultivation and the cultivation project is adaptable to introduce appropriate mitigation measures to address potential climate change vulnerabilities and impacts.</i>

F.6 HYDROLOGY (SURFACE DRAINAGE)

F6.1 REGIONAL HYDROLOGY

The Drakensberg mountain range is classified as a Strategic Water Resource Area. This area is therefore an important source of water that provides and maintains important ecological services downstream. The project site is located within the central reaches of the local catchment basin of the Kgwete River and within quaternary catchment No: B60G of the Ohrigstad - Blyde River sub-catchment of the Olifants River Water Management Area.

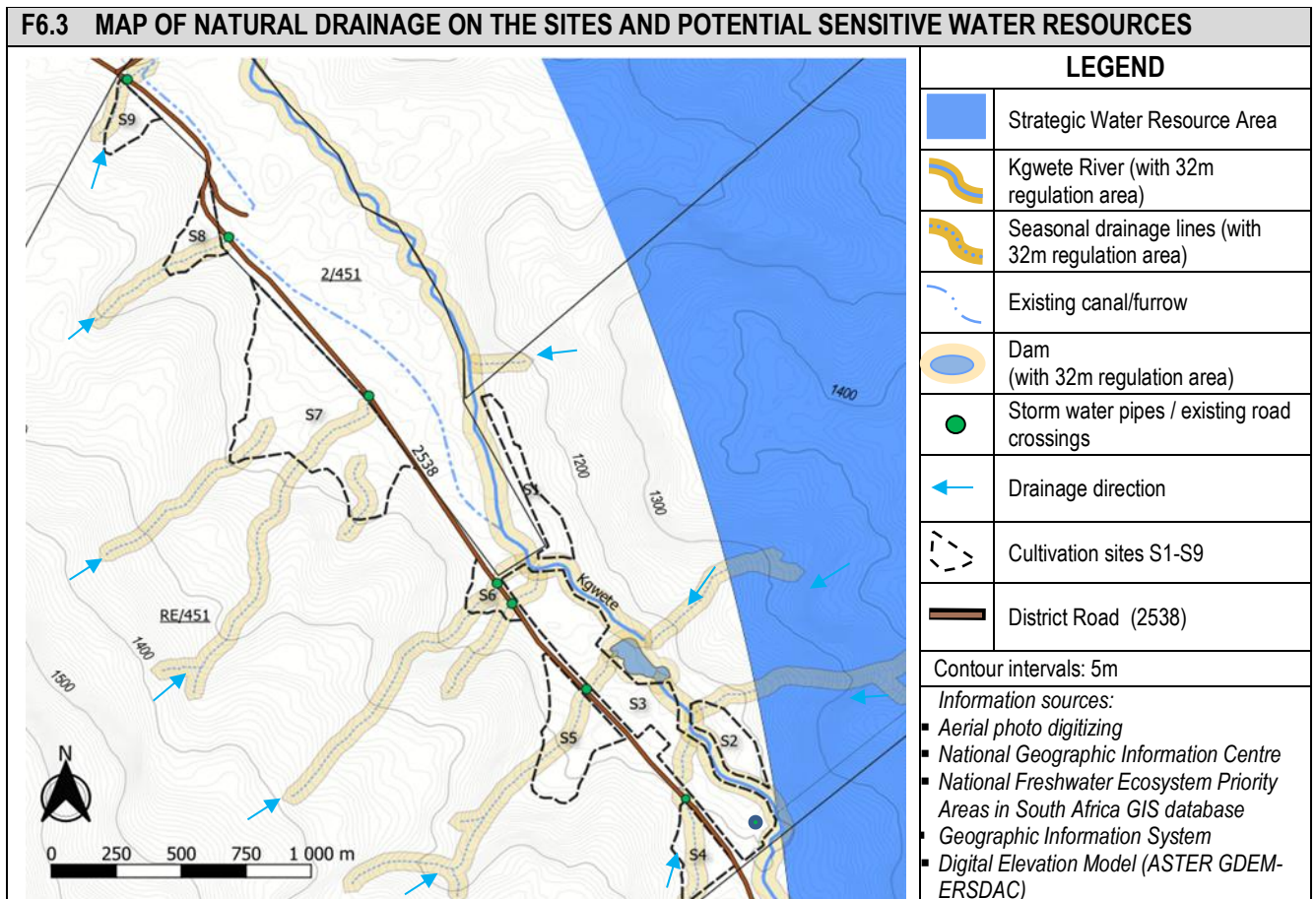
F6.1.1 WATER MANAGEMENT AND CATCHMENT AREA

CATEGORY	Catch. Name	Catch. Code	Drainage order	Flow Class	*PES
Management Area	<i>Olifants –North</i>	<i>B</i>	<i>3</i>	<i>Perennial</i>	<i>-</i>
Main catchment	<i>Ohrigstad</i>	<i>60</i>	<i>2</i>	<i>Perennial</i>	<i>CLASS D</i>
Quaternary catchment	<i>Kaspersnek-Vygehoek</i>	<i>G</i>	<i>1</i>	<i>Seasonal</i>	<i>CLASS D</i>

*PES: Present Ecological State –Class D=Largely Modified

F6.2 TERRAIN HYDROLOGY

The Kgwete is a seasonal stream that originates deep in the Kaspersnek Valley on the western slopes of the Drakensberg and it runs through the property and mouths into the Vygeboom River ±7km downstream. The mountainous landform of the project area is highly dissected by numerous small second to third order seasonal streams that drain towards the Kgwete River. An existing dam in the Kgwete River provides water storage on the property all year round.



F6.4 POTENTIALLY SENSITIVE WATER RESOURCES WITHIN OR IMMEDIATELY ADJACENT TO THE SITES

The National Freshwater Ecological Priority Assessment of 2012 (NFEPA) assigns a sensitivity status to vulnerable water resources within the local sub-catchment of the project area that require protection as indicated below:

SURFACE WATER RESOURCE	SITES								
	S1	S2	S3	S4	S5	S6	S7	S8	S9
Strategic groundwater resource area	X	X	X	X	X	X	X	X	X
Critical Biodiversity River (Kgwete River)	X	X	X	X	X	X	X	X	X
Ecological Support Areas Sub-catchments	X	✓	✓	✓	✓	✓	✓	✓	✓
Critical biodiversity wetlands	X	X	X	X	X	X	X	X	X

CBR: Critical Biodiversity River / CBW: Critical Biodiversity Wetlands / ESA: Ecological Support Area (Sub-catchment)

F6.5 EXISTING AND NEW WATERCOURSE MODIFICATIONS WITHIN OR IMMEDIATELY ADJACENT TO THE SITES

SURFACE WATER RESOURCE	SITES								
	S1	S2	S3	S4	S5	S6	S7	S8	S9
Existing In-stream dam	X	X	✓	X	X	X	X	X	X
Existing watercourse crossing (roads)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Altering watercourse bed and bank	X	✓	✓	✓	✓	✓	✓	✓	✓
Altering flow / impediment	X	✓	✓	✓	✓	✓	✓	✓	✓

F6.6 SURFACE WATER AVAILABILITY FOR IRRIGATION PURPOSES

Kaspersnek Vygehoek Rivers Irrigation Board indicates that the property is not enlisted for an irrigation water allotment from surface water resources and there is no evidence of existing lawful use during the qualifying period under the National Water Act 1998. Therefore, no surface water from the property can be used for irrigation purposes.

F6.7 IMPACTS AND RISKS ON SURFACE WATER RESOURCES

- Map F6.3 illustrates several natural drainage lines across the proposed cultivation sites. These are ephemeral and poorly defined watercourses that convey run-off from the higher-lying valley slopes towards the Kgwete River during periods of heavy precipitation only. Most of these drainage lines are impeded by District Road 2538 and routed through storm water pipes under the road surface.
- The establishment of cultivation land/orchards, as well as the installation of irrigation pipelines and management roads across these natural drainage lines, may cause additional run-off impediment or watercourse modification that may cause soil erosion and downstream silt deposition and the subsequent impact on aquatic eco-system services.
- These impacts can however be mitigated by way of correct orchard layout planning, to ensure that natural drainage are not impeded and that correct surface contouring of the orchard directs run-off towards these drainage lines.
- Soil conservation measures in the orchards, as well as in-stream erosion protection measures, can be applied to prevent soil erosion and scouring of watercourses (see more detail in the EMPR).
- By implementing the above measures, the free flow of surface water would not be impeded and there should thus not be any water quality and quantity impacts on downstream water ecology and users.
- The property holds no surface water rights for irrigation and no surface water will be utilised, therefore the proposed cultivation would not impact on surface water availability of downstream water users.
- Based on the Hydro-geological study (Appendix G1) there is a sustainable groundwater abstraction rate determined from a substantial groundwater resource located in the dolomite formations that underlay the property which can provide sufficient yield for the proposed cultivation and that does not negative impact surface water resources or downstream land owners.

F7 GROUNDWATER RESOURCES

F7.1 AQUIFER CLASSIFICATION AND BROAD GROUNDWATER CONDITIONS

According to the Aquifer Classification Map of South Africa (DWA - August 2012), the property is located on the edge of a major aquifer system which is a potentially high-yielding aquifer system of potentially good water quality. The dolomite formation on the property is classified as a strategic groundwater resource area. The valley bottom along the Kgwete River also holds a potentially shallow alluvial aquifer. Such an aquifer occurs in the saturated zone of the river/floodplain that is generally composed of clay, silt, sand, gravel or similar unconsolidated material. Although such water occurs underground, the use of alluvial groundwater from boreholes along the river is considered surface water in terms of its designated use.

F.2 AQUIFER VULNERABILITY

Aquifer vulnerability refers to the tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer. The Aquifer Vulnerability Map of SA (Directorate Hydrological Services 2013) indicates that all sites are located in the most vulnerable region and indicates a high tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer.

F7.3 AQUIFER SUSCEPTIBILITY

Aquifer susceptibility refers to a qualitative measure of the relative ease with which a groundwater body can be potentially contaminated by anthropogenic activities and includes both aquifer vulnerability and the relative importance of the aquifer in terms of its classification (Aquifer Susceptibility Map of SA, Directorate Hydrological Services 2013). The underlying aquifer is classified as highly susceptible.

F7.4 AQUIFER SUSCEPTIBILITY MATRIX		AQUIFER CLASSIFICATION		
VULNERABILITY		POOR	MINOR	MAJOR
	LEAST	Low	Low	Medium
	MODERATE	Low	Medium	High
	HIGH	Medium	High	High
SUSCEPTIBILITY POTENTIAL	Low due to the depth of the aquifer >85m, the occurrence of an impermeable Dolomite layer above the Dolomite aquifer and the very low likelihood and quantity of potential contaminants.			

F7.5 LOCAL GROUNDWATER AVAILABILITY

A Hydro-geological study (Appendix G1) revealed that there is sufficient and sustainable yield from groundwater resources located in the dolomite formations that underlay the property to provide in the required water demand for irrigation of the proposed new citrus cultivation area. The full sustainable safe daily abstraction rate of 734.400m³/day from borehole GT-02736, is enough to irrigate 59.578ha of soft citrus at the demand (4 500m³/ha/annum) on the Remainder of the farm Doornhoek 451 KT. This groundwater demand calculates to Category A or small-scale abstraction (<60% of recharge on the property). It is important to note that the borehole is located more than 100m away from the Kgwete River, are more than 85m deep, and is not located within the alluvial aquifer of the Kgwete River.

F7.6 GROUNDWATER / BOREHOLE CHARACTERISTICS ON RE / DOORNHOEK 451-KT

SUPPLY BOREHOLE	Sustainable abstraction rate	Irrigation Potential (hectares)
Borehole register no GT-02736 (new)	734.4 m ³ /day	59.578 ha

The potential groundwater abstraction from the new borehole GT-02736 located on the Remainder of the farm Doornhoek 451 KT provides an irrigation potential for 59.578 ha of soft citrus production at an extraction rate of 4500 m³/ha/annum.

F7.7 GROUNDWATER USE IMPACTS

A hydro-geological impact assessment was conducted (see App G1) as part of the feasibility determination for the proposed cultivation and the following findings were presented:

- The susceptibility of contamination of the aquifer by the intended cultivation activity is very low due to the depth of the aquifer, the impermeable Dolorite layer above the Dolomite and the very low volumes of potential contaminants.
- The very deep underground Kaspersnek Dolomite compartment was identified as a sufficient water reserve having a Dolomitic karst aquifer boundary which seems to function separately from surface catchment boundaries.
- Considering the distance of the borehole from the Kgwete River (±190m) and the depth of the water level (85m) in the water bearing dolomite, capped by a Dolorite dome, it is unlikely that the groundwater abstraction will have an effect on the Kgwete River flow. However, due to the vast extent of the dolomite compartments, it cannot be excluded and therefore a dedicated long-term management programme must be implemented by the Water User to measure groundwater abstraction, river flow and climatic conditions for future analysis and extraction calibration.
- To conclude, the groundwater investigation determined that risk of groundwater abstraction to the local aquifer and downstream water users is expected to be “very low” subject to keeping within the sustainable abstraction rate.

F8 LAND COVER

F8.1 BROAD VEGETATION DESCRIPTION

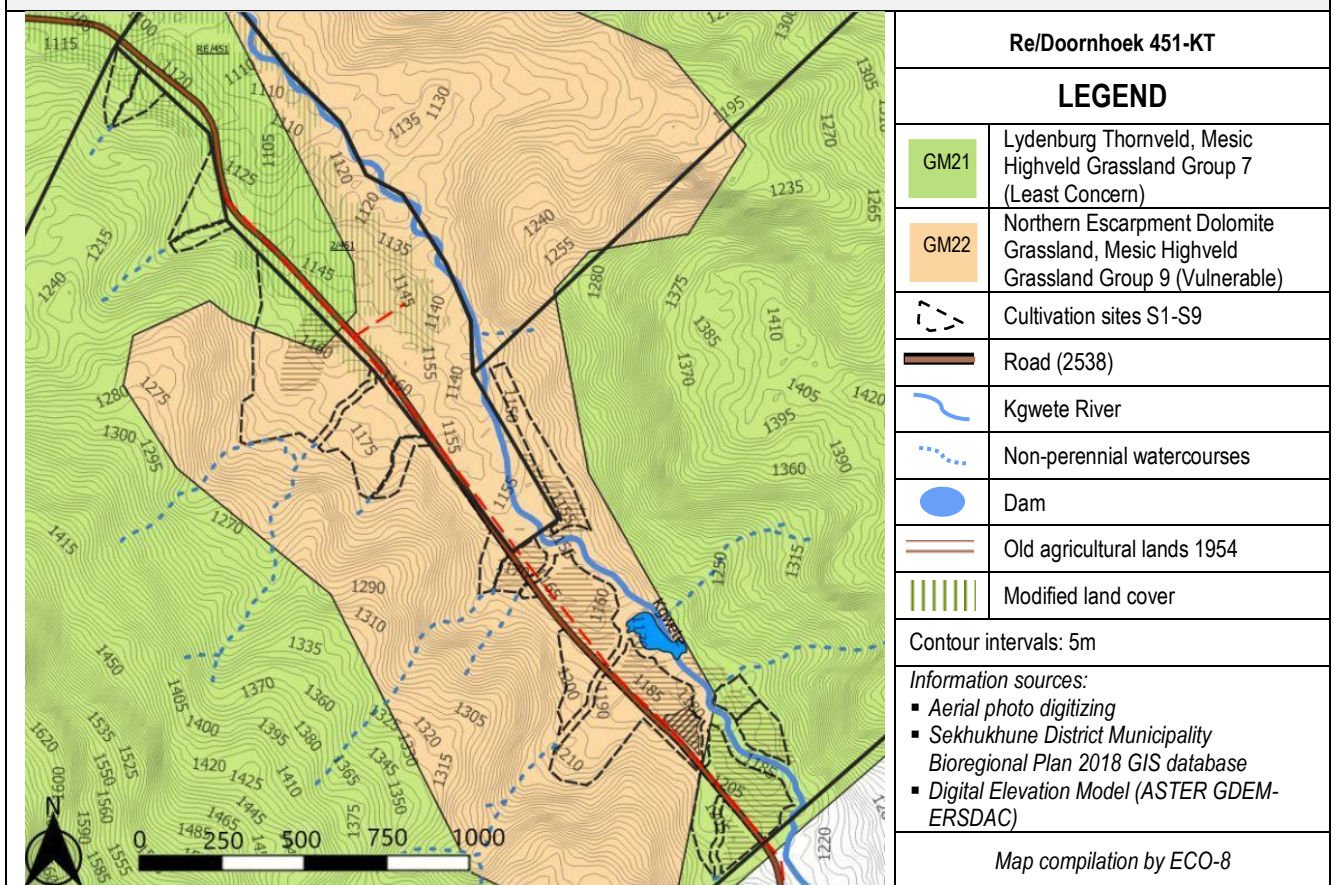
The vegetation map of Mucina & Rutherford (2006) classifies the vegetation of the project area as the “Lydenburg Thornveld” (GM21) and “Northern Escarpment Dolomite Grassland” (GM22), both vegetation types being of the Mesic Highveld Grassland Bioregion. The GM21 vegetation type is situated in broadband between the high-lying mountains from just north of Ohrigstad, tapering southwards through Lydenburg. This vegetation type occurs at lower elevations along the valley-bottom of valleys and along the foot slopes of the mountains and can broadly be described as open, frost-hardy woodland. The GM22 vegetation type occurs on the western slopes of the Drakensberg Escarpment from the north of the Blyde River Canyon to the south near Kaapsehoop. This vegetation type, being predominantly grassland with a shrub layer along drainage lines, covers the more elevated mid-slopes and crests of the mountainous terrain.

F8.2 VEGETATION / TERRESTRIAL ECOSYSTEM STATUS (IMPORTANCE & SENSITIVITY)

The Sekhukhune Bioregional Plan indicates that the proposed cultivation sites are located in both the Lydenburg Thornveld (GM21) and in the Northern Escarpment Dolomite Grassland (GM22) vegetation types.

- The Lydenburg Thornveld (GM21) is not listed as an ecosystem that is threatened as published in Government Notice R1002 of 9 December 2011 Section 52 of NEMBA. The conservation target of this vegetation type is 27% and regionally a total of 22% of this vegetation type has been transformed, mainly by dryland and irrigated cultivation. The conservation priority of this vegetation type is of “least concern” although potentially vulnerable (Mucina & Rutherford, 2006).
- The Northern Escarpment Dolomite Grassland (GM22) is listed as a vulnerable ecosystem and in need of protection as published in Government Notice R1002 of 9 December 2011 Section 52 of NEMBA. The conservation target of this vegetation type is 27% however, currently, only ±2% of this vegetation type is statutorily protected.

F8.3 MAP OF VEGETATION TYPE AND LAND COVER CONDITION ASSESSMENT OF THE SITES



F8.4 ASSESSMENT OF VEGETATION AND LAND COVER CONDITION OF THE PROPOSED CULTIVATION SITES

Assessment of the vegetation and land cover condition by way of aerial photo analysis, vegetation map and site verification by a Terrestrial Ecologists indicate the following:

- The vegetation map as included in the Sekhukhune District Municipality Bioregional Plan 2018 and as indicated in F8.3 above, is proved to be erroneous. The valley-bottom to midslope terrain forms of the project area is representative of the Lydenburg Thornveld (although modified) and does not represent the Northern Escarpment Dolomite Grassland as the grassland occurs at higher elevations along the upper-midslope to crests in the local landscape.
- On-site verification therefore confirms that all of the sites are situated in the Lydenburg Thornveld vegetation type which is in a modified state on all nine sites that are proposed for cultivation.
- The modification is a result of historic cultivation within this valley dating back to the late 1800's and up to the late 1980's after which abandonment of cultivation practices resulted in dense regrowth by mainly pioneer woodland species on these previously modified areas. There is evidence of previous and current cattle farming within the project area and historically overgrazing may have occurred that also lead to bush-encroachment within the valley bottom and foot-slope areas later on. Bush encroachment and alien vegetation are evident on all sites S1 to S9 with dominant pioneer species that are listed under CARA (1983) present (see Terrestrial Biodiversity Compliance Report attached in Appendix G2).
- The land cover and vegetation that occur on the proposed cultivation sites S1 to S8 are therefore characterised by a dense modified woodland thicket with poor woody diversity and mostly an absent herbaceous & grass layer.
- Ephemeral drainage lines that are poorly defined occur within sites S2-S9, however, no riparian vegetation that are associated with watercourses were identified along these drainage lines.
- It is important to note that no wetlands occur on the proposed cultivation sites as indicated on Map F8.3 above. This was confirmed during site verification by an Aquatic Ecologists. The site verification therefore indicates another error with the data of the Sekhukhune District Municipality Bioregional Plan 2018.
- A riparian woodland zone occurs in the valley-bottom along the Kgwete River, consisting mainly of woody vegetation that is associated with the presence of deep alluvial soils. Sites S2 and S3 borders onto this riparian woodland and a sufficient buffer of 20m along the river length is proposed by the Aquatic Specialist (Appendix G3.)
- Overall, terrestrial and aquatic ecology specialist assessment confirms LOW environmental sensitivity and importance.

F8.5 LAND COVER CONDITION									
LAND COVER STATUS	CULTIVATION SITE ALTERNATIVES								
	S1	S2	S3	S4	S5	S6	S7	S8	S9
Natural vegetation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Near natural (transformed)	✓	✓	✓	✓	✓	✓	✓	✓	✓
No natural land cover	X	X	X	X	X	X	X	X	X
Alien plant infestation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bush encroachment	✓	✓	✓	✓	✓	✓	✓	✓	✓
Poor veld management /	✓	✓	✓	✓	✓	✓	✓	✓	✓
Erosion/donga/bare soil	X	X	X	X	X	X	X	X	X
Old lands	✓	✓	✓	✓	X	✓	✓	X	X
Currently cultivated lands	X	X	X	X	X	X	X	X	X
Current and previous cattle grazing	✓	✓	✓	✓	✓	✓	✓	✓	✓
Buildings & cattle kraals	X	X	✓	X	X	X	X	X	X
Roads & servitudes	X	X	✓	✓	✓	✓	✓	✓	✓
Wetlands	X	X	X	X	X	X	X	X	X
Ephemeral drainage line	X	✓	✓	✓	✓	✓	✓	✓	✓
Riparian thicket	X	✓	✓	X	X	X	X	X	X

✓= Occurs in site, X=Does not occur on-site, U=Unsure – requires further site verification

F8.6 IMPACT ASSESSMENT OF CURRENT VEGETATION / LAND COVER CONDITIONS OF SITES

MEASURE OF MODIFICATION	SITES	SIZE	LAND COVER CONDITION DESCRIPTION	IMPORTANCE & SENSITIVITY	IMPACT ASSESSMENT
Heavily modified	S2,S3,S4,S5,S6	±35.4 ha	Moderate modification of vegetation due to historic farming and bush encroachment.	LOW	Low impact
Moderately modified	S1,S7,S8,S9	±32.94 ha	Moderate modification of vegetation due to bush encroachment.	LOW	Low impact
Low modification	N/A	N/A	The majority of the sites is bushveld that has been modified by bush encroachment.	N/A	N/A

F8.7 VEGETATION / LAND COVER IMPACTS AND RISKS

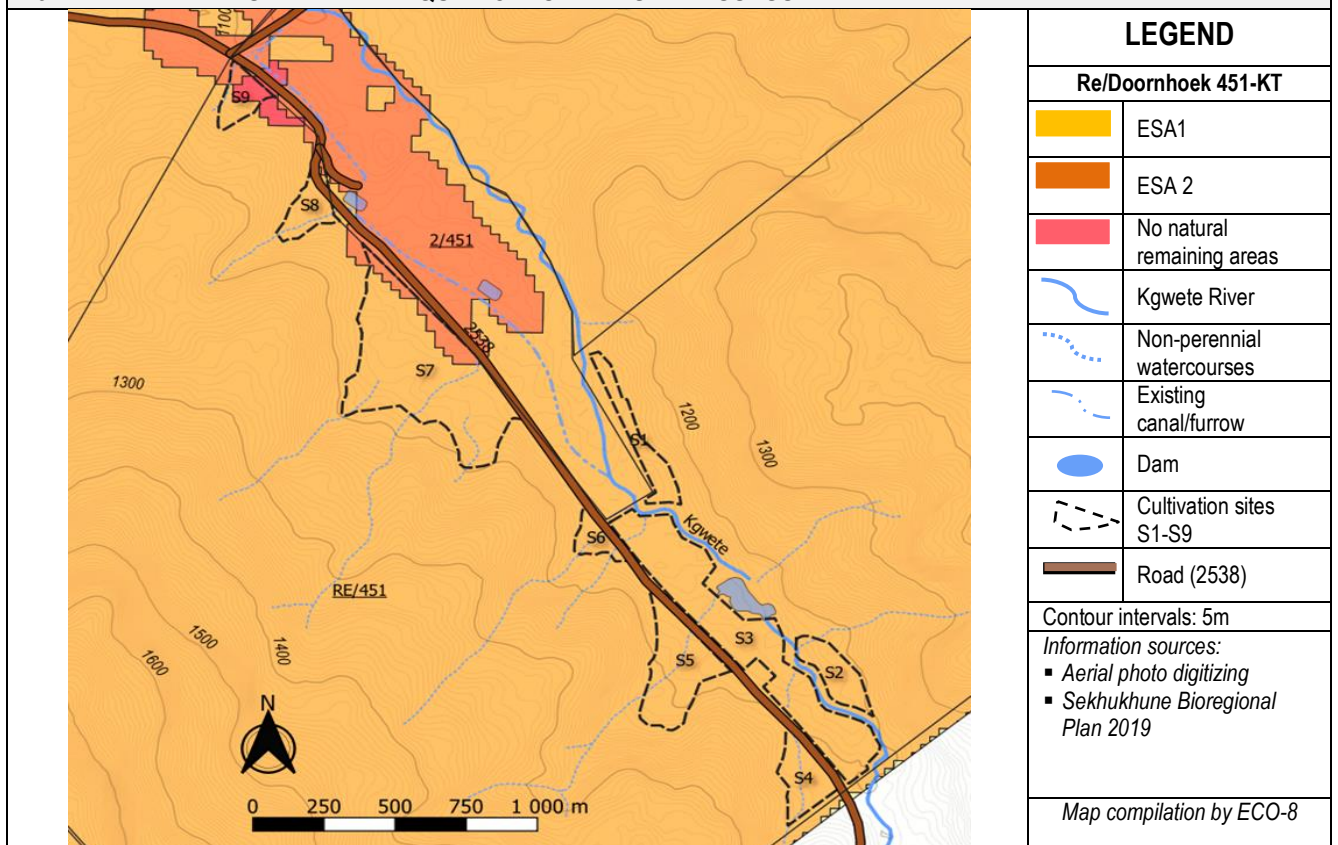
- The sites represent overall a heavy to low vegetation / land cover modification with low importance and sensitivity in terms of biodiversity, habitat, and species of conservation concern (also refer to Sections 9 and 11 for more detail).
- In terms of current land cover, the previously transformed areas are suitable for cultivation and are expected to pose little impact on biodiversity, loss of important species, fragmentation of habitat and impairment of ecological functions.
- The overall impact of cultivation on natural land cover is thus expected to be LOW, however the following mitigation measures must be applied to maintain some ecological connectivity and functioning along perennial and ephemeral watercourses:
 - On Sites 2,3,4,5 and 6 a 10m buffer strip of natural vegetation must be maintained on both sides of ephemeral drainage lines. On Sites 2 and 3 a 20m buffer strip of natural vegetation must be maintained along the Kgwete river.
 - Alien vegetation as well as indigenous bush encroachment must be controlled (see App F in the EMPR for methods).
 - The overall impact of the cultivation project on vegetation is low.

F.9 TERRESTRIAL AND AQUATIC BIODIVERSITY SENSITIVITY

The Sekhukhune District Bioregional Plan (2019) provides a combined assessment of the terrestrial and aquatic biodiversity importance on a very detailed scale. According to this biodiversity assessment, previous and existing land transformation on the property (as assessed in 2019), represents the majority of the proposed cultivation sites. The table below quantifies the biodiversity classification within each of the proposed cultivation sites:

F.9.1 TERRESTRIAL BIODIVERSITY SENSITIVITY OF THE SITES		SELECTED CULTIVATION SITES								
Terrestrial Biodiversity Categories		1	2	3	4	5	6	7	8	9
Protected area (PA's)	Formal Protected Areas are declared as such under the National Environmental Management Protected Areas Act (NEMPAA).	X	X	X	X	X	X	X	X	X
CRITICAL BIODIVERSITY AREA	Areas that are required to meet biodiversity targets for species, ecosystems or ecological processes.									
CBAs Irreplaceable (Level 1)	<ul style="list-style-type: none"> Irreplaceable sites. Areas essential for meeting biodiversity targets. No alternative sites can meet targets. 	X	X	X	X	X	X	X	X	X
Terrestrial Biodiversity Categories		1	2	3	4	5	6	7	8	9
CBAs Optimal (Important and necessary) (Level 2)	<ul style="list-style-type: none"> Areas selected to meet biodiversity targets. Optimal sites based on complementarity, connectivity and land uses conflict avoidance. 	X	X	X	X	X	X	X	X	X
ECOLOGICAL SUPPORT AREA	Areas that play an important role in supporting the functioning of PA's or CBAs and for delivering important ecosystem services									
Ecological Support Area (Level 1)	Natural, near-natural and semi-natural or degraded areas that support the ecological functioning of CBAs and protected areas and maintain ecological processes.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ecological Support Area (Level 2)	Areas with little to no natural habitat that is nevertheless important for supporting ecological processes.	X	X	X	X	X	X	✓	✓	✓
OTHER NATURAL AREAS (ONA)	Natural or near-natural areas that are currently not considered essential for meeting biodiversity targets or maintaining ecological functioning; may still retain valuable biodiversity or play an important role as ecological infrastructure or in the delivery of ecosystem services.									
(ONA Level 2)	Natural and intact but not required to meet targets, and not identified as CBAs or ESAs.	X	X	X	X	X	X	X	X	X
NO NATURAL HABITAT REMAINING (NNR)	Areas in which significant or complete loss of natural habitat and ecological function has taken place due to activities such as ploughing, hardening of surfaces, open-cast mining, cultivation etc.									
No Natural Habitat Remaining (NNR)	Areas with no direct biodiversity importance and no natural habitat/degraded natural areas that are not required as ESAs, including intensive agriculture, forestry, urban and built infrastructure.	X	X	X	X	X	X	X	X	✓

F9.2 MAP: TERRESTRIAL AND AQUATIC BIODIVERSITY ASSESSMENT



F9.3 LAND USE GUIDELINES FOR THE BIODIVERSITY CATEGORY : ESA 1 & ESA 2	
GUIDELINE OBJECTIVES/RECOMMENDATIONS	ASSESSMENT OF THE SITE AND RECOMMENDATIONS
<p>The objectives of Ecological Support Area-1 (ESA1) are to maintain ecosystem functionality and connectivity allowing for the limited loss of biodiversity patterns. The guidelines to achieve these objectives are:</p> <ul style="list-style-type: none"> ▪ Implement appropriate zoning and land management guidelines to avoid impacts on ecological processes and connectivity. ▪ Avoid intensification of land use. ▪ Avoid fragmentation of the natural landscape 	<ul style="list-style-type: none"> ▪ An assessment indicates by way of aerial photo analysis, map interpretation and on-site specialist verification indicate that all the proposed cultivation sites S1-S9 are located totally or partially within ESA1. ▪ It is expected that ecological functionality and connectivity on all of the proposed cultivation sites have mostly declined due to previous land cover modification (bush encroachment) as well as fragmentation of habitat by District Road 2538 and by fences on both sides of this road. ▪ Potentially ecological connectivity may be found along the riparian zone of the Kgwete River and ephemeral drainage lines, specifically towards the north and east of the Kgwete River. It is important to maintain this ecological connectivity between different habitats from the valley bottom towards the crest of the valley and beyond. Buffer zones are thus recommended along identified drainage lines. ▪ Ecological connectivity between the valley bottom and the valley crests west of the Kgwete River has mostly been fragmented by the District Road and electricity servitude that runs alongside, as well as by boundary fencing along the District Road. Some measure of ecological connectivity in this area may be repaired by way of ecological corridors along ephemeral drainage lines but their efficiency would be subject to dropping of fences along certain sections of the District Road to facilitate the movement of fauna. ▪ If the above can be applied, both the cultivation objectives as well as ecological objectives may be achieved. ▪ Overall impact on biodiversity is expected to be LOW.
<p>The objectives of Ecological Support Area-2 (ESA2) on areas with no natural habitat remain important for supporting ecological processes.</p>	<ul style="list-style-type: none"> ▪ An assessment by way of map interpretation indicates that some of the proposed cultivation sites S7-S9 are located partially within ESA2. ▪ Specialist site verification indicates that the area in which these sites are proposed, rather qualify as an ESA1. ▪ Recommendations are therefore similar as those for ESA1.

F9.4 LAND-USE GUIDELINES FOR THE BIODIVERSITY CATEGORY: NO NATURAL REMAINING AREA	
GUIDELINE	ASSESSMENT OF THE SITE AND RECOMMENDATIONS
<p>No natural remaining areas (NNR), are those areas in which significant or complete loss of natural habitat and ecological function has taken place due to activities such as ploughing, hardening of surfaces, opencast mining, and cultivation.</p>	<ul style="list-style-type: none"> ▪ A small area on S3 where an existing cattle kraal is located as well as an ESKOM servitude parallel to the District Road qualifies as an NNR area. ▪ This area poses no impact on biodiversity and if required existing cattle infrastructure can be removed to allow for cultivation. ▪ The ESKOM servitude does not pose any limitation and cultivation within the servitude is acceptable as long as access to the servitude is not impeded.

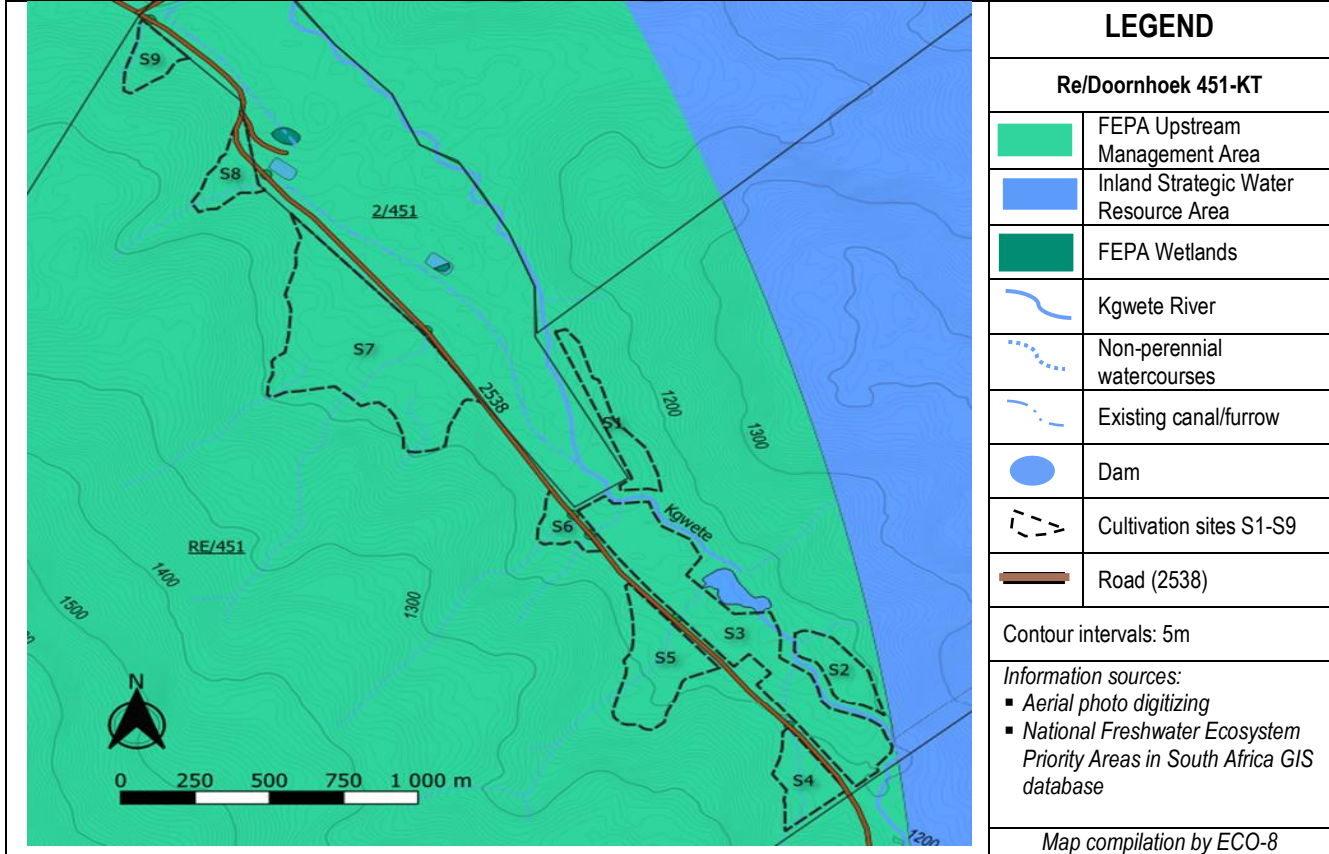
9.5 BIODIVERSITY RISKS AND IMPACTS
<p>The above assessment indicates that the proposed removal of vegetation on the selected cultivation sites would not pose a detrimental impact on local biodiversity.</p>

F10 FRESHWATER ECOSYSTEM SENSITIVITY

The National Freshwater Ecological Priority Assessment (NFEPA) that was compiled and published in 2011 provides an assessment of important watercourses, wetlands and catchment areas and a guideline for development in support of healthy freshwater ecosystems. The table below indicates the occurrence of FEPA on each of the proposed cultivation sites:

F.10.1 FRESHWATER ECOLOGICAL SENSITIVITY OF THE SITES		PROPOSED CULTIVATION SITES								
FEPA Categories		1	2	3	4	5	6	7	8	9
RIVER FEPA AND ASSOCIATED SUB-QUATERNARY CATCHMENT	A	Unmodified, natural (good condition).	X	X	X	X	X	X	X	X
	B	Largely natural with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged.	X	X	X	X	X	X	X	X
	C	Moderately modified. A loss and change of natural habitat and biota have occurred but the basic ecosystem functions are still predominantly unchanged.	X	X	X	X	X	X	X	X
	D	Largely modified. A large loss of natural habitat, biota and basic ecosystem functions have occurred.	✓	✓	✓	✓	✓	✓	✓	✓
	E	Seriously modified. The loss of natural habitat, biota and basic ecosystem functions are extensive.	X	X	X	X	X	X	X	X
	F	Critically/Extremely modified. Modifications have reached a critical level, the system has been modified completely with an almost complete loss of natural habitat and biota, loss of the basic ecosystem functions, and changes are irreversible.	X	X	X	X	X	X	X	X
WETLAND FEPA	Important wetlands that support biodiversity and is habitat to important fauna.	X	X	X	X	X	X	X	X	X
WETLAND CLUSTER	Wetland clusters are groups of wetlands embedded in a relatively natural landscape. This allows for important ecological processes such as the migration of frogs and insects between wetlands.	X	X	X	X	X	X	X	X	X
FISH SANCTUARY AND ASSOCIATED SUB-QUATERNARY CATCHMENT	Fish sanctuaries are rivers that are essential for protecting threatened and near-threatened freshwater fish that are indigenous to South Africa.	X	X	X	X	X	X	X	X	X
FISH SUPPORT AREA AND ASSOCIATED SUB-QUATERNARY CATCHMENT	Fish Support Areas also include sub-quaternary catchments that are important for migration of threatened or near-threatened fish species	X	X	X	X	X	X	X	X	X
UPSTREAM MANAGEMENT AREA	Upstream Management Areas are sub-quaternary catchments in which human activities need to be managed to prevent degradation of downstream river FEPAs and Fish Support Areas.	✓	✓	✓	✓	✓	✓	✓	✓	✓
PHASE 2 FEPA	Phase 2 FEPAs were identified in moderately modified rivers (C ecological category), only in cases where it was not possible to meet biodiversity targets for river ecosystems in good condition (A or B ecological category).	X	X	X	X	X	X	X	X	X
FREE-FLOWING RIVER	Free-flowing rivers without dams, which are importance for ecosystem processes.	X	X	X	X	X	X	X	X	X
STRATEGIC SURFACE WATER AREAS	Sub-quaternary catchments where mean annual run-off is at least 3X more than the average for the related primary catchment.	X	X	X	X	X	X	X	X	X
STRATEGIC GROUNDWATER RESOURCE AREAS	Sub-quaternary catchments where ground-water recharge is at least 3X more than the average for the related primary catchment.	X	X	X	X	X	X	X	X	X

F10.2 MAP: SUB-CATCHMENT FRESHWATER ECOSYSTEM PRIORITY ASSESSMENT (FEPA)



F10.3 LAND-USE GUIDELINES FOR AQUATIC FOR FEPA UPSTREAM MANAGEMENT AREAS

GUIDELINE	ASSESSMENT OF THE SITE AND RECOMMENDATIONS
<ul style="list-style-type: none"> The guiding principle for development is to maintain the good ecological condition of the network of streams and wetlands in the sub-catchment. Although the proposed cultivation activities can be supported in terms of the FEPA, indirect impacts such as non-point source pollution by way of leaching of agricultural chemicals and suspended solids through eroded soil sediment may occur which may result in poor water quality and pose a detrimental effect on freshwater ecology. 	<ul style="list-style-type: none"> Pathways for aquatic biological movement were identified by an Aquatic Ecologist as indicated in the Aquatic Biodiversity Compliance Report (refer to Appendix G3.1) and is included in the Site Plan (see Appendix A). The identified buffer zones are incorporated along the edge of all identified watercourses, 10m along certain ephemeral drainage lines and 20m along the perennial Kgwete River. Soil erosion and silting of watercourses can be prevented by the installation of orchard run-off management structures to maintain good water quality within the catchment as included in the EMPR (Appendix F).

F10.4 FRESHWATER ECOLOGY IMPACTS AND RISKS

- Changes can be expected in run-off hydrology such as increased run-off peak flows due to impediment of normally dispersed run-off and concentration of run-off in furrows or along contoured ridges within the orchards.
- Such changes combined with changes in ground cover within the orchard can result in sheet soil erosion across the orchard surface area and in channel erosion (rills and gullies). Silt loaded run-off (potentially containing traces of soil fertilizers and pesticides) can impact downstream water quality which poses a risk to freshwater ecology.
- Mitigation measures must therefore to be implemented to maintain good run-off water quality from all sites. Such measures are discussed in more detail in the EMPR (See Appendix F).
- Buffer zones along identified ephemeral drainage lines and the perennial Kgwete River must be maintained to ensure ecological connectivity and to assist with maintaining water quality in watercourses.
- By implementing the recommended mitigation the project is not expected to pose a detrimental impact on freshwater ecology.

F.11 SPECIES SENSITIVITY

The National Environmental Screening Tool indicates a moderate probability that plant and animal species of conservation concern (SCC) occur within in the project area. A site verification by an Ecologist however, found none of the indicated species that is identified in the NEST occur on any of the proposed cultivation sites or even near to the project area (see Appendix G2.2 and G2.3).

F11.1 SPECIES OF CONSERVATION CONCERN	PROPOSED CULTIVATION SITES								
	S1	S2	S3	S4	S5	S6	S7	S8	S9
Important Plant Species (SCC)	VL	VL	VL	VL	VL	VL	VL	VL	VL
Important Animal Species (SCC)	VL	VL	VL	VL	VL	VL	VL	VL	VL

VH=Very high / H=High probability / M=Moderate probability / L=Low probability / VL= Very low probability and none identified

Legally protected species may occur, however in limited numbers due (refer to App G2.3, Section 6.3) as follows:

F11.2 LEGALLY PROTECTED SPECIES		PROPOSED CULTIVATION SITES								
Act	Protected Species	S1	S2	S3	S4	S5	S6	S7	S8	S9
NFA	Potentially occurring	PO	PO	PO	PO	PO	PO	PO	PO	PO
LNCA	Potentially occurring	PO	PO	PO	PO	PO	PO	PO	PO	PO
NEMBA	None identified	X	X	X	X	X	X	X	X	X

NFA: National Forests Act 1998 / LNCA: Limpopo Nature Conservation Act 1998 / NEMBA: National Environmental Management Biodiversity Act 2004

U: Unsure-Verification to be determined by a qualified person

F11.3 IMPORTANT SPECIES IMPACTS AND RISKS
<ul style="list-style-type: none"> ▪ A specialist site verification revealed that no plant or animal species of conservation concern occur on the proposed cultivation sites or in close vicinity (refer to Species Compliance Report – App G2.2, G2.3 & G3.2). ▪ Potentially occurring protected species (NFA & LNCA) must be identified before or during site clearing and such species must be rescued or removed where at all possible after obtaining the required permit to do so. ▪ Alternatively, species must be replaced by offsetting the loss with the planting of seedlings in appropriate habitat elsewhere on the farm. ▪ Considering the above, it is not expected that the cultivation project pose any adverse impact on sensitive species.

F.12 HERITAGE RESOURCES

<p>“Heritage impact” means the impact or potential impact that activity has, has had, or may have on an object or place of cultural or archaeological significance, paleontological remains or paleontological sites, living heritage, public monuments, and memorials, or a place declared to be a national or provincial heritage site by the relevant authority.</p>

F12.1 POTENTIAL HERITAGE IMPACTS	PROPOSED CULTIVATION SITES								
	S1	S2	S3	S4	S5	S6	S7	S8	S9
Cultural & historic sites	X	X	X	X	X	X	X	X	X
Historic buildings (older than 60 years)	X	X	X	X	X	X	X	X	X
Archaeological sites / settlements	X	X	X	X	X	X	X	X	X
Fossils (Palaeontological)	X	X	X	X	X	X	X	X	X
Graves	X	X	X	X	X	X	X	X	X
Other (ruins & recent household items)	LV	X	LV	X	X	LV	LV	X	LV

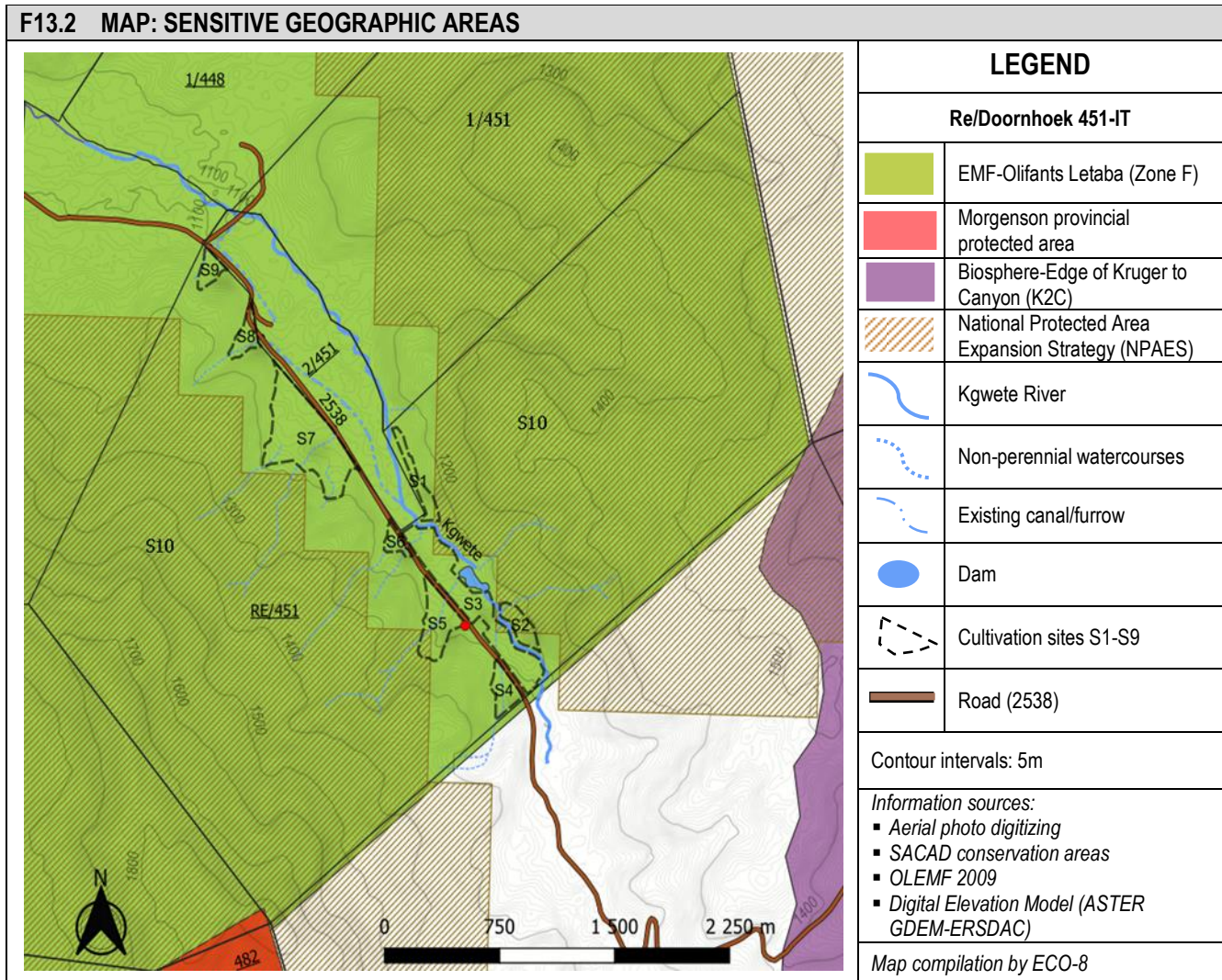
X: No evidence found, LV-Low value resources, no mitigation, MV- Moderate value resources , some mitigation, HV-High value resources, require protection

F12.2 POTENTIAL IMPACT ON HERITAGE RESOURCES
<ul style="list-style-type: none"> ▪ An Archaeological and Heritage Impact Assessment was undertaken by Kudzala Antiquity CC on the proposed cultivation sites. ▪ A few historic sites consisting of linear or rectangular stone structures as well as some associated household remains of historic pioneer settlers or livestock farmers of the area was documented but it is of low significance and no mitigation measure is proposed. The sites must be monitored during site preparation for potential chance finds. ▪ No significant archaeological sites, graves or gravesites and burial grounds were identified. ▪ Considering the above, the cultivation will not project pose any adverse impact on heritage resources.

F13 SENSITIVE GEOGRAPHIC AREAS

Sensitive geographic areas are incorporated in Listing Notice 3 of the EIA Regulations and therefore any development must be considerate to the sensitivity of such areas.

F13.1 IDENTIFICATION OF GEOGRAPHIC SENSITIVE AREAS (AS IDENTIFIED IN LN3 OF EIA REGULATIONS)			
Important geographic areas	Description	The locality of the sites	Potential impact due to the proposed activity
Near to / within national protected areas	<i>Within a 10km buffer surrounding a national protected area.</i>	No	N/A
Near to / within provincial protected areas	<i>Within a 5km buffer surrounding a provincial protected area.</i>	Yes	<i>No potential visual impact.</i>
Within a focus area for protected area expansion	<i>Specific guidelines apply. It is evident that the expansion area excludes the valley bottom area and should therefore not extend over the project area.</i>	No	N/A
Near to / within World Heritage Sites	<i>Specific guidelines will apply</i>	No	N/A
Near to / within a Biosphere Region	<i>Outside the Kruger-to-Canyons Biosphere Region.</i>	No	N/A
Near to / within an International Convention Area	<i>Specific guidelines will apply</i>	No	N/A
Within sensitive areas identified in EMF's	<i>Zone F of the Olifants-Letaba Catchments Environmental Management Framework Area (OLEMF).</i>	Yes	<i>No impact on the ecological reserve of the Kgwete River. Not an area with tourism potential</i>



F13.3 POTENTIAL IMPACT ON SENSITIVE GEOGRAPHIC AREAS
<ul style="list-style-type: none"> ▪ A potential indirect ‘sense-of place’ and ‘visual impact’ may occur as the property is situated within the 5km buffer from a provincial protected area, namely the Morgenson Provincial Reserve. However, these impacts are considered in Sections F15.1 and F15.2, which verifies that the potential impacts can be expected to have low significance. ▪ The ecological reserve of the Kgwete-Vygehoek and Kaspersnek Rivers may be impacted by the proposed cultivation use. A hydro-geological investigation in this regard confirmed that the project would not make use of surface water for irrigation and the intended groundwater extraction is unlikely to affect surface water quantity or flow. The ecological reserve of the river system would thus not be affected negatively by the groundwater use for the proposed cultivation. ▪ Conservation and tourism are the earmarked land use for the entire Zone F of the OLEMF. This land use designation, however, does not take historic and current agricultural land uses within the Kaspersnek Valley into consideration. Furthermore, there is no trend of tourism business and related activities in the surrounding areas and the establishment of such uses on high potential agricultural land within the Kaspersnek Valley is highly unlikely. Conservation and tourism land-use as suggested in the EMF is therefore not a feasible or reasonable alternative in terms of land use as further elaborated in Section I1.1-1.5. ▪ Overall, the cultivation project is not expected to pose any adverse impact on sensitive geographic areas.

F14 SURROUNDING LAND USES AND ASSOCIATED INFRASTRUCTURE SERVICES

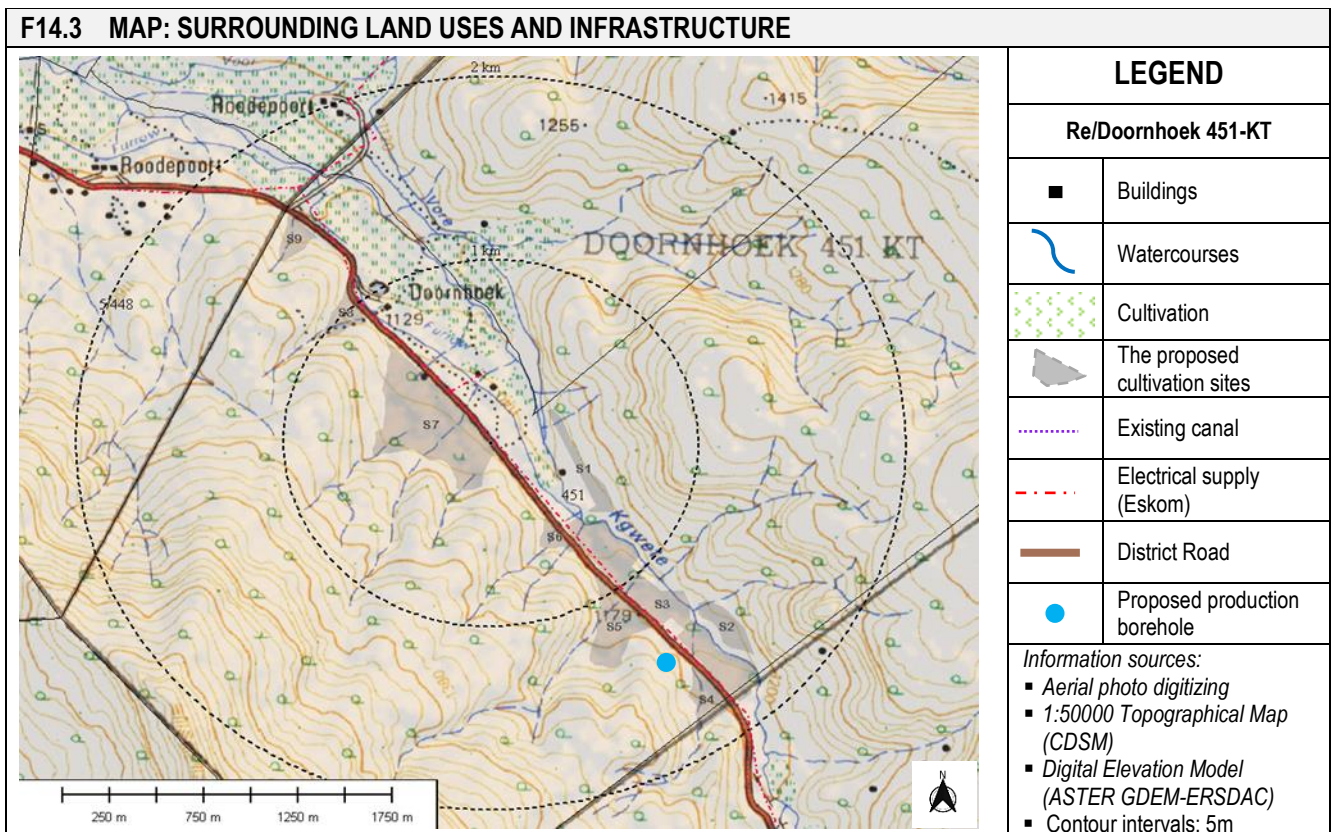
“Land use” means the purpose for which land is or may be used lawfully in terms of a land use scheme, existing scheme or in terms of any other authorisation, permit or consent issued by a competent authority, and includes any conditions related to such land use purposes.

“Infrastructure” means any structures, infrastructure or earthworks that are necessary for the development and functioning of a facility or activity.

F14.1 LAND USES IN SURROUNDING AREA (<5KM FROM THE PROJECT AREA)			
Land Use	Y/N	Km	Potential impact due to the proposed cultivation project.
Residential areas (formal & informal)	N	N/A	N/A
Urban commercial & industrial	N	N/A	N/A
Institutional and medical uses	N	N/A	N/A
Tourism accommodation	N	N/A	N/A
Commercial Agriculture	Y	<1km	Water extraction from surface water resources may reduce the availability of irrigation water downstream. However, the cultivation project will not utilise surface water for irrigation and will not impact on downstream water users.
Subsistence farming	Y	>5km	Maroabjang Community village practises subsistence farming towards the east of the property which area is located within a separate water catchment region and thus there should be no water-related impact on this community.
Agri - industries	Y	<5km	Water extraction from surface water resources may reduce the availability of irrigation water downstream for agri-industries and domestic purposes. However, the cultivation project will not utilise surface water for irrigation and will not impact on downstream water users.
Protected Area / Conservation area	Y	>2km	The Morgenson State Forest Reserve is located south of the application property. There are no tourism facilities in the reserve. The proposed cultivation area is compatible with surrounding agricultural uses and would not pose a negative visual impact (views) from the reserve (see F15.2).

F14.2 INFRASTRUCTURE & SERVICES		
Type	Km	Potential impact due to the cultivation project
National, Provincial or District Road	Along the site	District Road 2538 is located adjacent to the proposed sites S3-S9. Access to the new cultivation sites can be gained from this road and from internal farm roads. The District road is kept in good condition thus; the proposed cultivation project will not negatively impact this public infrastructure.

Road - stormwater pipes	Along the site	Non-perennial watercourses cross the District Road at several places and storm water pipes are located underneath the road surface to convey run-off towards the Kgwete River. The proposed orchards layout planning must direct run-off to the existing storm water pipes. Run-off attenuation measures within the orchard and within natural drainage lines must be installed to prevent the inundation of existing storm water pipes.
Boreholes for Domestic water supply	±1km	Boreholes for domestic use occur on an adjacent property ±1000m from the proposed supply borehole. A hydro-census that was conducted as part of a geo-hydrological study revealed that domestic water supply from boreholes within the catchment will not be affected by the groundwater use for the cultivation project (refer to Appendix G1).
Boreholes for Irrigation water supply	On-site	Downstream, the surface water of the Kgwete river is used for orchard irrigation. The application property does not hold any surface water allocation for irrigation and therefore will be dependent on groundwater. The proposed production borehole is located ±190m distance from the Kgwete River, is more than ±85m deep, and is thus not located within the alluvial aquifer of the Kgwete River. A Geo-hydrological Report (refer to Appendix G1) indicates that during a 72-hour dropdown test the water extraction from the borehole had no effect on the level of the Kgwete river. The irrigation planning, management and monitoring measures must ensure the sustainable use of the groundwater from this borehole without any risk of over-exploitation.
Electricity supply	>0km	A servitude for a 22kV overhead ESKOM distribution line runs parallel with District Road 2538 and cultivation can be done without impacting the ESKOM servitude. Safety precautions must be taken when the working below overhead powerlines and access to ESKOM maintenance personnel must be guaranteed at all times.
Waste management	25km – 50km	The nearest municipal waste disposal site is located at Ohrigstad, ±24km distance by road from the project area (located outside the municipal waste collection area). Citrus cultivation as land use is not regarded as a highly polluting activity. The land user is responsible for the correct disposal of general waste in a typical small farm disposal site (refer to DW808 waste disposal on farms). The land user is also responsible for the safe storage and removal of empty chemical containers to/by the supplier. Two waste recycling facilities are located at Burgersfort (±50 km from the project area) that receive certain recyclable waste that may emanate from the farm (see F16 for more detail).



H16.3 IMPACTS AND RISKS TO SURROUNDING LAND USES AND INFRASTRUCTURE
<ul style="list-style-type: none"> Water use for irrigation purposes was identified as the only potential impact on downstream agricultural uses. The sustainability of the groundwater resource and the impact of groundwater use on other water users was assessed and found that it is very unlikely that groundwater extraction for the cultivation project will affect downstream water users (see details in the Hydro-Geological report, Appendix G1). A long-term surface and groundwater-monitoring programme must be instituted by the Applicant/Land user/ Water user to facilitate on-going verification and to ensure re-calibration of the extraction rate if necessary. The cultivation project is not expected to pose any negative impact on existing public or private infrastructure.

F15 SENSORY ENVIRONMENT

F15.1 SENSE OF PLACE

“Sense of place” can be defined as how humans relate to or feel about the environments in which they live”. **“Sense of place impact”** means the impact or potential impact that activity has, has had or may have on the mix of natural and cultural features in the landscape that provides a strong and unique identity and character that is deeply felt by local inhabitants and/or visitors (GN R 698:2017).

F15.1.1 “SENSE OF PLACE” IMPORTANCE RATING OF THE PROJECT AREA			
Criteria	High	Moderate	Low
Sense of Place without any development	A particularly definite place with a dominant natural ambience, character, or theme.	A place that projects a loosely defined theme, character, or ambience.	A place having little or no ambience with which it can be associated.
The visual quality of the sites	A very attractive setting with great variation and interest.	A setting that has some aesthetic and visual merit.	A setting that has little aesthetic value.
Surrounding man-made Structures	Man-made structures as a minor visual element.	Man-made structures as a partial visual element.	Man-made structures as a dominant visual element.
Association with surrounding land uses	No similar land uses occur within the local area.	Similar land uses occur further than 5km from the proposed cultivation project and are confined to specific areas.	Similar land uses occur between 2-5km from the proposed cultivation project
Surrounding Landscape Compatibility	The landscape cannot accommodate proposed land use without it appearing totally out of place visually.	The proposed land use can be accommodated in the landscape setting without appearing out of place.	The proposed land use is ideally suitable within this landscape setting.

F15.1.2 POTENTIAL SENSE OF PLACE IMPACTS
<p>The project area poses a moderate sense of place in terms of rural agricultural character. The proposed agricultural activity is therefore highly compatible with the surrounding landscape and land uses and it is not expected to impact negatively on the area’s sense of place.</p> <ul style="list-style-type: none"> The local landscape along the ±14km length of the Kaspersnek Valley consists of high mountainous ridges on both sides of a relatively narrow valley (±1km wide). The land covers on the mountain plateaus consist of open grassland while woodland occur along the mid-to-foot slopes. The foot-slopes and valley bottom of the valley is almost totally covered by commercial agricultural lands and associated infrastructure, similar to the proposed cultivation project. The proposed clearing of vegetation on the subject property for the expansion of agricultural lands will remain within the valley bottom and foot-slope areas of the local landscape and mostly on previously utilised old lands. The Sekhukhune District Bioregional Plan (2019) refers to the proposed cultivation site as areas that are partly “modified” land cover. The change of land cover is not expected to pose a significant change in the local landscape. The proposed agricultural activity would be “keeping-in” with the other man-made activities in the Kaspersnek Valley and should not impact negatively on the surrounding land uses and the area’s sense of place.

F15.2 AESTHETIC ENVIRONMENT

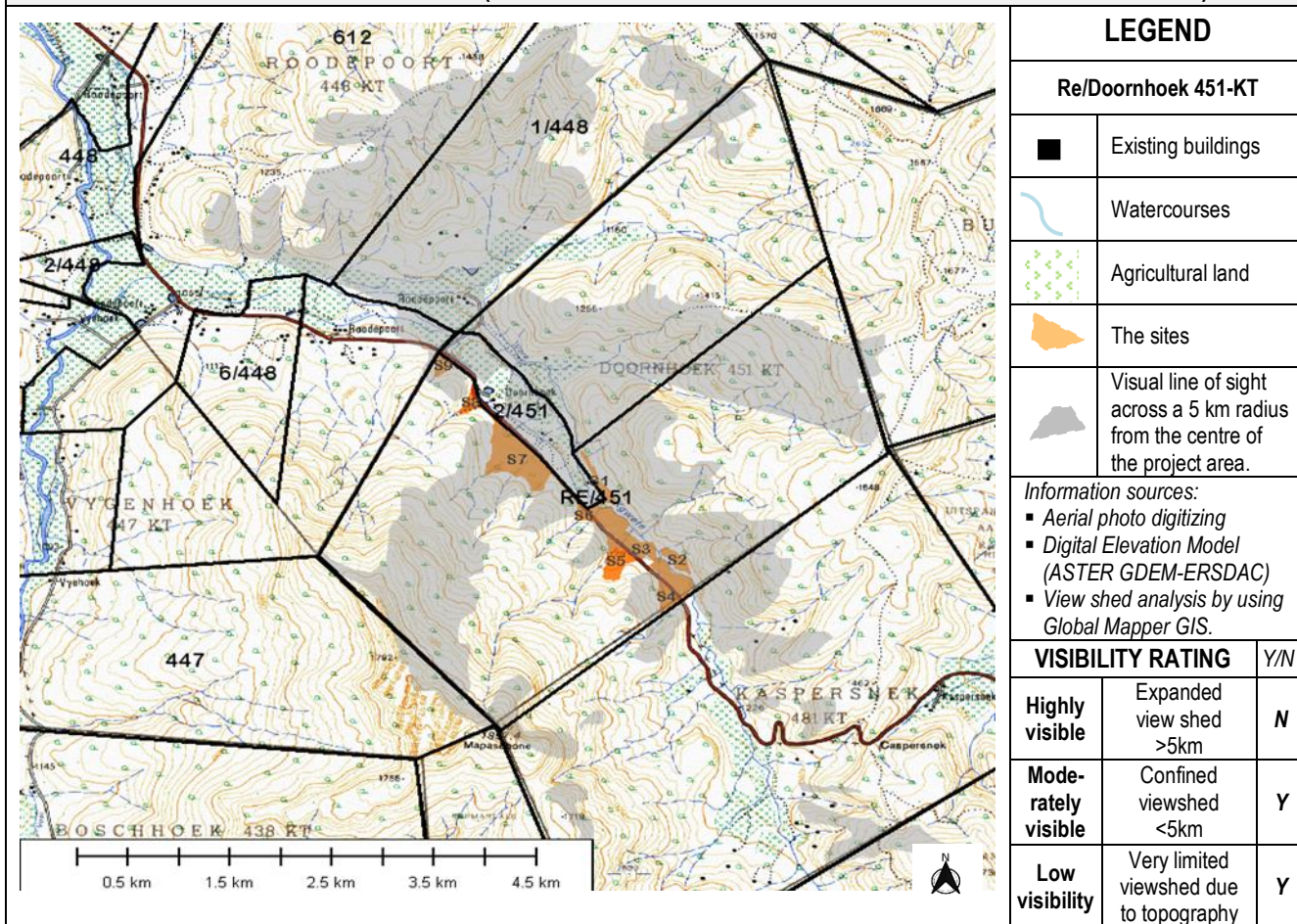
“Aesthetic environment” is the environment that viewers experience through senses (limited to visual experience for this application) (Smardon et al, 1986).

“Visual impact” means the degree of change in visual resources and viewer response to those resources caused by a development project (Smardon et al, 1986).

A visual assessment and impact prediction follows the method as indicated in Steps A – E below:

- A – Determine the view shed & visibility.
- B – Predict the visual exposure and viewer sensitivity.
- C – Determine the viewer proximity/ visual distance
- D – Predict & assess the visual absorption capacity of the site and the activity.
- E – Based on the above, the overall visual impact of the cultivation activity can be predicted.

F15.2.1 VIA STEP A : VIEW SHED MAP (VISIBILITY FROM SURROUNDING AREAS WITHIN 5KM RADIUS)



F15.2.2 VIA STEP B: PREDICT POTENTIAL VISUAL EXPOSURE & VIEWER SENSITIVITY

“Visual exposure” means the degree to which viewers are exposed to a view by their physical location, number of viewings and duration of view. **“Viewer sensitivity”** means the viewers variable receptivity to the elements within the environment that he/she is viewing, affected by the viewers activity and awareness (Smardon et al, 1986).

Potential areas of visual exposure	Y/N	VIEWER SENSITIVITY	Visual exposure rating		
			Very visible (High)	Moderately visible (Medium)	Hardly visible (Low)
Views onto the proposed cultivation lands from adjacent farm houses.	Yes	Low	Yes	N/A	N/A
Views onto the proposed cultivation lands from roads.	Yes	Low	Yes	N/A	N/A
Views from geographic sensitive areas and tourism facilities.	No	N/A	N/A	N/A	N/A

F15.2.3 VIA STEP C: DETERMINE VIEWER PROXIMITY / VISUAL DISTANCE

“Visual distance” mean the measurable units between the viewer’s position and the object being observed (Smardon et al, 1986). “Viewer proximity” means the geographic extent of a resource and legibility of its features which can be seen by an observer (viewer) determined by his or her location. (Smardon et al, 1986).

Viewer proximity / distance	Y/N	VIEWER FREQUENCY	Viewer proximity		
			Short Distance (1-500m) (High)	Medium Distance (500m – 1500m)	Long Distance (> 1500m) (Low)
Views onto the proposed cultivation lands from adjacent farm houses.	Yes	Low	Yes	N/A	N/A
Views onto the proposed cultivation lands from roads.	Yes	Low	Yes	N/A	N/A
Views from geographic sensitive areas and tourism facilities.	No	N/A	N/A	N/A	N/A

F15.2.4 VIA STEP D: PREDICT THE VISUAL ABSORPTION CAPACITY

The “Visual Absorption Capacity (VAC)” is the physical capacity of a landscape to screen proposed development and still maintain its inherent visual character also referenced as the degree of visual penetration and the complexity the landscape affects this capacity (Smardon et al, 1986). The VAC is primarily a function of the vegetation structure and density as well as texture, colour, form and light / shade and contrasting characteristics of structures / land uses in the landscape. VAC also generally increases with distance, where discernible detail in visual characteristics of both environment and structure decreases.

Rating	Low	Moderate	High
Expected Visual Absorption Capacity (VAC)	<i>The landscape will not visually accept the proposed cultivation development due to incompatible land use within a natural landscape.</i>	<i>The landscape will partially accept the proposed cultivation development visually, due to its rural and setting.</i>	<i>The landscape will easily accept the proposed cultivation development visually because of its rural and agricultural setting, and land use compatibility.</i>

F15.2.5 VIA STEP E: OVERALL VISUAL IMPACT PREDICTION

- *The viewshed is limited to the immediately surrounding valley areas due to the mountainous topography.*
- *Although the short distance visual exposure over a short distance from surrounding farms and road users are high, the viewer sensitivity and frequency is expected to be low.*
- *The visual absorption capacity within the rural agricultural setting is expected to be high when the trees are mature.*
- *The overall visual impact of the proposed cultivation project is thus expected to be very low.*
- *No visual mitigation measures would thus be required.*

F15.3 ACOUSTIC ENVIRONMENT

F15.3.1 SOURCES OF POTENTIAL NOISE IMPACTS

The agricultural activity is not a significant noise generator but noise may be a potential nuisance to nearby residents during the sites preparation phase when chain saws and earth moving machinery will be used to clear vegetation and to prepare the soil for planting. Intermittent use of low noise emitting machinery to maintain the orchard will occur throughout the operational phase. Assessment will be done in accordance to SANS 10328.

F15.3.2 POTENTIAL NOISE RECEPTORS

Adjacent land owners and farm workers living in nearby located farm houses.

F15.3.3 CRITERIA FOR APPLYING NOISE RATINGS				
SANS (10103) TYPICAL RATING LEVELS FOR AMBIENT NOISE			SANS 10103 Outdoors Rating Level (dBA)	
dB(A) is the value of sound pressure level in decibels (dB), determined using an expected weighted noise level (A) at typical noise emitting environments.			Day-time	Night-time
			06:00 – 22:00	22:00 – 06:00
Type of District		Y/N		
Residential Districts	Rural districts	Y	45	35
	Suburban & little road traffic	N	50	40
	Urban residential	N	55	45
Non-Residential Districts	Urban business	N	60	50
	Central business districts	N	65	55
	Industrial districts	N	70	60

Y = Yes, applicable to the project area N = No, not applicable to the project area

CRITERIA FOR DETERMINING NOISE IMPACTS	
NOISE IMPACT QUALIFIERS (SANS 10103)	
Impact	The noise difference between residual noise and typical outdoor rating level.
Negligible	0
Low	Between 0 & 5 dBA
Moderate	Between 5 & 10 dBA
High	Between 10 & 15 dBA
Very high	More than 15 dBA
Noise dissipates by 6dBA as distance doubles	

F15.3.4 MODEL FOR PREDICTION OF NOISE IMPACTS									
NOISE SOURCES (SANS 10103)	Noise dissipates at 6dBA by doubling the distance from source								
	Noise type and noise level at the source	1m	2m	4m	8m	16m	32m	64m	128m
Orchard establishment: Bulldozer / loader / trucks / chain saw (average 92dBA at source – SANS 10103)	92	86	80	74	68	62	56	50	44

F15.3.5 POTENTIAL NOISE IMPACT ASSESSMENT
<ul style="list-style-type: none"> The average daytime outdoor ambient noise rating for rural districts is ± 45dBA. Short term and intermittent noise disturbance is can be expected during the orchard establishment period and intermittently during the operational phase due to expected management practices. A maximum noise rating from plant/equipment at source is expected at ± 92dBA which is double that of the rural residential day-time rating. The closest residence is located ± 500m away from a potential noise. Noise dissipates as the distance from the noise source doubles and interference between the noise source and the receiver such as soil berms, buildings, trees, walls, bushes, and topographical absorbing landscapes can reduce noise impacts even further. Taking the above calculation into account, the closest residence would thus experience an expected noise rating of less than 44dBA which rates as a very low to negligible noise impact during the orchard establishment and the operational phases. The cultivation activity would therefore not pose an overall noise impact.

F15.4 AMBIENT AIR QUALITY

F15.4.1 AIR QUALITY CONTROL / PRIORITY AREA		
Air quality control /priority. (Section 18 of the NEMAQA 2004)	Low air quality risk area.	Regulations / Standards : (N/A)

F15.4.2 IDENTIFICATION OF POTENTIAL NEW SOURCES OF ATMOSPHERIC EMISSIONS / ODOURS				
Potential emission generation	Distance from sites	Emissions description	Frequency / Rating	Impact / risk
Land preparation earthworks	On-site	Dust	Occasional during the orchard establishment period.	Nuisance to surrounding residents.
Aerial pesticide application	On-site	Spray drift	Occasional during the operational period.	Human health risk to surrounding residents.

F15.4.3 POTENTIAL AIR QUALITY IMPACTS

- During the orchard establishment phase, dust may be a potential nuisance to adjacent residents specifically during the initial site preparation phase when on-site vegetation clearing and earth moving activities will take place.
- The extent of dust-fall, due to vegetation clearing and earth moving activities on the sites, cannot be anticipated or estimated as several variables such as soil moisture, wind direction, and wind speed, as well as the extent of earthworks, plays a role in the generation of dust. However, precautionary measures has been applied to minimise dust generation during the sites preparation phase. Such measures has been incorporated in the EMPR (refer to App F).
- Aerial spraying as a manner of in-orchard pesticide application may potentially result in aerial drift to natural areas adjacent to the orchard, which may impact directly on insects and indirectly on wildlife. Pesticide application within the orchard cannot be avoided however; the potential impacts can be reduced by making use of the prescribed methods as indicated in the relevant Guidelines as published by the Department of Agriculture. Such measures have been incorporated in the EMPR (refer to App F).
- The cultivation activity is therefore not expected to pose any significant impact on ambient air quality.

F.16 WASTE AND ENVIRONMENTAL POLLUTION

F16.1 EXISTING WASTE MANAGEMENT SERVICES / METHODS

The property is vacant agricultural land with no existing infrastructure or services or waste disposal methods in place. A small-scale farm waste site as provided for in DWA Policy DW808 will be established as part of the farming operations. Furthermore, a dedicated storage facility for empty agricultural chemical containers and an impermeable evaporation pond will be constructed for chemical rinsing, chemical neutralising and soil remediation.

F16.2 IDENTIFICATION OF POTENTIAL SOURCES OF WASTE

Waste generation activities	Waste type	Waste description	Waste handling	Impact / risk prediction
Waste will be generated during the orchard establishment phase.	Inert waste	During construction periods where brick and mortar is involved.	Re-use on-site.	Low risk contamination of soil.
	Organic waste	Vegetation clearance as well as pruning and wasted fruit.	Re-use on-site as compost.	No potential risk / impact.
	General waste	Plastic waste from planting bags and bottles, pipe off-cuts and plastic cables.	Dispose on-site at a designated small-scale farm waste site.	Low risk of soil and water contamination.
Waste will be generated during the farming operation period.	General waste	Seasonal plastic waste from bags, bottles and netting.	Dispose on-site at a designated small-scale farm waste site.	Low risk of soil and water contamination.
	Hazardous waste	Empty chemical and fertilizer containers.	Return to supplier.	Low risk of leachate and contamination of soil and water resources.
	Hazardous waste	Liquid waste from cleaning of chemical containers after use.	Remove and dispose in on-site evaporation pond.	Low risk of leachate and contamination of soil and water resources.
	Hazardous waste	Hydro-carbon spills from working with & servicing farm equipment & vehicles.	Remove and remediate contaminated soil by chemical neutralisation.	Low risk of leachate and contamination of soil and water resources.
	Hazardous waste	Chemical spills from concentrated containers	Remove and remediate contaminated soil by chemical neutralisation.	Low risk of leachate and contamination of soil and water resources.

F16.3 IDENTIFICATION OF POTENTIAL SOURCES OF POLLUTION				
Contamination Phase	Contamination type	Contamination description	Contamination handling	Impact / risk prediction
<i>Potential contamination during the farming operation period.</i>	<i>Point Source</i>	<i>Storage room / facility for agricultural chemicals</i>	<i>Managed in accordance with regulatory norms and standards.</i>	<i>If contamination sources are dealt with in accordance with the relevant guidelines, the contamination risk is to be expected LOW.</i>
	<i>Point Source</i>	<i>Fuel tanks</i>		
	<i>Non-Point Source</i>	<i>Sprat drift to aerial spraying</i>		

F15.4.3 POTENTIAL POLLUTION RISKS AND IMPACTS
<ul style="list-style-type: none"> ▪ <i>Solid waste emanating from the construction activities is rated as a low potential risk. However, precautionary measures must be applied to prevent such waste from entering the natural veld and watercourse. Such measures has been incorporated in the EMPR (refer to App F).</i> ▪ <i>Liquid waste can potentially occur but is rated as a low potential risk. However, precautionary measures must be applied to prevent such waste from entering the natural veld and watercourses. Such measures has been incorporated in the EMPR (refer to App F).</i> ▪ <i>In view of all the pollution prevention measures included in the EMPr the cultivation activity is therefore not expected to pose any significant impact as a source of waste/pollution.</i>

F.17 SOCIO-ECONOMIC ENVIRONMENT

The property is located in Ward 1 of the Fetakgomo Tubatse Local Municipality; however, the opportunities that can be derived from the proposed farming business can also benefit the communities living in Ward 10 of the Thaba Chweu Local Municipal Area. The latest (2011) Census data as provided by Statistics South Africa (SSA), the Municipal Integrated Development Plans and Wazimap (2016) were used to determine the broad socio-economic conditions of the area.

F17.1 DEMOGRAPHIC PROFILE OF THE FETAKGOMO TUBATSE MUNICIPAL WARD 1

DEMOGRAPHIC INDICATOR	DATA OF WARD 1 FTLM	SOCIO-ECONOMIC INTERPRETATION OF WARD 1
Age	<i>The population has a median age of 23 years and a 48% male to 52% female ratio.</i>	<i>The data indicates a young population. This implies an increase in unemployed young adults in the area.</i>
Education	<i>±52.6% completed Grade 9 or higher but only 24.3% completed Matric or higher.</i>	<i>The population has a low educational profile and therefore opportunities for unskilled labour are required.</i>
Employment	<i>±63.1% of the adult population is unemployed.</i>	<i>An opportunity exists in the agricultural sector for the high percentage of the unskilled labour force.</i>
Average annual income	<i>R 14 400.00</i>	<i>The average annual income of employed persons is below par with that of the Province (being R25 000.00).</i>
Income opportunities	<i>Income generation platforms are strongly connected to the Agricultural sector.</i>	<i>Rural to urban migration for employment has a low success rate coupled with poor education levels. New employment opportunities in the agricultural sector should expand the income opportunities for the local population.</i>

F17.2 BROAD SOCIO-ECONOMIC CHARACTER OF THE AREA

- The area in which the site is located in a rural farming area and the nearest rural residential community is Moremela, Leroro and Matibidi in the Dientje Area. These communities are overall poor with little to no economic opportunities locally.
- The adjacent farms of ±15000ha to the east of the property belong to the Maroabjang Community. Although these farms were previously commercially utilised there is currently no economic activity being conducted. There is evidence of community cattle grazing and removal of natural resources on these properties. Although the land belongs to the above-mentioned communities, there are no employment opportunities or income generation from these lands. The community, therefore, remains dependant on other sources of income and employment.
- Commercial cattle farming occur in the mountainous areas towards the west of the sites which provides few direct employment opportunities.
- Large-scale commercial citrus farming occurs within the Kaspersnek Valley directly northwest of the property. These farms provide substantial direct, indirect, permanent, and seasonal employment opportunities mainly for poor local communities.

"Socio-economic impact" means the impact or potential impact that activity has, has had or may have on the surrounding community's social and economic wellbeing, including changes in demographics, housing, employment, income opportunities, and demand for public services

F17.3 SOCIO-ECONOMIC INTERPRETATION OF THE AREA AND POTENTIAL IMPACTS

The assessment revealed that economic opportunities from the proposed new cultivation activities will impact positively the local and regional community as follows:

- Agricultural development is socially justifiable and consistent with the employment needs of the residents within the Ward.
- Agricultural development provides improved access to employment opportunities for the local population with lower levels of education and skill.
- Benefits are expected to filter through to the supply-chain service providers to secondary and indirect employment and overall income generation within the local economy.
- The agricultural development will complement the National, Provincial and Local development objectives.
- The agricultural development will promote justifiable economic and social development in terms of the spatial priorities and desired spatial patterns as indicated in the Municipal IDP and the Municipal Economic Development Strategy.
- It is not expected that the proposed agricultural activity would negatively affect existing economic activities on surrounding properties.
- The local farming community is reliant on the natural resources of the area and as such, there may be concern regarding the potential impact of the proposed groundwater use for agricultural irrigation purposes on the water resource and availability of water to the existing downstream surface and groundwater users. For this reason, a comprehensive hydro-geological study was commissioned which indicates that the proposed use of groundwater would not affect the availability of surface water and groundwater downstream of the property.
- An overall positive socio-economic impact can be expected by the development of the proposed cultivation lands as more clearly described below:
 - Employment opportunities
The proposed cultivation project aligns with the development goals of the Fetakgomo Tubatse Municipal IDP (2016-2021). The proposed cultivation project would increase the socio-economic growth of the region that would directly increase employment opportunities especially impacting poor communities positively. These employees have to commute to the proposed cultivation project ±17 km and will create indirect jobs regarding transportation services as well.

- Income-generating opportunities

The Fetakgomo Tubatse IDP (2016-2021) as well as the National Economic Action Plans identified citrus cultivation as a foundational economic investment for strategic economic growth and poverty alleviation.

- Local economic opportunities

The proposed cultivation project will contribute directly and indirectly to the local economy by acquiring the local supply chain of goods and services.

- Public health & safety

It is not expected that the proposed cultivation project will have a negative health and safety impact. Sufficient legal norms and standards apply to the proposed cultivation activity and external auditing can ensure compliance thereto.

PROJECT NEED & DESIRABILITY

This Section complies with GN R326 Appendix 3, Section 3(1)(f) and motivates the need and desirability for the proposed development, in the context of the preferred development footprint and within the approved site.

The need and desirability assessment in EIA deals with the search for the best practicable option that will best ensure the maintenance of ecological integrity while promoting justifiable social and economic development

The Integrated Environmental Management Guideline on Need and Desirability, (DEA:2017) provides the requirements for need and desirability assessment in the EIA process in the form of a list of questions that aims to ensure that all the relevant need and desirability considerations have been taken into account. During the scoping process, these questions identified gaps in information and the key issues to be investigated, assessed and addressed as well as alternatives that may better respond to the development. Specialist studies were (where relevant) commissioned to provide the identified information requirements. The above-mentioned process to determine the need and desirability of the project is summarised below:

G1 NEED IN TERMS OF THE MUNICIPAL ECONOMIC DEVELOPMENT PRIORITIES

The need and desirability assessment in EIA deals with the search for the best practicable option that will best ensure the maintenance of ecological integrity while promoting justifiable social and economic development. When considering how development may affect or promote justifiable economic and social development, the relevant spatial plans must be considered, including Municipal Integrated Development Plans (IDP), Spatial Development Frameworks (SDF). In the absence of a Municipal EMF, the information and guidelines in the District-level Bioregional Plan is applied instead.

*The **Fetakgomo Tubatse Municipal Spatial Development Framework (2019)** establishes the geographic context to physical and infrastructural development concerning the desired spatial form, desirable land use patterns, and the location of future development. It also establishes priorities for public sector development and investment and provides a spatial logic that guides private sector investments.*

*The **Sekhukhune District Bioregional Plan (2019)** spatially identifies the biodiversity status and priority of terrestrial and freshwater ecosystems and is accompanied by recommended land-use guidelines for use in land-use and development planning, environmental assessment and regulation, and natural resource management, ultimately ensuring continued progress towards sustainability.*

G2. NEED IN TERMS OF STRATEGIC CONTEXT

“Need and desirability” considerations as part of an EIA process must also take into account national policies and strategies that support growth in the economy (need) whilst ensuring that such growth is ecologically sustainable (desirable).

*The **National Development Plan (NDP)** recognises the potential of commercial agriculture for job creation. It identifies the potential for 250000 direct jobs and 130000 indirect jobs in addition to those presently employed. Citrus production is one of the agricultural sub-sectors identified as having great promise. The NDP states the following “The employment requirement to produce citrus fruit is estimated at one worker per hectare of an estimated 60 000 translating into about 60 000 workers employed on citrus farms. Direct downstream labour requirements for citrus are estimated at one labourer per 2500 cartons packed: with about 100 million cartons packed per year, some 40 000 jobs are created in packing plants for six months or 20 000 full-time equivalents. In addition, there are labour requirements for transportation, warehousing, port handling, research and development, and processing”.*

*The **New Growth Path (NGP) (2010)** highlights the need to focus on facilitating growth in sectors (“sectoral targeting”) able to create employment on a large scale. Agriculture was identified as such a sector on both national and local level.*

*The **Industrial Policy Action Plan (IPAP) 2018 -20/21** features fruit export development as one of the key action programmes for the country. The intention is to accelerate agricultural export, grow, and develop value-added and processed agricultural products in both new and existing markets (www.thedti.gov.za).*

*The **Agricultural Policy Action Plan 2015 (APAP)** takes its cue from the NDP and the IPAP. It suggests that the fruit and nut sector should increase plantings in order to increase employment opportunities. It suggests that the citrus sector increase plantings by 15 000ha to 80 000ha, which is expected to increase employment from 70 200 to 85 200 jobs*

Considering the above Municipal and Strategix context, the need for the proposed cultivation can be justified in terms of the local and national economic growth and development strategies.

G3. FINANCIAL VIABILITY

While the financial viability considerations of the private developer might indicate if development is “do-able”, the “need and desirability” will be determined by considering the broader community’s needs and interests as reflected in an IDP, SDF and EMF for the area, and as determined by the EIA.

Financial viability for the developer/land user. South Africa is currently the second-largest producer of citrus globally. It is well known that the local soft citrus farming industry is experiencing very high growth due to its economic viability.

Financial benefits for the community Project viability will ensure financial benefits to the broader community by way of employment and job earnings, spending on/by local service providers and ultimately giving rise to growing the local economy to the benefit of the whole community.

G4. SUSTAINABILITY (DESIRABILITY)

While the importance of job creation and economic growth for South Africa cannot be denied, the Constitution calls for justifiable economic development. While the specific social and economic needs of the broader community should be achieved the desirability of the economic activity in terms of ecological sustainability must be upheld. It should therefore be assessed whether this development will impact the ecological integrity of the area by considering the following sustainability criteria:

Loss of threatened ecosystems	<i>The cultivation site is not located in a threatened ecosystem as identified under Section 52 of NEMBA (refer to Section H)</i>
Loss of Critical Biodiversity Areas (“CBAs”) and Ecological Support Areas (“ESAs”)	<i>The cultivation site is not located in a CBA (SDBP 2019), however, the project is located within an “ecological support area”, and on “heavily modified areas”. Specialist investigations found that the biodiversity importance and sensitivity of the selected sites are low and are therefore suitable for the proposed cultivation.</i>
Impact on conservation targets	<i>The selected and previously transformed cultivation areas would not compromise any ecosystem conservation targets.</i>
Loss of ecological drivers of the ecosystem.	<i>Local ecological drivers were previously modified due to historic cultivation and modification. However, drivers such as veld condition (biodiversity), soil conditions, and water quality can be preserved by way of run-off attenuation, trapping of sediment, nutrients and pollutants and maintained vegetation buffer strips along the edges of the cultivation sites (see EMPR).</i>
Loss of biodiversity	<i>The clearance of vegetation on the selected cultivation sites will not lead to a loss of biodiversity as the ecological studies indicate single-species dominance on the sites combined with indigenous and alien invaders .</i>
Pollution and degradation of the biophysical environment	<i>Although polluting can occur as a result of poor waste management on a farm, cultivation as an economic activity is not regarded as a polluting activity. Contamination by the use of agricultural chemicals can be mitigated.</i>
Changes to the landscape	<i>The cultivation activity will not alter the local landscape (sense of place)..</i>
Changes to the cultural heritage	<i>The cultivation activity will not disturb any significant cultural heritage resource.</i>
Use of renewable resources (soil and water)	<i>Management of irrigation water use, as well as soil conservation management, will be introduced as part of the cultivation plan (refer to EMPR – Appendix F).</i>
A risk-averse and cautious approach	<i>Mitigation measures are proposed to minimise and manage potential negative impacts and to enhance positive impacts (refer to Section J and EMPR – App F).</i>
Agricultural suitability	<i>The suitability of the site in terms of terrain, soil, water and climate is favourable for the cultivation of soft citrus (Refer to relevant Sections F.)</i>

The above desirability deliberation indicates the proposed cultivation can be ecologically sustainable and can therefore be an economically justifiable development, subject to the implementation of recommended mitigation measures.

KEY ISSUES : I & AP COMMENTS & RESPONSE AND SPECIALIST INPUTS

H1. IDENTIFICATION OF KEY ISSUES BY WAY OF PUBLIC AND DEPARTMENTAL PARTICIPATION

This Section provides a summary of the issues raised during the Scoping Public Participation Process by registered Interested and Affected Parties and State Departments.

H1.1 PURPOSE OF PUBLIC AND DEPARTMENTAL PARTICIPATION

The IEM Guideline Series 7 (2010) indicates the main purpose of public participation is:

- *to provide an opportunity for interested and affected parties (I&AP's), the environmental assessment practitioner and the competent authority to obtain clear, accurate and understandable information about the environmental impacts of the project or implications of a decision,*
- *to provide I&APs with an opportunity to voice their support, concerns and questions regarding the project, and for suggesting ways for reducing or mitigating any negative impacts of the project,*
- *it enables the applicant to incorporate the need, preferences and values of affected parties into his application, and*
- *it provides the opportunity for clearing up misunderstandings about technical issues, resolving disputes and reconciling conflicting interests.*

H1.2 METHOD OF PUBLIC AND DEPARTMENTAL NOTIFICATION AND PARTICIPATION

The method follows the requirements of GNR 326 of 7 April 2017 and the following public participation process has been concluded as part of the environmental scoping process which commenced on 11 February 2022.

- *A notification of the project to the broad public in the local newspaper.*
- *A notification of the project to the broad public by way of notice boards that were fixed on the boundaries of the site.*
- *A written notice of the application was provided to owners and occupiers of land / property directly adjacent to the site.*
- *A written notice of the application was provided to stakeholders such as the kaspersnek –Vyehoek Rivers Irrigation Board.*
- *A written notice of the application was provided to the Local Municipality and to the municipal Councillor of the relevant Ward.*
- *A written notice of the application was provided to relevant State Departments that have interest / jurisdiction.*
- *The above-mentioned notice provided the public and above-mentioned parties with background on the proposed development and invited participation by registering, reviewing and commenting within 30 days on the Draft Scoping Report that was available for public review at the*

Written comments were received from interested and affected parties and state departments and the EAP responded thereon. A Register of Interested and Affected Parties was opened and the comments were incorporated completely into the Draft Environmental Impact Report.

The following method will be followed in the second round of public participation with registered I&APs and State Departments: A written notification will be provided to registered parties and State Departments, inviting them to review and to comment within 30 days on a Draft Environmental Impact Report (EIR) that will be made available for review on an accessible electronic platform.

Comments received during this period will be reviewed, responded to and will be incorporated into a Final EIR that will be submitted to the Competent Authority in support of their decision on the application for Environmental Authorisation of the relevant regulated activities associated with this project.

H.1.3 SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

In compliance with Appendix 3, Section 3(h)(iii) of GNR326 (2017), the Section below provides a summary of the issues raised by interested and affected parties and an indication of the manner in which the issues are incorporated or the reasons for not including them (the unabridged comments can be viewed in Appendix F).

#	Summary of comments/issues received on the Scoping Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
Ref	11 March 2022 Comment by Namoneng, represented by Mr. C Blignout (Ptn 2 Doornhoek 451-KT and Re Namoneng 612-KT)	Response by Eco 8-Environmental Planners. Assisted by Insitu Consulting upon request by Eco-8	N/A
1	This farm doesn't have any water rights from the river or its resources from the catchment area it falls within.	<p><i>Namoneng Citrus (Pty) Ltd (Mr Christiaan Blignout)</i> <i>The water use is for groundwater and in accordance with the National Water Act – Act No. 36 of 1998 (NWA), the water user can apply for a groundwater use license with or without surface water rights. The “legal water entitlements” as Mr. Blignaut stipulate is for surface water use and not for groundwater use and in terms of the NWA, two different resources. To the best of our knowledge Namoneng Citrus only have surface water rights, and the twenty-four boreholes reported by Namoneng during the 2018 and 2020 hydro-census, with a combined yield of 1558.365m³/day, does not constituted as surface water. As indicated above in point 1, addressed to the Irrigation Board, no groundwater maybe abstracted from drainage region B60G without a WUL. The “eye” of the river as Mr. Blignaut state is not on Kaspersnek or Doornhoek alone. Granted, there are two fountains on Kaspersnek with an averaged measured yields of 1.53l/s (fountain 1, measured in 2020) and 0.2l/s (fountain 2) that accumulate to 1.73l/s discharging to the alluvium and Kgwete Stream. Stream measurement Point 1 indicated an average flow rate of 10.76l/s in 30/11/2020, suggesting natural discharge further upstream form Kaspersnek boundary. The difference between Stream Measure Points 1 and 2 is also largely attributed to natural discharge from the dolomitic compartment, hence the Geohydrological study to prevent over abstraction and exploitation of surface and groundwater sources and to give guidelines to the correct management of these resources, and as stated in our reports, with dedicated monitoring the interaction could be quantified. All these concerns are address in Sections 4, 5, and 7 of our reports. As stipulated by Mr. Blignaut “The system (River & Borehole) downstream showed the last few years with the drought and over extracting of water from these sources” is of concern to us as well. The over abstraction of groundwater below the northern boundary dyke is clearly visible in the step of -9.27m that was recorded (2018) in the water table across the dyke between borehole MH5 located up gradient of the dyke and MH4 located downgradient of the dyke in the adjacent compartment. This is an indication of over exploitation of groundwater in the downstream compartment. No signs of over abstraction were evident upstream from the dyke (Kaspersnek and Doornhoek), water levels remained the same between 2018 and 2020. Borehole density down the Kgwete River valley below the Kaspersnek compartment appears high with unbridled overexploitations, apart from affecting downstream base flow and will also influence the Kaspersnek compartment in the long run.</i></p>	Sect F6.6 Sect F6.7 Sect 14.2
2	This valley is a mountain catchment area and any new development without the right there of will effect water resources from and above ground.		
3	The property is still in the origin of the Kgwete (Kaspersnek) river and the drilling of boreholes will affect the downstream of the river severely.		
4	This will have a dramatic effect the water users downstream and this puts everyone's business downstream at high risk.		
5	The system (rivers and boreholes) downstream showed this the past few years with the drought and over extracting of water from these sources and in the “eye” of the river cannot continue and furthermore this farm doesn't have water rights-they planted already far more than they should and this will result in using more water than they should they land.		
6	The system cannot sustain any further developments. This is not sustainable and a huge risk for downstream users and their business.		

#	Summary of comments/issues received on the Scoping Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
	15 March 2022 Comment by Kaspersnek Vyehoeck Irrigation Board, represented by Mr. C Blignout and the assisted by Steenekamp Brookman attorneys	18 March 2022 Response by Eco 8-Environmental Planners	N/A
A	The Water Board has had sight of the hydrological report filed by the Applicant for	1. Your letter dated 15 March 2022 (ref JJ Steenekamp/ks/SK0098) and your comments to	N/A

	<p>purposes to support an application to be issued with a water use licence. The Water Board has consulted with a professional Geo- Hydrologist with regard to the conclusions contained in the hydrological report of the Applicant.</p>	<p><i>our Notice of 11 February 2022 is herewith acknowledged.</i></p> <p><i>2. You have been registered as interested and affected party on behalf of the Kaspersnek Vygehoek Rivers Irrigation Board (KVRIB).</i></p> <p><i>3. Your comment that is Annexed to your letter (Annexure B), in support of objections to the application for a water use license on the remainder of the farm Doornhoek is noted, however we also noted the following:</i></p> <p><i>a. You mention that the Water Board consulted with a professional geo-hydrologist who reviewed the Hydrological Report by Insitu Consulting and who provided advise and comment thereon (Par 1; 2; 3; 4).</i></p> <p><i>b. However, you failed to append evidence of such review and comments by a professional geo-hydrologist to your letter.</i></p> <p><i>4. Both the Environmental Impact Assessment (EIA) and the Water Use License Application (WULA) processes require scientific evidence to be provided to the decision-making authorities.</i></p> <p><i>5. In this regard the Applicant (Nendicure (Pty) Ltd provided such evidence by way of a specialist study and Hydro-Geological Report that complies with the minimum requirements as required by Department of Water and Sanitation and which study assessed both the effect of groundwater abstraction on the aquifer and the effect of such abstraction on the surface water quantity of the Kgwete River.</i></p> <p><i>6. There is no evidence that your comments (Par 1; 2; 3 ; 4) has any scientific basis and can therefore not be regarded as sufficient for decision-making by any decision-making authority.</i></p> <p><i>7. You are therefore requested to provide the scientific evidence in support of your comments by sending us a report compiled and signed by an independent and qualified geo-hydrologist, dealing with and providing scientific evidence as basis to each of your comments mentioned in Par 1; 2; 3 and 4 of Annexure B to your letter.</i></p> <p><i>8. Upon failure by you to supply us with the requested information, your comments will be regarded as unfounded assumptions only, and we and the decision-making authorities will not be able to consider your comment in any way as part of the decision-making process which forms part of the EIA and WULA processes.</i></p> <p><i>9. Upon your failure to comply with our request, the Applicant will also be under no obligation to reply further on your relevant comments (Par. 1; 2; 3 and 4) attached as Annexure B to your letter.</i></p> <p><i>10. As it is clear in your letter that you have already received some form of written report from your appointed geo-hydrologist we request that you provide the information requested</i></p>	
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		above, to us by 25 March 2022.	
		<i>Additional response by Eco 8-Environmental Planners, assisted by Insitu Consulting.</i>	
1	The entire catchment area within the area of jurisdiction of the water board is situated, is of such a nature that there is a very high direct integration between surface water and underground water.	<i>The interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports. The statement in point 1 “The entire catchment area within which the area of jurisdiction of the water board is situated, is of such a nature that there is a very high direct integration between surface water and underground water” is not correct as dolomitic aquifers is not restricted to catchments, it is defined by compartments and must be evaluated in its entirety, not just the area of jurisdiction of the water board. The provided summary report from WSM Leshika addressed to Mr. Christiaan Blignaut stated “During dry periods the board has allowed groundwater abstraction to supplement the surface water shortage”. Our question to the Water Board is, if there is such a “very high direct integration between surface water and underground water,” why do they allow the downstream users to supplement their “surface water” allocations with groundwater abstraction from boreholes without the necessary permits or licences? Surface and groundwater are deemed as two different resources and a surface water entitlement does not constitute the right to use groundwater for irrigation purposes. Section 21(a) of the National Water Act requires that, where water is taken from a water resource for irrigation purposes, that use has to be registered as a general authorisation if abstraction volumes are less than the relevant gazetted water volumes, or licensed if the abstraction volumes are more than the relevant gazetted water volumes. The majority of downstream water users fall within drainage region B60G, and no groundwater may be abstracted without a licence in terms of the relevant gazetted water volumes.</i>	Sect F6.7
2	The above implies that it is completely insufficient to consider the underground water source in isolation from the surface water characteristics of the area.	<i>As stipulated above, the interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports; stating that the groundwater sources were not considerate in isolation from the surface water. As indicated in our reports, with dedicated monitoring this interaction could be quantified.</i>	Sect F6.7
3	The hydrological report on which the applicant relied only considered the underground water resource and in this regards the following can be remarked.	<i>Statement is not true, as indicated above.</i>	N/A
3a	The tests conducted were for a very short period of time.	<i>DWAF’s (April 1997) “Minimum Standards and Guidelines for Groundwater Resource Development for the Community Water Supply and Sanitation Programme” were adhered to in terms of the aquifer testing perform as well as SANS 0299-4:1998 - Code of Practice; Development, Maintenance and Management of Groundwater Resources – Part 4: Test-pumping of water boreholes, to meet the requirements of the National Water Act – Act No. 36 of 1998. For agricultural purposes, the minimum requirements are 48 hours. Tests on production boreholes were conducted for 72 hours. And with dedicated long-term monitoring the interaction would be quantified.</i>	Sect F14.2
3b	The testing procedures entailed that the water pumped from the underground source, was released in the surface water and due to the fact that there is a high integration between surfaces and underground, such water would immediately replenish the underground source with the result that little reliance can be placed on the tests done.	<i>This statement is not true. As per above, the minimum standards were adhered to, and discharge hose of a 100m in length was used on production holes pump tested.</i>	Sect F14.2
3c	There was no testing done at all with regard to the surface water source stability and its impact on the underground water.	<i>Please refer to above and to Section 4.2.2 in our reports addressing this matter.</i>	N/A
4	As a result of the above, the hydrological report is wholly insufficient to justify an	<i>This statement is not true.</i>	N/A

	additional water use license to the Applicant.		
5	The Water board notes that an initial borehole water use license has already been granted to the Applicant, and the Water Board has immediately filed an appeal, opposing the issuing of the license and his appeal is currently pending.	<i>This appeal is based on the assumption that the Water Board was not consulted during the previous public participation process; to the best of our knowledge, the Water Board was consulted during this process.</i>	N/A
6	The water board also states as follows	<i>The Water Board or the planned "Water Use Association" must comply with the rules and regulations of the National Water Act: Act 36 of 1998 (NWA) and it seems as if the current board is missing this point; as they grant the use of groundwater by their members to supplement the shortage of surface water (as stated in point 1 no groundwater maybe abstracted in drainage region B60G, without a WUL). Their obligation is to manage the surface and groundwater use in a sustainable manner and to protect the ecology of the Kgwete, Vyehoek and Kaspersnek Rivers for the benefit to all its members and water users, not just for the benefit of a few. During the studies conducted in 2018 and 2020, the Kgwete river was dry from below the split weir due to over abstraction. In our previous public participation response dated 2019/01/30 we gave the following opinion; "In our opinion Kaspersnek Vyehoek River Irrigation Board need to implement stricter monitoring to regulate existing surface water usage (flow meters installed by all water users to document their usage on a monthly base) and the Board should install measuring points to determine the actual river flow along the Kgwete, Vyehoek and Kaspersnek rivers. During droughts when the river flow diminishes all water, users must reduce their usage. With closer monitoring the correlation between the rainfall and associated flows and discharges could be quantified." We also recommended that all the water users with in the jurisdiction of the Kaspersnek Vyehoek River Irrigation Board, should register their boreholes and where applicable Water Use License be obtained. All irrigation usage, surface and groundwater, must be metered and recorded on a monthly basis. The remainder of the points to be addressed by legal representatives as it seems bias. In-Situ Consulting would like to request a copy of the report as mentioned in point 6.d, when it becomes available.</i>	N/A
6a	The Water Board is currently finalising its existence as a water use Association in terms of Chapter eight of the National Water Act 36 of 1998.		N/A
6b	As part of the above-mentioned process, the Water Board is finalising its water use rules and constitution, as foreseen in the act in the normal legal way.		N/A
6c	The Water Board also takes notice that borehole license are normally issued to an Applicant subject to the condition that the Applicant shall become part of your produce associations and shall be subject to the rules, regulations and constitutions of such a water board regulation.		Sect E1
6d	The Water Board states unequivocally that it is awaiting an integrated hydrological and geo-hydrological report of the area, which will contain very clear guidelines as to the total reasonable constraints on the water use by water users within the area of jurisdiction of the Water Board.		N/A
6e	In its rules and regulations, the Water Board foresees that is will cap each member of the water use association, to a water use quantity that could be less than the quantity allowed to the current Applicant in terms of its application for the underground water use license.	N/A	
7	It is, given the above, completely inappropriate for the Department to issue a water use license that can be in conflict with the envisaged water use rules and regulations of the water board.	<i>As stated above, the Water Board must adhere to the NWA and the Department, not the other way around.</i>	N/A
8	For the above reasons, the water board clearly objects to the issue of the water use license.	<i>Noted</i>	N/A

#	Summary of comments/issues received on the Scoping Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
	25 March 2022 Additional comment by Kaspersnek Vyehoek Rivers Irrigation Board, assisted by Geohydrologist Messrs. WSMLESHIK	31 March 2022 Response by Eco 8-Environmental Planners, assisted by Insitu Consulting	

1	<p>Background</p> <p>The Kaspersnek Vyehoek Irrigation Board has a total water allocation of 657ha at 7500m³/ha/annum or 4927500m³/annum. Its members are located in the eastern portion of the B60G quaternary catchment along the Kgwete, Vyehoek, and Kaspersnek rivers. The property of Nendicure (Pty) Ltd (Kaspersnek Fruits) is located in the upper catchment area of the Kgwete river where a significant portion of the runoff and base flow is generated for use by the Kaspersnek Vyehoek Irrigation board.</p> <p>Each of the property owners belonging to the Kaspersnek Vyehoek Irrigation board including Nendicure (Pty) Ltd have a legal allocation which is managed by the board. <u>During dry periods, the board has allowed groundwater abstraction to supplement the surface water shortage. The total water usage (groundwater and surface water) is not allowed to exceed the allocations.</u> This shows that the existing allocations are under stress during low flow periods.</p> <p>Nendicure (Pty) Ltd intend expanding their operation to between 120 and 140 ha. This will require an additional 380 250m³/annum (120ha at 4 500m³/ha/annum = 540 000m³/annum, less the existing rights, 21,3ha at 7 500m³/ha/annum = 159 750m³/annum). They intend to source the additional water from groundwater resources. They have recently received a Water Use License (License No: 06/B60G/A/10858) for the abstraction of groundwater (227 634,44m³/annum) on the remaining extent of the farm Kaspersnek 481 KT and are in the process of applying for 2 additional Water Use Licences for the balance of their water requirement on the recently purchased property, the remainder of Doornhoek 451 KT, and again on the remaining extent of the farm Kaspersnek 481 KT.</p>	<p><i>The interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports. The statement in point 1 “The entire catchment area within which the area of jurisdiction of the water board is situated, is of such a nature that there is a very high direct integration between surface water and underground water” is not correct as dolomitic aquifers is not restricted to catchments, it is defined by compartments and must be evaluated in its entirety, not just the area of jurisdiction of the water board.</i></p> <p><i>The provided summary report from WSM Leshika addressed to Mr. Christiaan Blignaut stated “During dry periods the board has allowed groundwater abstraction to supplement the surface water shortage”. Our question to the Water Board is, if there is such a “very high direct integration between surface water and underground water,” why do they allow the downstream users to supplement their “surface water” allocations with groundwater abstraction from boreholes without the necessary permits or licences?</i></p> <p><i>Surface and groundwater are deemed as two different resources and a surface water entitlement does not constitute the right to use groundwater for irrigation purposes. Section 21(a) of the National Water Act requires that, where water is taken from a water resource for irrigation purposes, that use has to be registered as a general authorisation if abstraction volumes are less than the relevant gazetted water volumes, or licensed if the abstraction volumes are more than the relevant gazetted water volumes. The majority of downstream water users fall within drainage region B60G, and no groundwater may be abstracted without a licence in terms of the relevant gazetted water volumes.</i></p>	Sect F6.7
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<p>2</p>	<p>Hydrogeological Assessment by IN-SITU Consulting</p> <p>Impacts of abstraction on base flow in the river cannot be determined from short duration test pumping and stream flow measurements as initially water is removed from aquifer storage. The time of response is greatly affected by distance from the river and aquifer parameters and stream bed conductance.</p> <p>Groundwater abstraction can deplete both groundwater storage and groundwater base flow in a non-linear fashion depending on the transmissivity and storability of the aquifer, the distance from the stream channel and the time since pumping started and the volume of recharge in that month.</p> <p>The depletion of base flow is critical to determine as this will impact on existing allocations downstream. The test pump results indicate leaky conditions from the flattening of the CRD curve. This leakage is probably from the river further indicating impact on stream flow.</p> <p>The calculations show that the bulk of recharge is discharged to the river. Surely then abstraction will largely result in streamflow depletion, otherwise what is the fate of this water? No piezometric map of the compartment is available to determine the flow towards the Kgwete River.</p> <p>The water balance done for the Kaspersnek Compartment shows a significant amount of allocatable groundwater available. This is misleading as most of this is available in the B60D and B60B catchments. In fact, there is no allocatable groundwater available in the B60G catchment according to the Gazetted Reserve Determination for the Olifants and Letaba catchments, see Government Gazette No 41887 of 7 September 2018, Reserve Determination of water resources for the catchments of the Olifants and Letaba in terms of section 16(1) and (2) of the National Water Act, 1998 (Act 36 of 1998), Table 6.1. The Gazette further indicates (Table 6.1) that the groundwater stress factor is high (0.82) and that when the reserve is considered no additional groundwater should be allocated. This is a legal requirement that should have been considered when evaluating the license application for Nendicure (Pty) Ltd.</p>	<p><i>As stipulated above, the interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports; stating that the groundwater sources were not considered in isolation from the surface water. As indicated in our report, with dedicated monitoring this interaction could be quantified.</i></p> <p><i>DWAF's (April 1997) "Minimum Standards and Guidelines for Groundwater Resource Development for the Community Water Supply and Sanitation Programme" were adhered to in terms of the aquifer testing perform as well as SANS 0299-4:1998 - Code of Practice; Development, Maintenance and Management of Groundwater Resources – Part 4: Test-pumping of water boreholes, to meet the requirements of the National Water Act – Act No. 36 of 1998. For agricultural purposes, the minimum requirements are 48 hours. Tests on production boreholes were conducted for 72 hours. And with dedicated long-term monitoring the interaction would be quantified.</i></p> <p><i>This statement is not true. As per above, the minimum standards were adhered to, and discharge hose of a 100m in length was used on production holes pump tested.</i></p> <p><i>Please refer to above and to Section 4.2.2 in our report addressing this matter. This objection is based on the assumption that the Water Board was not consulted during the previous public participation process; to the best of our knowledge, the Water Board was consulted during this process.</i></p> <p><i>The Water Board or the planned "Water Use Association" must comply with the rules and regulations of the National Water Act: Act 36 of 1998 (NWA) and it seems as if the current board is missing this point; as they grant the use of groundwater by their members to supplement the shortage of surface water (as stated in point 1 no groundwater maybe abstracted in drainage region B60G, without a Water Use License).</i></p>	<p>Sect F6.7</p>
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3	<p>Conclusions</p> <p>The area under jurisdiction of the Kaspersnek Vyehoek Irrigation Board is already under stress to supply sufficient water to meet the legal allocations of its members. Any additional allocation will place further stress on the water resources threatening the investments made in the area. Significant quantities of groundwater discharge to the surface water resources supplying the base flow of the rivers. Any abstraction of groundwater will thus impact on the surface water resources affecting existing allocations. The Gazetted allocatable groundwater for the B60G catchment is zero, therefore no additional groundwater use should be approved.</p>	<p><i>The Irrigation Board's obligation is to manage the surface and groundwater use in a sustainable manner and to protect the ecology of the Kgwele, Vyehoek and Kaspersnek Rivers for the benefit to all its members and water users, not just for the benefit of a few. During the studies conducted in 2018 and 2020, the Kgwele river was dry from below the split weir due to over abstraction. In our previous public participation response dated 2019/01/30 we gave the following opinion; "In our opinion Kaspersnek Vyehoek River Irrigation Board need to implement stricter monitoring to regulate existing surface water usage (flow meters installed by all water users to document their usage on a monthly base) and the Board should install measuring points to determine the actual river flow along the Kgwele, Vyehoek and Kaspersnek rivers. During droughts when the river flow diminishes all water, users must reduce their usage. With closer monitoring the correlation between the rainfall and associated flows and discharges could be quantified." We also recommended that all the water users with in the jurisdiction of the Kaspersnek Vyehoek River Irrigation Board, should register their boreholes and where applicable Water Use License be obtained. All irrigation usage, surface and groundwater, must be metered and recorded on a monthly basis. The remainder of the points to be addressed by legal representatives as it seems bias. In-Situ Consulting would like to request a copy of the report as mentioned in point 6.d, when it becomes available.</i></p> <p><i>As stated above, the Water Board must adhere to the NWA and the Department, not the other way around.</i></p>	F14.2
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#	Summary of comments/issues received on the Draft Environmental Impact Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
	<p>7 July 2022</p> <p>Comment from the Environmental Impact Management Directorate of the Department of Economic development, Environment & Tourism</p>	Response by Eco 8-Environmental Planners.	
1.	The Environmental Impact Assessment Report (EIAR) received by the Department on 30 June 2022 is hereby acknowledged.	<i>Noted</i>	N/A
2.	The EIAR is under review, the Department will inform on the progress of the project within 107 days from the date of the receipt of the EIAR as required by the Environmental Impact Assessment Regulations of 2014, promulgated in terms of the National Environmental Management Act (Act 107 of 1998) as amended	<i>Noted</i>	N/A
3.	Kindly bring to the attention of the applicant the fact that this development must not commence prior to the Department deciding on the application.	<i>Noted</i>	N/A

	27 July 2022 Comment from Kaspersnek Vyehoek Irrigation Board, represented by Mr. C Blignout and the assisted by Steenekamp Brookman attorneys (also refer to the same comments received on 15 March 2022)	Response by Eco 8-Environmental Planners. (also refer to Eco-8 response dated 18 March 2022)	
	Our letter of 27 July 2022, with attached report of WSM Leshika Consulting (Pty) Ltd refers. Kindly note that the attached report clearly serves as an objection to the approval of any license or rights applied for, which is opposed.	<i>Noted</i>	N/A
1.	Background The Kaspersnek Vyehoek Irrigation Board has a total water allocation of 657ha at 7500m ³ /ha/annum or 4927500m ³ /annum. Its members are located in the eastern portion of the B60G quaternary catchment along the Kgwete, Vyehoek and Kaspersnek rivers. The property of Nendicure (Pty) Ltd (Kaspersnek Fruits) is located in the upper catchment area of the Kgwete river where a significant portion of the runoff and baseflow is generated for use by the Kaspersnek Vyehoek Irrigation Board.	<i>It is important to note that the commenter refers to run-off and (river) baseflow which is regarded as surface water.</i> <i>Note that the Applicant will not make use of surface water for irrigation purposes.</i> <i>The Applicant will make use of groundwater for irrigation purposes from a sustainable groundwater resource that was scientifically tested for this purpose. It is important to note that the Applicant will <u>not</u> obtain groundwater from the baseflow of the Kgwete River which is also referred to as an alluvial aquifer.</i>	N/A
	Each of the property owners belonging to the Kaspersnek Vyehoek Irrigation Board including Nendicure (Pty) Ltd have a legal (<i>surface water</i>) allocation which is managed by the Board. <u>During dry periods the Board has allowed groundwater abstraction to supplement the surface water shortage.</u> The total water usage (groundwater and surface water) is not allowed to exceed the allocations. This shows that the existing allocations are under stress during low flow periods.	<i>It is illegal for the Irrigation Board to "allow" groundwater abstraction by its members to supplement to surface water for irrigation purposes.</i> <i>The use of groundwater is only permissible by way of a water use license which the Applicant intends to obtain. It is our understanding that none of the downstream Irrigation Board Members are in possession of Water Use Licenses for groundwater abstraction.</i>	N/A
	Nendicure (Pty) Ltd intend expanding their operation to between 120 and 140 ha. This will require an additional 380250m ³ /annum (120ha at 4500m ³ /ha/annum = 540000m ³ /annum, less the existing rights, 21,3ha at 7500m ³ /ha/annum = 159750m ³ /annum). They intend to source the additional water from groundwater resources. They have recently received a Water Use License (License No: 06/B60G/A/10858) for the abstraction of groundwater (227634,44m ³ /annum) on the remaining extent of the farm Kaspersnek 481 KT and are in the process of applying for 2 additional Water Use Licences for the balance of their water requirement on the recently purchased property, the Remainder of Doornhoek 451 KT, and again on the remaining extent of the farm Kaspersnek 481 KT.	<i>Doornhoek 451KT/0 does not have an existing surface water irrigation allocation from the Kaspersnek Vyehoek Rivers Irrigation Board (Kgwete River) and the Applicant does not intend to make use of surface water for irrigation.</i> <i>The proposed irrigation on the property will be met through groundwater abstraction and not by extraction from the alluvial aquifer or baseflow of the Kgwete River.</i> <i>The Applicant is planning to develop ±60ha of soft citrus cultivation on the Remainder of farm Doornhoek 451KT using low flow drip irrigation which calculates at 734.4m³/d or 268056m³/annum.</i> <i>The Water Use License (License No: 06/B60G/A/10858) that was granted to the Applicant on the adjacent property should have no influence on the proposed application on this property as the groundwater aquifer is compartmented.</i>	N/A
2.	Hydrogeological Assessment by IN-SITU Consulting Impacts of abstraction on baseflow in the river cannot be determined from short duration test pumping and stream flow measurements as initially water is removed from aquifer storage. The time of response is greatly affected by distance from the river and aquifer	<i>The hydro-geological study indicates that the no stream flow (including baseflow) reduction was observed in the Kgwete River during the 72-hour constant discharge test. The Hydro-geologists acknowledge that it is unlikely that groundwater abstraction will have no effect on</i>	N/A

<p>parameters and stream bed conductance. Groundwater abstraction can deplete both groundwater storage and groundwater baseflow in a non-linear fashion depending on the transmissivity and storativity of the aquifer, the distance from the stream channel and the time since pumping started and the volume of recharge in that month.</p> <p>The depletion of baseflow is critical to determine as this will impact on existing allocations downstream.</p> <p>The test pump results indicate leaky conditions from the flattening of the CRD curve. This leakage is probably from the river further indicating impact on stream flow.</p> <p>The calculations show that the bulk of recharge is discharged to the river. Surely then abstraction will largely result in streamflow depletion, otherwise what is the fate of this water?</p> <p>No piezometric map of the compartment is available to determine the flow towards the Kgwete River (B60G catchment).</p> <p>The water balance done for the Kaspersnek Compartment shows a significant amount of allocatable groundwater available. This is misleading as most of this is available in the B60D and B60B catchments, which are outside the area of the proposed abstraction which is in the B60G catchment.</p> <p>In fact, there is no allocatable groundwater available in the B60G catchment according to the Gazetted Reserve Determination for the Olifants and Letaba catchments, see Government Gazette No 41887 of 7 September 2018, Reserve Determination of water resources for the catchments of the Olifants and Letaba in terms of section 16(1) and (2) of the National Water Act, 1998 (Act 36 of 1998), Table 6.1.</p> <p>The Gazette further indicates (Table 6.1) that the groundwater stress factor is high (0.82) and that when the reserve is considered no additional groundwater should be allocated. This is a legal requirement that should have been considered when evaluating the license application for Nendicure (Pty) Ltd.</p>	<p><i>the Kgwete River flow. However, a positive recharge was observed and by applying a safe daily abstraction rate (metered abstraction) and continuous monitoring of both surface and ground water flow throughout the lifetime of the irrigation use, any potential losses can be calibrated to reduce water abstraction and thus prevent any impact on downs-stream surface water users.</i></p> <p><i>DWAF's (April 1997) "Minimum Standards and Guidelines for Groundwater Resource Development for the Community Water Supply and Sanitation Programme" were adhered to in terms of the aquifer testing perform as well as SANS 0299-4:1998 – Code of Practice; Development, Maintenance and Management of Groundwater Resources – Part 4: Test-pumping of water boreholes, to meet the requirements of the National Water Act – Act No. 36 of 1998.</i></p> <p><i>For agricultural purposes the minimum requirements are 48 hours. However, a tests on production boreholes were conducted for 72 hours which is regarded as adequate.</i></p> <p><i>The interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports; stating that the groundwater sources were not considerate in isolation from the surface water. As indicated in our reports, with dedicated monitoring this interaction could be quantified.</i></p> <p><i>A very detailed and scientific Groundwater Conceptual Model was developed by the Hydro-Geologist as indicated in Section 7 of the Hydrogeological Report. Figures 7.1 – 7.5 provides detailed maps of the delineated Kaspersnek compartment.</i></p> <p><i>The groundwater reserve determination of the Kaspersnek Compartment as indicated in Section 7.6 of the Hydro-geological Report include recharge, groundwater extraction, groundwater use for basic human needs, the ecology and IFR requirement, groundwater flux towards rivers, groundwater outflow from the area, amount allowed to be intercepted from outflow as well as the groundwater inform into the area. Taking all the above into account, the model calculations indicates an extra possible groundwater allocation of 16.9097937Mm³/annum or 46328.202m³/day as shown in Table 4.2 of the Hydro-geological report.</i></p> <p><i>Government Gazette No41887 of 7 September 2018 does not prevent any person from applying to DWS for a Water use License in terms of the National Water Act in the B60G catchment area. Based on the above, positive groundwater conditions the Applicant intends to apply for a water use license and the DWS shall, based on their own data and on the information presented, in the Hydro-geological report make a decision with regard to the issuing of a water use license.</i></p>	
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3.	<p>Conclusions</p> <p>The area under jurisdiction of the Kaspersnek Vyehoek Irrigation Board is already under stress to supply sufficient water to meet the legal allocations of its members. Any additional allocation will place further stress on the water resources threatening the investments made in the area.</p> <p>Significant quantities of groundwater discharge to the surface water resources supplying the baseflow of the rivers. Any abstraction of groundwater will thus impact on the surface water resources affecting existing allocations.</p> <p>The Gazetted allocatable groundwater for the B60G catchment is zero, therefore no additional groundwater use should be approved.</p> <p>The comments made here were also made previously in the appeal of the Water use License (Licence No: 06/B60G/A/10858) for the abstraction of groundwater (227634,44m³/annum) on the Remaining Extent of the farm Kaspersnek 481-KT. This additional licence will further aggravate the situation in the Kaspersnek Vyehoek area.</p>	<p><i>The Applicant is not applying with the Irrigation Board for an additional allocation of surface water and therefore the proposed cultivation and irrigation on the Remainder of Doornhoek should not pose an impact on the existing surface water allocations downstream.</i></p> <p><i>The commenter makes an assumption that significant quantities of groundwater discharge to surface water and baseflow of the Kgwete River, without providing any proof thereof.</i></p> <p><i>The applicant provided proof by way of a hydro-geological study that no impact on the Kgwete River was measured during a 72 hour draw-down test of the borehole and thus there is little likelihood of significant discharge of groundwater to river baseflow. Specific mitigation is proposed by way of continuous monitoring, measuring and reporting of both groundwater extraction and surface flow of the Kgwete river to identify any impact on surface water. These monitoring measures will be provided to both DWS and the Irrigation Board on a continuous base and if necessary of safe extraction rates can be adjusted accordingly.</i></p> <p><i>The B60G catchment area is not listed for General Authorisation of groundwater resources in the relevant Gazetted Regulation, but only allows for a Water Use License. Thus any person that intends to utilise groundwater in this catchment must conduct a hydro-geological investigation to determine sustainable use of the groundwater resource after which an application for a water use license can be lodged to DWS. The Applicant previously obtained a Water use License for a separate borehole on an adjacent property within this catchment which is an indication that the DWS is willing to approve the use of groundwater for irrigation in this catchment, based on scientific proof of availability and sustainable use of the resource.</i></p>	N/A
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#	Summary of comments/issues received on the Draft Environmental Impact Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
	<p>28 July 2022</p> <p>Comment from Mr L Mbulaheni of the Department of Water and Sanitation Mpumalanga (who has jurisdiction of water resources in the Olifants River Water Management Area)</p>	Response by Eco 8-Environmental Planners.	
	<p>DEPARTMENT OF WATER AND SANITATION COMMENTS FOR THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FORTHE PROPOSED CULTIVATIONON THE REMAINDER OF THE FARM DOORNHOEK 451-KTGREATER TUBATSE FETAKGOMO LOCAL MUNICIPALITY.</p> <p>Reference is made to the above-mentioned report, dated 27 June 2022 and site inspection conducted on the 14th of July 2022. The Department has the following comments with regards to the proposed development.</p>	Noted	N/A

1.	<p>Water Uses and Water Use Authorisations</p> <p>1.1 The applicant should note that the following activities will trigger section 21 water uses in terms of the National Water Act, Act 36 of 1998 (NWA) and should be authorised by the Department of Water and Sanitation.</p> <ul style="list-style-type: none"> • Section 21(a) for ground water abstraction. • Section 21(b) for storage of water. • Section 21(c)&(i) for the position of the existing spilt weir and construction of a new gauging weir for stream flow metering in Kgwete River. • Section 21(c)&(i) for the position road and pipeline crossings over water courses (Kgwete River and ephemeral drainage lines). 	<p><i>The water use licensing requirements are noted and are included in Section E of the final EIR.</i></p>	<p>Ref. Sect E.1 (page 9)</p>
1.2	<p>Your attention is drawn to Government Notice No. 509 dated 26 August 2016 in Government Gazette No. 40229 which states that a General Authorisation (GA) is not applicable to the following:</p> <p>(a) To the use of water in terms of section 21(c) or (i) of the Act for the rehabilitation of a wetland/watercourse as contemplated in General Authorisation 1198 published in Government Gazette 32805 dated 18 December 2009,</p> <p>(b) To the use of water in terms of section 21(c) or (i) of the Act within the regulated area of a watercourse where the Risk Class is Medium or High as determined by the Risk Matrix. This Risk Matrix must be completed by a suitably qualified SACNASP professional member;</p> <p>(c) In instances where an application must be made for a water use license for the authorisation of any other water use as defined in section 21 of the Act that may be associated with a new activity;</p> <p>(d) Where storage of water results from the impeding or diverting of flow or altering the bed, banks, course or characteristics of a watercourse; and</p> <p>(e) To any water use in terms of section 21(c) or (i) of the Act associated with construction, installation or maintenance of any sewerage pipelines, pipelines carrying hazardous materials and to raw water and wastewater treatment works.</p>	<p>(a) Section 21(c) and (i) activities in this case includes the rehabilitation of a watercourse an existing dam spillway and therefore a GA will not be applicable and these activities will be included in an application for a Water Use License.</p> <p>(b) The Risk Class if the watercourse (Kgwete River) is expected to be Medium and therefore a GA will not be applicable and these activities will be included in an application for a Water Use License.</p> <p>(c) An application for a Section 21 (a) activity – ground water extraction is applicable and therefore a GA will not be applicable and these activities will be included in an application for a Water Use License.</p> <p>(d) In this case an off-stream water storage dam is proposed so no watercourse will be impeded or diverted.</p> <p>(e) The farming activity does not include the installation of sewerage pipelines, pipelines carrying hazardous materials and to raw water and wastewater treatment works.</p> <p>None of the above are applicable therefore a General Authorisation would not be appropriate. The Applicant will continue with a Water Use License for the individually listed activities under Section 21 of the NWA.</p>	<p>Ref. Sect E.1 (page 9)</p>
1.3	<p>The Applicant will require authorisation from the Department for any activity within the riparian habitat or the 1:100-year floodline, whichever is the greatest distance. Furthermore, the Applicant must note that any activity within a 500m radius from the boundary of a wetland requires a water use authorisation in terms of Section 21(c) and (i) of the NWA.</p>	<p><i>Section 144 of the NWA refers to the determining and indication of a 1:100 year flood line on a township layout plan. The Act does not require the 1:100 year flood line to be calculated and indicated on an agricultural cultivation plan. Therefore, this assessment identified and delineated the riparian habitat along the banks of the Kgwete River as identified by an Aquatic Ecologist and clearly indicated in Appendix G3.3 Aquatic Biodiversity Compliance Report. No wetlands were identified on or near the proposed cultivation sites. Apart from road crossings, no vegetation clearance associated with orchard establishment shall occur within the riparian zone of the Kgwete River and for that purpose an appropriate buffer zone was determined and indicated on the site plan (Appendix A).</i></p>	<p>App G3.3</p>
1.4	<p>The river, stream and associated buffers must be treated as sensitive environment areas: caution must be exercised near the watercourses.</p>	<p><i>Noted. Apart from road crossings, no vegetation clearance associated with orchard establishment shall occur within the riparian zone of the Kgwete River and for that purpose an appropriate buffer zone was determined and indicated on the site plan (Appendix A).</i></p>	

1.5	Please note that no person may use water unless permitted under the NWA. Should the applicant engage in any water use activity without the necessary water use authorisation, it will be regarded as an unlawful water use. The Applicant will thus be guilty of an offence and liable for a fine or imprisonment as stipulated in Section 151 of the NWA. A Pre-Water Use Authorisation Application meeting is recommended.	<i>Noted. The applicant will commence with the necessary applications for water use licenses as indicated in Section E of this report and as included in the regulatory compliance outcomes in Section L4.2 of this report.</i>	Sect. L.4.2
2	Solid Waste Management The requirements of this Department with respect to solid waste must be strictly enforced and complied with. The waste management hierarchy must be implemented for all solid waste generated.	<i>Noted. The principles of the waste hierarchy is included in the DWS requirements for small non-commercial farm waste disposal sites.</i>	Ref. K.4.5.c
2.1			
2.2	The Applicant should note that contaminated soil or other hazardous material must be disposed of at a permitted hazardous landfill site that is authorized to accept the said material and proof of this must be made available to this Department when required.	<i>Noted and sufficiently addressed in Sections K4.5 and K4.6.</i>	Ref K4.5 and K4.6
2.3	Should private contractors be used, all solid waste must be disposed of at a permitted landfill site and proof of this must be made available to this Department when required.	<i>Noted. Very little solid waste is expected to be generated by the farming activity and such waste will be handled as indicated in Section K4.5 of this report.</i>	Ref. K4.5
2.4	The recycling of suitable material is encouraged by this Department, provided it is properly managed.	<i>The only recyclable waste of the agricultural activity is organic matter from pruning of trees and mowing of grass. This can be re-used as compost or mulch within the orchard and will be managed in terms of the NEMWA norms and standards for organic waste composting.</i>	Ref. E.4 K4.5.a
3.	Sewage and Wastewater Management		
3.1	Washing, refuelling, maintaining of vehicles or the transfer of hazardous substances must be conducted within a bunded area. All drainage arising from the bunded area must be treated as a water containing waste and disposed of safely.	<i>The safe handling of potentially hazardous liquid waste or wastewater is described in Section 4.6 of this report.</i>	Ref 4.6
3.2	The following is applicable should small volumes of wastewater be generated during the construction phase: <ul style="list-style-type: none"> • Water containing waste must not be discharged into the natural environment, and; • Measures to contain the water containing waste and safely dispose thereof must be implemented. 	<i>The safe handling of potentially hazardous liquid waste or wastewater is described in Section 4.6 of this report.</i>	Ref. 4.6
4.	Storm-water Management		
4.1	It is imperative that there is proper management of storm water at the project site. This Department requests a storm-water Management Plan.	<i>A storm water management plan is included in Appendix C of this report.</i>	App C.
4.2	The storm water management plan should indicate the separation of clean and dirty water and illustrate treatment and disposal location of dirty water.	<i>Run-off from the cultivation lands contains inorganic matter (soil particles) and organic matter (vegetation matter) that collects naturally in the run-off water from the orchards. The only means to separate dirty water that contains soil/silt and organic matter end produce clean water is to discharge run-off from the orchard to grass swales and vegetated buffer strips along watercourses. This is described in detail in Section K2.2 of the report.</i>	Ref. K2.2.
4.3	The Engineer or Contractor must ensure that only clean storm-water runoff enters the environment, ensure that all drainage locations are well monitored to prevent clogging and blockage of drainage lines.	<i>The Land user shall maintain soil conservation works, constructed waterways and vegetated buffer zones or filter strips in optimal condition as indicated in Section 2.4 of this report.</i>	Ref. K2.4
4.4	Drainage must be controlled to ensure that runoff from the project area does not culminate in off-site pollution, flooding or result in any damage to properties downstream of any storm-water discharge point(s).	<i>The Land User shall maintain the watercourses and in-stream dam on the property to optimally perform their functions as indicated in Sections K2.6 and K2.7 of this report</i>	Ref. K2.6 & K2.7
5	Erosion Control Soil erosion onsite must be prevented at all times, i.e. pre-, during- and post-construction	<i>Soil conservation measures during the orchard establishment period as well as the</i>	Ref. K1.2, K1.3, K1.4

5.1	activities. Erosion control measures must be implemented in areas prone to erosion such as near water supply points, edges of slopes, etc. These measures could include the use of sand bags, hessian sheets, bidim, retention and replacement of vegetation.	<i>operational period is described in detail in Sections K1.2, K1.3 and K1.4 of this report.</i>	
5.2	Where the land has been disturbed during construction/excavation it must be rehabilitated and re-vegetated back to an acceptable state after construction/excavation.		
5.3	Stockpiling of soil or any other materials used during the construction phase must not be allowed on or near steep slopes, near a watercourse or water body. This is to prevent pollution or the impediment of surface run-off. The Applicant must control and establish suitable mitigation measures to prevent the erosion of stockpiles.		
6	Spillages Management Storage of material, chemicals, fuels etc. must not pose a risk to the surrounding environment, and this includes surface and groundwater. Temporary bunds must also be constructed around chemical or fuel storage areas to contain possible spillages.	<i>The safe storage and handing of potentially hazardous substances, spillages and liquid waste is dealt with in detail in Sections 4.6 and 4.7 of this report.</i>	<i>Ref. 4.6 and 4.7</i>
6.1			
6.2	It is important that any significant spillage of chemicals, fuels, etc. during the construction phase and/or operational phase is reported to this Office and other relevant authorities. In the event of a spill, the following steps can be taken: <ul style="list-style-type: none"> • Stop the source of the spill; • Contain the spill; All significant spills must be reported to this Department and other relevant authorities; • Remove the spilled product for treatment and authorised disposal; • Determine if there is any soil, groundwater or other environmental impact; • If necessary, remedial action must be taken in consultation with this Department; and • Incident must be documented. 		
7	General No form of secondary pollution should arise from the disposal of sewage and refuse. The contractor must be clearly briefed on the method of disposal of such waste and compliance must be ensured/monitored. Any pollution problems arising from the above project is to be addressed immediately by the Applicant.	<i>Noted and addressed adequately in Sections K4.5, K4.6 and K4.7</i>	<i>Ref K4.5; K4.6 K4.7</i>
7.1			
7.2	This Office reserves the right to inspect the site without prior notice in order to ensure that its requirements, as mentioned above, are adhered to. Should any problems be noted, measures must be undertaken immediately to rectify the situation.	<i>Noted.</i>	
7.3	This Department reserves the right to revise/withdraw these comments and request further information from the applicant should any other information that contradicts the above comes to light.	<i>Noted.</i>	
7.4	Notwithstanding the above, the responsibility rests with the Applicant to identify all sources or potential sources of pollution from his undertaking and to take appropriate measures to prevent any pollution of the environment.	<i>All potential sources of pollution was identified in Section F16 of this report.</i>	<i>Ref.F16.</i>
	The applicant is advised to apply for all water uses relevant to the proposed activity in terms of section 21 of the National Water Act, 1998 (Act No 36 of 1998) on the DWS online system referred to as electronic Water Use Licence Application Administration System (eWULAAS), which is accessible on the Departmental website: www.dws.gov.za .	<i>Noted. It is the intention of the Applicant to commence with the Water use License applications directly after Environmental Authorisation has been obtained as the eWULAAS process required copies of the EIR, EMPR and Environmental Authorisation.</i>	

H2 INVESTIGATION AND INPUTS ON KEY ISSUES BY ENVIRONMENTAL SPECIALISTS AND TECHNICAL PROFESSIONALS

H2.1 PURPOSE OF INVOLVING SPECIALIST

The purpose of involving a wide range of Specialist Input is to specifically address the technical ability of EIA's in determining baseline environmental conditions, field surveys and data collection, identifying and predicting potential impacts and prescribing mitigation measures and implementing monitoring requirements regarding direct, indirect, and cumulative impacts (DEAT, 2002c).

H2.2 METHOD OF DETERMINING KEY ISSUES FOR SPECIALIST INVESTIGATION

The priorities of the environmental assessment were determined in a scoping process during which the project activities and project sites were "scoped" for potential issues, risks and impacts. Stakeholder engagement as a means of identifying key issues formed part of the scoping process. A need and desirability assessment and matrix method identified issues, risks and impacts and key aspects that required in-depth investigation by way of specialist verification and/or assessment as included in a Plan of Study for EIA.

H2.3 SUMMARY OF THE INPUTS / FINDINGS OF SPECIALIST INVESTIGATIONS

The required specialist studies as referred to above were concluded and are attached in Appendix G to this report. In compliance with Appendix 3, Section 3(k) of GNR326 (2017), the Section below provides a summary of the findings of specialist investigations, based on the previously identified key issues and it also makes reference to the relevant Sections in this Appendix where the findings and recommendations of specialists are included in this report.

#	Key Issues	Specialist Study	Summary of the findings / inputs from environmental specialists	Report Reference
1	Impact on groundwater resources	Hydrogeological investigation to determine a sustainable abstraction rate	<p>The Hydro-geological investigation addressed the key issues as follow:</p> <ul style="list-style-type: none"> ▪ The Remainder of the farm Doornhoek 451 KT is encompassed by the 224.3km² Kaspersnek dolomite compartment ▪ None of the proposed Kaspersnek Fruits (Pty) Ltd activities assessed indicated “no-go” implications and in conclusion it can be stated that should the listed mitigation measures and proposed “Groundwater Resource Objectives” be adhered to and maintained, the risk that the proposed Kaspersnek Fruits (Pty) Ltd groundwater abstraction will pose to the groundwater reserve, the environment or any other person’s water use is regarded as low. ▪ The preliminary groundwater reserve determination, recharge plus groundwater inflow into the compartment and the amount allowed to be intercepted from outflow, less groundwater abstraction, including basic human need (BHN), the Ecology and IFR requirement as well as the groundwater outflow from the compartment, indicates an extra possible groundwater allocation of 16.9097937Mm³/annum or 46,328.202m³/day. ▪ The significantly positive water balance indicates the current ratio between recharge and discharge to be well balanced and the Kaspersnek Compartment can be regarded as in a ‘healthy’ state quantity wise. ▪ Incorporating two parallel boundaries at distance, as well as four boreholes abstracting at distance, a sustainable long-term abstraction rate of 90,000.00L/hour (25.00L/s) for a maximum of 8 hours/day (734,400m³/day) is recommended for borehole GT-02736, which is to serve as the main/only water supply borehole to the proposed agricultural development. ▪ The initial regional assessments for the groundwater demand calculate to Category A or small-scale abstraction (<60% of recharge on property). ▪ No stream flow reduction was observed in the Kgwete River during the 72-hour constant discharge test performed on proposed production borehole GT-02736. It is however unlikely that groundwater abstraction will have no effect on the Kgwete River flow. It was recommended that potential losses are to be calibrated through continuous and dedicated monitoring. ▪ Even by applying a porosity 4% to the immediate dolomite outcrop area of the Kaspersnek compartment in quaternary sub-catchment area B60G, the implied average monthly drawdown in borehole GT-02736 at the recommended safe, daily abstraction rate, calculates to >0.2m per month, implying a low land stability risk. ▪ The groundwater is generally of excellent quality. The water from boreholes GT-02736 classified as C2-S1 (medium salinity hazard) and is suitable for irrigation on most soils and crops provided drainage is good. ▪ To conclude, the groundwater investigation determined that risk of groundwater abstraction to the local aquifer and downstream water users is expected to be “low” subject to keeping to the sustainable abstraction rate as mentioned above. 	Appendix G1

#	Key Issues	Specialist Study	Summary of the findings / inputs from environmental specialists	Report Reference
2	Changes to terrestrial biodiversity	Terrestrial Biodiversity Compliance Report	<p><i>The terrestrial biodiversity compliance report addressed the key issues as follow:</i></p> <ul style="list-style-type: none"> ▪ <i>The site has been transformed historically due to heavy grazing by cattle. The site represents a mostly transformed and degraded land cover due to historic cultivation, overgrazing, poor veld management, and resultant moderate alien vegetation infestation.</i> ▪ <i>The previously transformed areas are suitable for cultivation and are expected to pose little impact on biodiversity, loss of important species, fragmentation of habitat and impairment of ecological functions.</i> ▪ <i>Modified land cover within the selected sites is suitable for cultivation.</i> ▪ <i>Vegetation in areas with low modification within the selected sites must be undeveloped and where necessary vegetation rehabilitation must be applied.</i> ▪ <i>Maintain the ecological integrity of the ephemeral drainage systems concerned by planning the proposed cultivation of lands outside the ephemeral drainage systems.</i> ▪ <i>Vegetation in the drainage lines must remain natural and a buffer of 10m must be applied from the outer edge of each drainage line</i> ▪ <i>Alien vegetation must be removed and the remaining natural vegetation must be kept free of alien infestation and bush encroachment.</i> ▪ <i>Suitable ecological corridors elsewhere on the property needs to be identified, defined and implemented to provide a suitable and functional link between the higher lying grassland and the low-lying woodland and watercourse, while taking into account the need to fence-off cultivation lands.</i> ▪ <i>The proposed development will have a LOW impact on terrestrial biodiversity as vegetation will be removed within an area that was previously modified.</i> ▪ <i>None of the sensitive species of both the animal and plant kingdoms are present on this site as they are all associated with the higher altitude mist-belt grassland and mist-belt forest.</i> ▪ <i>The area was previously utilised as heavy grazing for cattle which resulted in trampling the natural vegetation as indicated by the high density of the indicators of bush encroachment in terms of the CARA act of 1938.</i> ▪ <i>These different areas are all in a similar disturbed state.</i> ▪ <i>The Sekhukhune District Bioregional Plan classified the entire area as Ecological Support Area 1. This is Natural, near natural and semi-natural or degraded areas that support the ecological functioning of CBA's and protected areas and maintains ecological processes to some extent.</i> ▪ <i>The development site thus poses an actual "Low" terrestrial biodiversity rating, which is completely in contrast with the "Very High" sensitivity rating as indicated in the Environmental Screening Report. The sensitivity rating is thus adjusted from VERY HIGH to LOW.</i> ▪ <i>In conclusion, the heavily modified biodiversity and associated "Low" biodiversity rating poses no limitation to the proposed orchard establishment in terms of biodiversity conservation.</i> 	Appendix G2.1

#	Key Issues	Specialist Study	Summary of the findings / inputs from environmental specialists	Report Reference
3	Changes to land cover and species	Terrestrial Animal Species Verification Report	<p>The terrestrial animal verification report addressed the key issues as follow:</p> <ul style="list-style-type: none"> ▪ The Biobase Report indicates that the proposed site has overall low to medium importance for important fauna species. In view of the habitat requirements of all the species listed in table 3.2 not present in the proposed project area, the site importance for Fauna should be changed to LOW. ▪ No other secondary data sources used to identify the spatial distribution and sensitivity of important animal species. ▪ No important habitat species are present on-site. ▪ The site is approximately 68ha in extent. It was previously utilised for the heavy grazing by cattle for an extended period. The result of that activity can be seen in the plant species composition mostly dominated by <i>Vachellia karroo</i> and <i>Senegalia caffra</i>. The degraded habitat holds no to little habitat potential of species of conservation concern. No animal species of conservation concern was previously recorded on the site or in close vicinity. ▪ The national web-based environmental screening tool determines that the study area falls within a “medium” animal species category based on animal species which have habitat requirements that are not found in the study area. The score of a ‘low’ sensitivity for animal species is appropriate for the entire study area and no sensitive animal species were encountered on site. ▪ On-site field survey confirms moderate to heavy modification of the natural land cover with associated loss of biodiversity and change in species composition including bush encroachment dominated by <i>Vachellia karroo</i>, <i>Senegalia caffra</i>, and <i>Dichrostachys cinerea</i> to a lesser extent. These land cover modifications hold none-to-little suitable habitat for sensitive animal species. ▪ Based on the above field verification and discussions, it is recommended that an Animal Species Compliance Report, with adequate mitigation measures, would be sufficient to assess the potential impacts of the proposed citrus cultivation activity. ▪ The Environmental Screening Sensitivity Rating for terrestrial animal species is therefore adjusted from MEDIUM to LOW. ▪ In conclusion, the heavily modified habitat and associated “Low” animal species sensitivity rating pose no limitation to the proposed orchard establishment in terms of species conservation. 	Appendix G2.2
		Terrestrial Plant Species Verification report	<p>The terrestrial plant verification report addressed the key issues as follow:</p> <ul style="list-style-type: none"> ▪ None of the sensitive species listed in the screening report occurs at the site. ▪ The Limpopo Conservation Plan V3 map indicates most of the project area to be Ecological Support Area 1. ▪ Game-proof fences surrounding the agricultural fields and along the gravel road as well as the severe disturbance of the vegetation generally, diminish the value of this land as Ecological Support Area. Natural ecological processes function at a lower level. ▪ The previous heavy Cattle grazing resulted in high modification of the vegetation. ▪ The high prevalence of the CARA Act indicator species of bush encroachment is evidence of high modification. ▪ Due to severe disturbance caused by previous heavy Cattle grazing and the high presence of <i>Vachellia karroo</i>, <i>Senegalia caffra</i> and to a lesser extent <i>Dichrostachys cinerea</i>, which are declared indicators of bush encroachment an overall low occurrence of potential terrestrial plant species site sensitivities / species of conservation concern is to be expected since the study area vegetation is highly modified. ▪ Based on the above, it is recommended that a Compliance Report is sufficient to account for the potential impacts of the proposed activity / development. ▪ The Environmental Screening Sensitivity Rating for terrestrial plant species of conservation concern is thus adjusted from MEDIUM to LOW. ▪ In conclusion, the heavily modified natural land cover associated “Low” animal species sensitivity rating poses no limitation to the proposed orchard establishment in terms of species conservation, subject to the implementation of mitigation as mentioned above. 	Appendix G2.3

#	Key Issues	Specialist Study	Summary of the findings / inputs from environmental specialists	Report Reference
4		Aquatic Site Sensitivity Verification Report	<p>The aquatic biodiversity compliance report addressed the key issues as follow:</p> <ul style="list-style-type: none"> ▪ The NEST determined the study area to fall into a "low" sensitivity rating. This rating has been verified and confirmed that the study area has allow aquatic sensitivity rating and no highly sensitive aquatic habitat occurs. ▪ The study area contains eleven ephemeral drainage lines and the Kgwete River. No other aquatic habitat was encountered during the field survey. ▪ Based on the above field verification and discussions, it is recommended that a Compliance Report, with adequate mitigation measures, would be sufficient to assess the potential impacts of the proposed citrus activity. 	Appendix G3.2

#	Key Issues	Specialist Study	Summary of the findings / inputs from environmental specialists	Report Reference
5	Changes to aquatic biodiversity and freshwater ecology	Aquatic Biodiversity Compliance Report	<p>The aquatic biodiversity compliance report addressed the key issues as follow:</p> <ul style="list-style-type: none"> ▪ The National Freshwater Ecological Priority Assessment of 2012 (NFEPA) assigns a sensitivity status to the perennial Kgwete River to be within an Ecological Support Areas sub-catchment and upstream management area, with a FEPA category D-Largely modified. ▪ On-site verification confirmed the Kgwete River is perennial and always has water in it and that a total of 11 ephemeral drainage lines originate on the sites. Refer to the Appendix D3.1 for these before mentioned features locations. The ephemeral drainage systems only have occasional water flowing through them and are called 'ephemeral systems' or 'dry washes.' They flow primarily during rare flash flood events. However, there are identifiable impacts within the ephemeral drainage systems currently affecting drainage flow and retention patterns. These include shallow gullies, head-cut erosion, cattle paths, road crossings, sediment plumes, etc. A rehabilitation plan is suggested to re-instate more natural water distribution and retention patterns and deactivate and stabilise head-cut erosion in key point areas. ▪ The edge of the water resources in the study area has been delineated, with the starting point for delineating the 10m aquatic impact buffer zones on the ephemeral's outer channel edge. For the Kgwete riparian buffer, the starting point is from the edge of the active channel edge, this because the riparian forms part of the buffer. A setback requirement of a 20m buffer is proposed, if the proposed mitigation is implemented, to accommodate the required buffer services. ▪ These buffer zones must be inspected for erosion seasonally that requires good management especially in the rehabilitation of disturbed watercourse, and/or their buffer zones, that should commence immediately after construction is completed. A part of this management keeping an excellent vegetative cover to prevent erosion is inevitable, the vegetation within the watercourse buffers must be monitored and managed to avoid becoming a fire hazard. Therefore, it is permissible to selectivity slash or cut grasses and removes the debris as well as seasonally controls any alien vegetation, including listed invasive indigenous species within the watercourses and its buffer zone. ▪ All further instructions, recommendations and conditions mentioned in the Aquatic Biodiversity report are included in the EMPR (refer to App F). ▪ The NEST determined the study area to fall into a "low" sensitivity rating. This rating has been verified and confirmed that the study area has allow aquatic sensitivity rating and no highly sensitive aquatic habitat occurs. 	Appendix G3.1

#	Key Issues	Specialist Study	Summary of the findings / inputs from environmental specialists	Report Reference
6	Impact on heritage sites	Heritage Impact Assessment	<ul style="list-style-type: none"> ▪ The NEST determined the study area is located within a "low" heritage sensitivity area which was confirmed by a Specialist study. The Heritage Impact Assessment report addressed the key issues as follow: ▪ An historic overview and archival information, including scrutiny of previous heritage surveys of the area formed the baseline information against which the survey was conducted. ▪ Nine sites were documented (sites DH 1-9) and they are of low heritage significance. ▪ They mainly consist of either linear or rectangular stone structures which are often dry-packed. ▪ They are mostly in very poor condition and often associated with scattered iron utilitarian household remains such as paraffin containers, remains of a bed, enamel crockery and more. It is probable that these were dwellings either used by farm workers or seasonal dwellings for pioneer settlers/ livestock farmers of the area (Coetzee & Schoeman, 2011:7). ▪ No grave has been found on the site. Care should be taken when clearing vegetation for any occurrence of potential grave locations. ▪ In terms of section 34 of the National Heritage Resources Act (NHRA, 25 of 1999), nine sites were documented they are considered to be of low heritage significance. Recommendations are summarized in section five of this report. ▪ In terms of section 35 of the NHRA, no significant archaeological sites were located. ▪ In terms of section, 36 of the NHRA, no graves or gravesites and burial grounds were located. Due to certain areas being densely overgrown with vegetation it is possible that some unmarked graves may have been overlooked during the survey. ▪ It is unlikely that the project will pose any impact on paleontological resources. ▪ Nonetheless, Chance Find Protocol is included added to the EMPR for fossils that are found once clearing of the vegetation and ploughing of the land for planting have commenced. 	Appendix G4

#	Key Issues	Specialist Study	Summary of the findings / inputs from environmental specialists	Report Reference
7	Impact on palaeontology sites	Palaeontological Impact Assessment	<p>The NEST determined the study area to fall into a "high to very high" sensitivity rating.</p> <p>A palaeontological site assessment found the following:</p> <ul style="list-style-type: none"> ▪ Based on the site visit survey and observations, there are no stromatolites or any other fossils in the project footprint. ▪ It is extremely unlikely that any fossils would be preserved in the rocks below the soils because the dolomites occurred much higher up the valley slope than the flatter lands that are the target of the project. ▪ It is unlikely that the project will pose any impact on paleontological resources. ▪ Nonetheless, a Chance Find Protocol is included added to the EMPR for fossils that are found once clearing of the vegetation and ploughing of the land for planting have commenced. 	Appendix G5

ASSESSMENT OF ALTERNATIVES

This section provides a full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report as required in GN R326 of 17 April 2017, Appendix 3 Section 3(1)(h).

11.1 OBJECTIVE OF ALTERNATIVES

Reasonable and feasible alternatives is considered in respect of the proposed development or activities that forms part of it, for it to feedback into the planning and design of the development/activity thereby optimising the positive aspects and minimising the negative aspects that are highlighted during the assessment process with the aim of including the best environmental option / alternatives in the proposed development.

11.2 DEFINING ALTERNATIVES

The “**alternatives**” concerning the proposed development or activity, means different means of meeting the general purpose and requirements of the development or activity, which may include alternatives to—

- the land/site on which or location where it is proposed to undertake the activity (SA);
- the type of land use activity to be undertaken (LA);
- the planning, design or layout of the activity/development (PA);
- the technology/process (engineering/architectural) to be used in the activity/development (TA);
- the operational aspects of the activity/development (OA); and
- the option of not implementing the activity/development, the no-go alternative (NG).

11.3 THE SELECTION AND ASSESSMENT METHOD

In the Scoping Process alternatives were identified and selected by applying the method proposed by the Integrated Environmental Assessment Guideline Series 11, (DEA in 2004). Only those alternatives that were found to conform to both the requirements of reasonability and feasibility were put forward for further investigation during the EIA process. **Reasonability** refers of considerations of moderation, fairness, cost-effectiveness, sensibility and sound judgement when considering an alternative. **Feasibility** refers to the ease, convenience and capability to achieve/implement an alternative. Only alternatives that were identified in the scoping process and listed as such in the scoping report, and which were found to be **reasonable** and **feasible**, are included in this assessment. The following table indicates the alternatives that were considered during the scoping process and their selection [✓] or not [X].

ALTERNATIVES SELECTED FOR ASSESSMENT								
	Type of alternative			Type of alternative			Type of alternative	
PA	Project Area	X	CS₄	Cultivation Site 4	✓	CS₉	Cultivation Site 9	✓
LU	Land Use	X	CS₅	Cultivation Site 5	✓	S₁₀	Remainder Site 10	X
CS₁	Cultivation Site 1	✓	CS₆	Cultivation Site 6	✓	CM	Cultivation Methods*	X
CS₂	Cultivation Site 2	✓	CS₇	Cultivation Site 7	✓	NG	No-Go Alternative	✓
CS₃	Cultivation Site 3	✓	CS₈	Cultivation Site 8	✓			

* : The Cultivation method is not included in the Matix but form part of the alternative assessment to be included in the EMPr as indicated in Section I3.4.4 of the Scoping report.

The purpose of the following Section is to compare the selected project alternatives in terms of their advantages (positive impacts) and disadvantages (negative impacts) as a further method of impact identification, inclusive of the impact identification findings and mitigation recommendations in the previous Sections E, F and G which includes inputs from environmental and technical specialists as well as interested and affected parties.

11.4 COMPARATIVE ASSESSMENT : IDENTIFICATION OF IMPACTS OF SELECTED PROJECT ALTERNATIVES

<p><i>This Section applies the method of comparative assessment by considering the advantages, disadvantages and the mitigation potential of selected project alternatives as part of the process to identify potentially significant impacts, and of reaching the proposed development footprint, in compliance with GNR 326 Appendix 3, Section 3(h)(vii), (viii), (ix), (x).</i></p>	
<p>Symbols used in this assessment have the following meaning: <input checked="" type="checkbox"/> Positive impact <input checked="" type="checkbox"/> Negative impact ! Mitigation potential ? Unknown impact</p>	
<p>11.4.1 ALTERNATIVE CULTIVATION SITES (CS1)</p>	
<p>ADVANTAGE <i>Positive impacts on ecological/social/economic/physical environments</i></p>	<p>INVESTIGATION AND RECOMMENDATIONS ON PREVIOUSLY IDENTIFIED DISADVANTAGES / LIMITATIONS <i>Mitigation to negative impacts on ecological/social/ physical environments</i></p>
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> <i>Historic cultivation occurred on this site and the existing modification will result in less impact compared to a “green field” area. Soil and slope conditions are suitable for the proposed cultivation project.</i> <input checked="" type="checkbox"/> <i>Severe bush encroachment has modified the natural composition and structure of vegetation with resultant loss of habitat for wildlife. The site is therefore not sensitive or important in terms of vegetation, biodiversity and habitat.</i> <input checked="" type="checkbox"/> <i>No drainage lines are present across the proposed cultivation site.</i> <input checked="" type="checkbox"/> <i>An existing river crossing will be utilised to access the site without creating a new impact.</i> <input checked="" type="checkbox"/> <i>The overall impact of this site is LOW.</i> 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> <i>The riparian area along the Kgwete River is a sensitive area that may limit the proposed area of cultivation.</i> ! <i>Suitable ecological corridors must exist as a functional link between the higher lying grassland and the low-lying woodland and watercourse. Such ecological corridors cannot be fence-off and a small portion of arable land will be lost to a proposed 20m buffer along the Kgwete River.</i> <input checked="" type="checkbox"/> <i>The existing road crossing across the Kgwete River is sensitive for soil erosion along its banks.</i> ! <i>Suitable erosion protection measures must be installed at the road crossing to protect the bed and banks of the watercourse.</i>
<p>11.4.2 ALTERNATIVE CULTIVATION SITES (CS2)</p>	
<p>ADVANTAGE <i>Positive impacts on ecological/social/economic/physical environments</i></p>	<p>INVESTIGATION AND RECOMMENDATIONS ON PREVIOUSLY IDENTIFIED DISADVANTAGES / LIMITATIONS <i>Mitigation to negative impacts on ecological/social/ physical environments</i></p>
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> <i>Historic cultivation occurred on this site and the existing modification will result in less impact compared to a “green field” area.</i> <input checked="" type="checkbox"/> <i>Soil and slope conditions are suitable for the proposed cultivation project.</i> <input checked="" type="checkbox"/> <i>Severe bush encroachment has modified the natural composition and structure of vegetation with resultant loss of habitat for wildlife. The site is therefore not sensitive or important in terms of vegetation, biodiversity and habitat.</i> <input checked="" type="checkbox"/> <i>An existing river crossing will be utilised to access the site without having to creating a new impact.</i> <input checked="" type="checkbox"/> <i>Although the site pose some limitations and potential impacts, all can be overcome by implementing the recommended mitigation and the remaining area of this site is very suitable for cultivation.</i> <input checked="" type="checkbox"/> <i>The overall impact of this site is LOW.</i> 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> <i>The riparian area along the Kgwete River is a sensitive area that may limit the proposed area of cultivation.</i> ! <i>Suitable ecological corridors must exist as a functional link between the up-stream and downstream areas of the Kgwete River as well as the higher lying grassland and the low-lying woodland and watercourse. Such ecological corridors require a 20m buffer along the Kgwete River.</i> <input checked="" type="checkbox"/> <i>The existing road crossing across the Kgwete River is sensitive for soil erosion along its banks.</i> ! <i>Suitable erosion protection measures must be installed at the road crossing to protect the bed and banks of the watercourse.</i> <input checked="" type="checkbox"/> <i>Two drainage lines occur on this site that may limit cultivation and which may cause soil erosion.</i> ! <i>A 10m buffer must be maintained along the northern drainage line and a constructed waterway without a buffer must be installed within the orchard along the centre drainage line.</i>

11.4.3 ALTERNATIVE CULTIVATION SITES (CS3)	
ADVANTAGE <i>Positive impacts on ecological/social/economic/physical environments</i>	INVESTIGATION AND RECOMMENDATIONS ON PREVIOUSLY IDENTIFIED DISADVANTAGES / LIMITATIONS <i>Mitigation to negative impacts on ecological/social/ physical environments</i>
<ul style="list-style-type: none"> ☑ <i>Historic cultivation occurred on this site and the existing modification will result in less impact compared to a “green field” area.</i> ☑ <i>Existing infrastructure such as storage rooms for agricultural equipment will benefit the proposed cultivation project.</i> ☑ <i>The site has existing access from the District Road with existing fencing on both sides. This road historically fragmented the valley-bottom vegetation and created a habitat barrier between the mountainous and valley landforms on the property. Cultivation on Site 3 would thus not create habitat fragmentation as the habitat is already fragmented.</i> ☑ <i>Existing river crossings will be upgraded, thus avoiding new impacts associated therewith.</i> ☑ <i>Soil and slope conditions are suitable for the proposed cultivation project.</i> ☑ <i>Severe bush encroachment has modified the natural composition and structure of vegetation with resultant loss of habitat for wildlife. The site is therefore not sensitive or important in terms of vegetation, biodiversity and habitat.</i> ☑ <i>Although the site pose some limitations and potential impacts, all can be overcome by implementing the recommended mitigation and the remaining areas of this site are very suitable for cultivation.</i> ☑ <i>The overall impact of this site is LOW.</i> 	<ul style="list-style-type: none"> ☒ <i>The riparian area along the Kgwete River is a sensitive area that may limit the proposed area of cultivation.</i> ! <i>Suitable ecological corridors must exist as a functional link between the up-stream and downstream areas of the Kgwete River and a 20m buffer along the river bank must be maintained.</i> ☒ <i>Three ephemeral drainage lines occur within this site that may limit the proposed area of cultivation. Furthermore, storm water emanating from up-land areas and the District Road discharge within these drainage lines which may lead to frequent run-off peaks after heavy rainfall. Existing road crossings and installation of irrigation infrastructure across these drainage lines may result in soil erosion.</i> ! <i>Buffers of 10m wide along the length of the ephemeral drainage lines must be maintained.</i> ! <i>Suitable erosion protection measures must be installed at the three road crossing to protect the bed and banks of the watercourse.</i> ☒ <i>The existing dam wall and road crossing across the Kgwete River is sensitive for soil erosion along its banks. A portion of the spillway is heavily eroded.</i> ! <i>Repair of the dam wall and spillway and erosion protection measures are required.</i> ☒ <i>An ESKOM servitude runs along the length of the site which may reduce arable land and / or the cultivation may impact negatively on the overhead electricity infrastructure.</i> ! <i>It is acceptable to conduct cultivation practices within the ESKOM servitude subject to it that the overhead power lines and electricity poles are not impacted. The electricity power line must remain accessible for maintenance purposes by ESKOM .</i>
11.4.4 ALTERNATIVE CULTIVATION SITES (CS4)	
ADVANTAGE <i>Positive impacts on ecological/social/economic/physical environments</i>	INVESTIGATION AND RECOMMENDATIONS ON PREVIOUSLY IDENTIFIED DISADVANTAGES / LIMITATIONS <i>Mitigation to negative impacts on ecological/social/ physical environments</i>
<ul style="list-style-type: none"> ☑ <i>Historic cultivation occurred on this site and the existing modification will result in less impact compared to a “green field” area.</i> ☑ <i>Soil and slope conditions are suitable for the proposed cultivation project.</i> ☑ <i>Severe bush encroachment has modified the natural composition and structure of vegetation with resultant loss of habitat for wildlife. The site is therefore not sensitive or important in terms of vegetation, biodiversity and habitat.</i> ☑ <i>Existing access from the District Road with fencing along the road already fragmented the habitat and the cultivation would not create new habitat fragmentation.</i> 	<ul style="list-style-type: none"> ☒ <i>An ephemeral drainage line occur within this site that may limit the proposed area of cultivation. Existing road crossings and installation of new crossings and irrigation infrastructure across this drainage line may result in soil erosion.</i> ! <i>A buffer of 10m wide along the length of the ephemeral drainage line must be maintained.</i> ! <i>Suitable erosion protection measures must be installed at the road crossing to protect the bed and banks of the watercourse.</i>

<ul style="list-style-type: none"> ☑ Although the site pose some limitations and potential impacts, all can be overcome by implementing the recommended mitigation and the remaining area of this site is very suitable for cultivation. ☑ The overall impact of this site is LOW. 	
11.4.5 ALTERNATIVE CULTIVATION SITES (CS5)	
ADVANTAGE <i>Positive impacts on ecological/social/economic/physical environments</i>	INVESTIGATION AND RECOMMENDATIONS ON PREVIOUSLY IDENTIFIED DISADVANTAGES / LIMITATIONS <i>Mitigation to negative impacts on ecological/social/ physical environments</i>
<ul style="list-style-type: none"> ☑ Historic cultivation occurred on this site and the existing modification will result in less impact compared to a “green field” area. ☑ Soil and slope conditions are suitable for the proposed cultivation project. ☑ Severe bush encroachment has modified the natural composition and structure of vegetation with resultant loss of habitat for wildlife. The site is therefore not sensitive or important in terms of vegetation, biodiversity and habitat. ☑ Existing access from the District Road with fencing along the road already fragmented the habitat and the cultivation would not create new habitat fragmentation. ☑ Although the site pose some limitations and potential impacts, all can be overcome by implementing the recommended mitigation and the remaining area of this site is very suitable for cultivation. ☑ The overall impact of this site is LOW. 	<ul style="list-style-type: none"> ☒ An ephemeral drainage line occurs within this site that may limit the proposed area of cultivation. Existing road crossings and installation of irrigation infrastructure across this drainage line may result in soil erosion. ! A buffer of 10m wide along the length of the ephemeral drainage line must be maintained. ! Suitable erosion protection measures must be installed at the road crossing to protect the bed and banks of the watercourse.
11.4.6 ALTERNATIVE CULTIVATION SITES (CS6)	
ADVANTAGE <i>Positive impacts on ecological/social/economic/physical environments</i>	INVESTIGATION AND RECOMMENDATIONS ON PREVIOUSLY IDENTIFIED DISADVANTAGES / LIMITATIONS <i>Mitigation to negative impacts on ecological/social/ physical environments</i>
<ul style="list-style-type: none"> ☑ Historic cultivation occurred on this site and the existing modification will result in less impact compared to a “green field” area. ☑ Soil and slope conditions are suitable for the proposed cultivation project. ☑ Severe bush encroachment has modified the natural composition and structure of vegetation with resultant loss of habitat for wildlife. The site is therefore not sensitive or important in terms of vegetation, biodiversity and habitat. ☑ Existing access from the District Road with fencing along the road already fragmented the habitat and the cultivation would not create new habitat fragmentation. ☑ Although the site pose some limitations and potential impacts, all can be overcome by implementing the recommended mitigation and the remaining area of this site is very suitable for cultivation. ☑ The overall impact of this site is LOW. 	<ul style="list-style-type: none"> ☒ Two ephemeral drainage lines occur within this site that may limit the proposed area of cultivation. Existing road crossings and installation of irrigation infrastructure across this drainage lines may result in soil erosion. ! Provision must be made to convey run-off along these drainage lines through the orchard by way of a constructed waterway without providing 10m wide buffers. ! Suitable erosion protection measures must be installed at the road crossing to protect the constructed waterways.

11.4.7 ALTERNATIVE CULTIVATION SITES (CS7)	
ADVANTAGE <i>Positive impacts on ecological/social/economic/physical environments</i>	INVESTIGATION AND RECOMMENDATIONS ON PREVIOUSLY IDENTIFIED DISADVANTAGES / LIMITATIONS <i>Mitigation to negative impacts on ecological/social/ physical environments</i>
<ul style="list-style-type: none"> ☑ <i>Historic cultivation occurred on this site and the existing modification will result in less impact compared to a “green field” area.</i> ☑ <i>Soil and slope conditions are suitable for the proposed cultivation project.</i> ☑ <i>Severe bush encroachment has modified the natural composition and structure of vegetation with resultant loss of habitat for wildlife. The site is therefore not sensitive or important in terms of vegetation, biodiversity and habitat.</i> ☑ <i>Existing access from the District Road with fencing along the road already fragmented the habitat and the cultivation would not create new habitat fragmentation.</i> ☑ <i>Although the site pose some limitations and potential impacts, all can be overcome by implementing the recommended mitigation and the remaining area of this site is very suitable for cultivation.</i> ☑ <i>The overall impact of this site is LOW.</i> 	<ul style="list-style-type: none"> ☒ <i>Two ephemeral drainage lines occur within this site that may limit the proposed area of cultivation. Existing road crossings and installation of irrigation infrastructure across this drainage lines may result in soil erosion.</i> ! <i>The eastern less prominent drainage line must convey run-off through the orchard by way of a constructed waterway without providing 10m wide buffers.</i> ! <i>The western drainage line is more prominent with larger catchment area. A buffer of 10m wide along the length of the ephemeral drainage line must be maintained.</i> ! <i>Suitable erosion protection measures must be installed at the road crossing to protect the natural drainage line and the constructed waterway.</i>
11.4.8 ALTERNATIVE CULTIVATION SITES (CS8)	
ADVANTAGE <i>Positive impacts on ecological/social/economic/physical environments</i>	INVESTIGATION AND RECOMMENDATIONS ON PREVIOUSLY IDENTIFIED DISADVANTAGES / LIMITATIONS <i>Mitigation to negative impacts on ecological/social/ physical environments</i>
<ul style="list-style-type: none"> ☑ <i>Soil and slope conditions are suitable for the proposed cultivation project.</i> ☑ <i>Less severe bush encroachment has modified the natural composition and structure of vegetation with resultant loss of habitat for wildlife. The site is therefore not sensitive or important in terms of vegetation, biodiversity and habitat.</i> ☑ <i>Existing access from the District Road with fencing along the road already fragmented the habitat and the cultivation would not create new habitat fragmentation.</i> ☑ <i>Although the site pose some limitations and potential impacts, all can be overcome by implementing the recommended mitigation and the remaining area of this site is very suitable for cultivation.</i> ☑ <i>The overall impact of this site is LOW.</i> 	<ul style="list-style-type: none"> ☒ <i>An ephemeral drainage line occurs within this site that may limit the proposed area of cultivation. Existing road crossings and installation of irrigation infrastructure across this drainage line may result in soil erosion.</i> ! <i>Provision must be made to convey run-off along this drainage lines through the orchard by way of a constructed waterway without providing 10m wide buffers.</i> ! <i>Suitable erosion protection measures must be installed at the road crossing to protect the constructed waterways.</i>
11.4.9 ALTERNATIVE CULTIVATION SITES (CS9)	
ADVANTAGE <i>Positive impacts on ecological/social/economic/physical environments</i>	INVESTIGATION AND RECOMMENDATIONS ON PREVIOUSLY IDENTIFIED DISADVANTAGES / LIMITATIONS <i>Mitigation to negative impacts on ecological/social/ physical environments</i>
<ul style="list-style-type: none"> ☑ <i>Soil and slope conditions are suitable for the proposed cultivation project.</i> ☑ <i>Less severe bush encroachment has modified the natural composition and structure of vegetation with resultant loss of habitat for wildlife. The site is therefore not sensitive or important in terms of vegetation, biodiversity and habitat.</i> 	<ul style="list-style-type: none"> ☒ <i>An ephemeral drainage line occurs within this site that may limit the proposed area of cultivation. Existing road crossings and installation of irrigation infrastructure across this drainage line may result in soil erosion.</i> ! <i>Provision must be made to convey run-off along this drainage lines through the orchard</i>

<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Existing access from the District Road with fencing along the road already fragmented the habitat and the cultivation would not create new habitat fragmentation. <input checked="" type="checkbox"/> Although the site pose some limitations and potential impacts, all can be overcome by implementing the recommended mitigation and the remaining area of this site is very suitable for cultivation. <input checked="" type="checkbox"/> The overall impact of this site is LOW. 	<p>by way of a constructed waterway without providing 10m wide buffers.</p> <p>! Suitable erosion protection measures must be installed at the road crossing to protect the constructed waterways.</p>
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11.4.10 NO-GO ALTERNATIVES – (KEEP STATUS QUO)	
ADVANTAGE OF THE ORCHARD ESTABLISHMENTS NOT OCCURRING	DISADVANTAGE OF THE ORCHARD ESTABLISHMENTS NOT OCCURRING
<p>? If the project is not to go ahead, the advantages are that the implies that the current terrestrial and aquatic vegetation and biodiversity can be retained although their current importance and sensitivity are already low due to historic modification and current encroachment by listed alien and indigenous invasive species may remain unattended which may lead to further biodiversity degradation.</p> <p>? If the project is not to go ahead, no new impacts will occur on watercourses, however existing impacts on the watercourses may remain un-attended and un-rehabilitated which may lead to further soil erosion and watercourse degradation.</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> The large extent of bush encroachment will continue to spread and diminish the current fragmented animal and plant habitats. <input checked="" type="checkbox"/> Lose the opportunity to rehabilitate the current erosion damage evident in watercourses, ephemeral systems and at a dam wall. <input checked="" type="checkbox"/> The option of not implementing the activity may result in a financial loss for the Land Owner and may impact his right to utilise the property according to the approved land use zoning (agriculture). <input checked="" type="checkbox"/> The option of not implementing the activity would constitute wastage of high potential agricultural land and would defy the objectives of the National, Provincial and Local economic development goals of growth in the agricultural sector in support of long and short term direct and indirect job creation and resultant poverty alleviation.

11.5 FINDINGS OF THE COMPARATIVE ASSESSMENT

- The purpose of the comparative assessment was to analyse the selected project alternatives in terms of their advantages (positive impacts), disadvantages (negative impacts) and mitigation potential as a further method of impact identification and of finalising the development footprint within the selected and approved site (property).
- The assessment revealed overwhelmingly more advantages (positive impacts) compared to disadvantages (negative impacts) on each of the selected sites. The assessment further identified feasible mitigation potential [!] with regard to identified site limitations / disadvantages (negative impacts) on each of the selected sites.
- The assessment of the “no-go” alternative indicates a substantial ecological, economic and social disadvantage if the proposed development does go-ahead on the selected sites.

In conclusion, it can be stated that the preferred alternatives as indicated in Section C and their locality as indicated in the cultivation layout plan (Appendix A) can be considered as the selected site alternatives and development footprint as their selection and footprint would not pose any overwhelming disadvantage or negative impact, also considering the potential of feasible mitigation of identified impacts. In the following Section potential impacts and risks that are associated with the selected site alternatives and development footprint are assessed in terms of their significance by applying the impact ranking method.

12. IMPACT ASSESSMENT RANKING METHOD

The impact ranking assessment method is used to assess the nature, magnitude, extent and duration of potentially significant impacts of the selected project alternatives after which a range of mitigation measures is considered that could be implemented to lessen the impacts of the activity. The ranking results in a significance rating of residual impacts i.e. impacts that remain after taking mitigation measures into account. The ranking method that is used is indicated in the three tables below.

12.1 IMPACT ASSESSMENT RANKING METHOD				
Nature of Potential Impact	Rating or Category	Ranking		Description of Impact on the Environment
Period	Planning	PI	-	Project planning and decision-making phase.
	Construction	Co	-	Construction phase
	Operational	Op	-	Operational phase
Extent	Site	S	1	Limited to the site and its immediate surroundings.
	Local	L	2	Up to 5km from the project site.
	Regional	R	3	Beyond 5km of the site. Up to a 20km radius from the project site.
	Province/National	P	4	Will affect beyond 20km from the site.
Duration	Short term	S	1	Not applicable or construction and early operation 0 - 5 years.
	Medium-term	M	2	Operational phase up to 25 years.
	Long term	L	3	Operational phase is longer than 25 years.
	Permanent	P	4	The impact will continue after the operational phase.
Intensity / Consequence or Severity	Very low	L-	0	None or limited damage to a small area. Natural, cultural or social functions or processes are not affected/negligible.
	Low	L	1	Marginal damage. Natural, cultural or social functions or processes can / will be only marginally affected.
	Medium	M	2	Moderate damage. Natural, cultural or social functions or processes can / will be notably altered but can continue although in a modified way /state.
	High	H	3	Severe damage. Natural, cultural or social functions or processes can / will be altered to the extent that they temporarily cease.
	Very high	H+	4	Irreparable damage. Natural, cultural or social functions or processes can / will be altered in such a way that they will permanently cease.
Probability	Unlikely	U	1	Less than 5% probability that impact may occur.
	Probable	P	2	There is a good chance that the impact may occur (6-49%)
	Very likely	VI	3	Likely that the impact will occur, (50 – 94%)
	Definite	D	4	More than 95% probability that impact may occur.
Degree of loss of irreplaceable resources	Low	L	1	Not likely that there will be an irreplaceable loss of resources.
	Probable	P	2	There is a good chance of loss of irreplaceable resources.
	Very likely	VI	3	More than 50% probability of loss of irreplaceable resources.
	Definite	D	4	More than 90% probability of loss of irreplaceable resources.
Significance	See significance ratings in Table I2.2			Significance rating without applying mitigation measures.
Mitigation potential	See mitigation measures in Table I1.2.3		-1/-5	Mitigation measures and objectives and ranking in the table below.

(Impact rating: 0 = Lowest / 4 = Highest)

“Significant impact” means an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.

I2.2 CRITERIA FOR DETERMINING IMPACT SIGNIFICANCE				
Significance	Rating or Category	Ranking		Description of Impact on the Environment
	Neutral	N	0	Zero significance
	Low (Normally acceptable)	L	0-5	The impact is likely to be very low and mitigation is not required. Impacts have little real effect/ mitigation is easily achieved.
	Medium (Can be acceptable with mitigation).	M	6-10	Moderate impact and mitigation is both feasible and fairly easily possible but may influence the decision if not mitigated / or modification of the project design or alternative action may be required.
	High (Normally unacceptable).	H	11-15	Mitigation is essential to reduce to an acceptable level, mitigation is difficult, time-consuming and/expensive and may affect the decision to continue or approve.
	Very high (Unacceptable).	>H	16-20	No possible mitigation or mitigation is extremely difficult, time-consuming and/or expensive. The decision to approve will be affected
Status of the impact	Positive or Negative	+	-	Status of the impact: positive (benefits) or negative (costs).

I2.3 RANKING MODEL : MITIGATION ACTIONS THAT ARE AIMED AT REDUCING UNACCEPTABLE IMPACTS			
Mitigation objective	Ranking		The degree to which negative impacts can be mitigated
Avoidance / prevention	AP	-5	Measures are taken to anticipate and prevent adverse environmental impacts before actions or decisions are taken that could lead to such impacts. This approach is most effective when applied in the earliest stages of project planning. Project alternatives can also form part of avoidance mitigation measures (see Section I1.4) with the aim of identifying the best environmental option and incorporating the selected alternatives in the planning of the proposed orchard establishment
Minimise / Reduce	MI	-4	Measures are taken to reduce the duration, intensity, extent and significance of environmental impacts cannot be completely avoided. This can be achieved by scaling down, relocating, or redesigning elements of a project.
Rehabilitate	RE	-3	Measures are taken to repair/restore degradation or damage to specific environmental features and ecosystem services of concern following project impacts that cannot be completely avoided and/or minimized.
Compensate / Off-set	CO	-2	Measurable conservation outcomes resulting from actions designed to remedy the negative impacts of development which remain after measures to avoid, minimize and rehabilitate have been taken into account. Creation, enhancement, or protection of the same type of resource at another suitable and acceptable location, compensating for lost resources.
Preservation	Ps	-1	Preventing any future actions that might adversely affect an environmental resource. This is typically achieved by extending legal protection to selected resources beyond the immediate needs of the project.

Mitigation rating: -4= Most favourable / -1=Least Favourable

I2.4 IDENTIFICATION OF POTENTIAL SIGNIFICANT IMPACTS BY WAY OF MATRIX RANKING METHOD

The adapted Environmental Impact Identification Matrix method has the following objectives:

- The matrix method **identifies positive and negative impacts/risks** that selected land use and technology alternatives may pose on the receiving environment and where relevant identify the impacts/risks that the receiving environment may pose on the proposed development.
- The matrix method predicts the **significance** (quantitative and qualitative) of negative impacts/risks that may be posed by the selected land use and technology alternatives.
- The matrix method provides a **comparative ranking** of the land use and technology alternatives to facilitate the identification of potentially significant impacts / key issues that need to be put forward for additional assessment in Section K where specific mitigation descriptions are required.

I2.5 ADAPTED MATRIX IMPACT RANKING METHOD		PROJECT DESCRIPTION: PROPOSED CULTIVATION ON THE REMAINDER OF DOORNHOEK 451-KT																									
LEGEND		ALTERNATIVE CULTIVATION SITES												SIGNIFICANCE ASSESSMENT													
POTENTIALLY SIGNIFICANT IDENTIFIED IMPACTS/RISKS		S ₁ Cultivation site 1	S ₂ Cultivation site 2	S ₃ Cultivation site 3	S ₄ Cultivation site 4	S ₅ Cultivation site 5	S ₆ Cultivation site 6	S ₇ Cultivation site 7	S ₈ Cultivation site 8	S ₉ Cultivation site 9							No-go alternative	Period	Extent	Duration	Consequence / intensity	Probability	Irreplaceable loss of resources	Impact significance w/o mitigation	Degree of impact mitigation	Predicted residual impact / risk	Residual impact significance rating
POTENTIALLY NEGATIVE ○ Indirect ● Direct																											
POTENTIALLY POSITIVE □ Indirect ■ Direct																											
NOT APPLICABLE OR NO ANTICIPATED IMPACT [-]																											
RECEIVING ENVIRONMENT	POTENTIAL IMPACTS/RISKS OF THE CULTIVATION PROJECT																										

I-1. LAND USE & INFRASTRUCTURE	Vacant arable land	■	■	■	■	■	■	■	■	■																	
	Municipal Land use zoning (Agriculture)	■	■	■	■	■	■	■	■	■																	
	Access to provincial road (accessibility)	-	-	■	■	■	■	■	■	■																	
	Access to electricity	-	-	■	-	-	-	-	-	-																	
I-2. IMPACTS OF TERRAIN FORM	Land form type	■	■	■	■	■	■	■	■	■																	
	Land form stability	■	■	■	■	■	■	■	■	■																	
I-3. IMPACTS OF TERRAIN GRADIENT	Gradient steeper than 20%	-	-	-	-	-	-	-	-	-																	
	Gradient less than 20%	■	■	■	■	■	■	■	■	■																	
I-4.1 IMPACT OF LOCAL GEOLOGY	Type and depth to parent material	●	■	■	■	■	■	■	■	■																	
	Fault lines / unstable rock	-	-	-	-	-	-	-	-	-																	
I-4.2 IMPACTS OF LOCAL SOIL CONDITIONS	Effective soil depth	●	■	■	■	■	■	■	■	■																	
	Soil clay content	●	■	■	■	■	■	■	■	■																	
	Soil internal drainage	●	■	■	■	■	■	■	■	■																	
	Hard layers	●	-	-	-	-	-	-	-	-																	
	Saturated soils	-	-	-	-	-	-	-	-	-																	
	Erosion hazard	-	●	●	●	●	●	●	●	●	●																
I-5. IMPACTS OF CLIMATE AND CLIMATE CHANGE	Mean annual rainfall	■	■	■	■	■	■	■	■	■																	
	Mean annual temperature	■	■	■	■	■	■	■	■	■																	
	Climate change variances	-	-	-	-	-	-	-	-	-																	
	Climate change induced hazards	-	-	-	-	-	-	-	-	-																	
	Climate change vulnerabilities	-	-	-	-	-	-	-	-	-																	
I-6. CHANGES TO SURFACE DRAINAGE AND WATER QUALITY	Changes to existing instream dam / crossings	-	■	■	-	-	-	-	-	-																	
	Changes to watercourse bed & banks	-	●	●	●	●	●	●	●	●																	
	Drainage line impediment / altering flow	-	●	●	●	●	●	●	●	●																	
	Surface water quality	○	○	○	○	○	○	○	○	○																	

I2.5 ADAPTED MATRIX IMPACT RANKING METHOD		PROJECT DESCRIPTION: PROPOSED CULTIVATION ON THE REMAINDER OF DOORNHOEK 451-KT																											
LEGEND		ALTERNATIVE CULTIVATION SITES												SIGNIFICANCE ASSESSMENT															
RECEIVING ENVIRONMENT	POTENTIAL IMPACTS/RISKS OF THE CULTIVATION PROJECT	S ₁ Cultivation site 1	S ₂ Cultivation site 2	S ₃ Cultivation site 3	S ₄ Cultivation site 4	S ₅ Cultivation site 5	S ₆ Cultivation site 6	S ₇ Cultivation site 7	S ₈ Cultivation site 8	S ₉ Cultivation site 9									No-go alternative	Period	Extent	Duration	Consequence / intensity	Probability	Irreplaceable loss of resources	Impact significance w/o mitigation	Degree of impact mitigation	Predicted residual impact / risk	Residual impact significance rating
		POTENTIALLY SIGNIFICANT IDENTIFIED IMPACTS/RISKS																											
	POTENTIALLY NEGATIVE	○ Indirect			● Direct																								
	POTENTIALLY POSITIVE	□ Indirect			■ Direct																								
	NOT APPLICABLE OR NO ANTICIPATED IMPACT	[-]																											

I-7. CHANGES TO GROUNDWATER QUANTITY AND QUALITY	Groundwater availability	□	□	□	□	□	□	□	□	□									-	-	-	-	-	-	-	-	-	-	-
	Groundwater sustainability	□	□	□	□	□	□	□	□	□									-	-	-	-	-	-	-	-	-	-	-
	Groundwater quality	□	□	□	□	□	□	□	□	□									-	-	-	-	-	-	-	-	-	-	-
	Aquifer contamination vulnerability	-	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-
	Aquifer contamination susceptibility	-	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-
I-8. CHANGES TO LAND COVER / VEGETATION	Vulnerable ecosystem	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-
	Old lands – Low Impact	□	□	□	□	-	□	□	-	-								-	●	-	-	-	-	-	-	-	-	-	-
	Modified – vegetation – Low impact	□	□	□	□	□	□	□	□	□								-	●	-	-	-	-	-	-	-	-	-	-
	Modified by structures/land use – Low impact	-	-	□	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-
	Modified by roads and electricity servitudes	-	-	●	●	●	●	●	●	●	●								-	PL	1	3	3	1	1	9	-5	4	L
	Already fragmented habitats	□	□	□	□	□	□	□	□	□	□								-	-	-	-	-	-	-	-	-	-	-
Ecosystem services	-	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	
I-9. IMPACTS & RISKS TO TERRESTRIAL AND AQUATIC BIODIVERSITY	CBA Irreplaceable (CBA 1)	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	
	CBA Optimal (CBA 2)	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	
	ESA level 1	○	○	○	○	○	○	○	○	○	○							-	●	C/O	2	3	2	3	2	12	-5	7	M
	ESA level 2	-	-	-	-	-	-	-	○	○	○							-	●	C/O	2	3	2	3	2	12	-5	7	M
	Other Natural Area (ONA)	-	-	-	-	-	-	-	-	-	-							-	-	-	-	-	-	-	-	-	-	-	
	No Remaining Natural Habitat	-	-	-	-	-	-	-	-	-	■							-	-	-	-	-	-	-	-	-	-	-	
I-10. IMPACTS AND RISKS TO FRESH-WATER ECOLOGY	Catchment FEPA (Category D)	○	○	○	○	○	○	○	○	○								-	-	C/O	2	3	2	3	2	12	-5	7	M
	Wetland FEPA	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	
	Wetland clusters	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	
	Fish sanctuaries	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	
	ESA Fish support areas	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	
	Upstream management area	○	○	○	○	○	○	○	○	○	○							-	-	C/O	2	3	2	3	2	12	-5	7	M
	Phase 2 FEPA	-	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	

12.5 ADAPTED MATRIX IMPACT RANKING METHOD		PROJECT DESCRIPTION: PROPOSED CULTIVATION ON THE REMAINDER OF DOORNHOEK 451-KT																															
LEGEND		ALTERNATIVE CULTIVATION SITES														SIGNIFICANCE ASSESSMENT																	
POTENTIALLY SIGNIFICANT IDENTIFIED IMPACTS/RISKS		S ₁ Cultivation site 1	S ₂ Cultivation site 2	S ₃ Cultivation site 3	S ₄ Cultivation site 4	S ₅ Cultivation site 5	S ₆ Cultivation site 6	S ₇ Cultivation site 7	S ₈ Cultivation site 8	S ₉ Cultivation site 9											No-go alternative	Period	Extent	Duration	Consequence / intensity	Probability	Irreplaceable loss of resources	Impact significance w/o mitigation	Degree of impact mitigation	Predicted residual impact /risk	Residual impact significance rating		
POTENTIALLY NEGATIVE																																	
POTENTIALLY POSITIVE																																	
NOT APPLICABLE OR NO ANTICIPATED IMPACT [-]																																	
RECEIVING ENVIRONMENT	POTENTIAL IMPACTS/RISKS OF THE CULTIVATION PROJECT																																

I-11. IMPACTS AND RISKS ON SENSITIVE SPECIES	Strategic water resource areas	-	-	-	-	-	-	-	-	-																												
	Ecosystem services	-	-	-	-	-	-	-	-	-																												
	SCC Plant species	-	-	-	-	-	-	-	-	-																												
	SCC Animal species	-	-	-	-	-	-	-	-	-																												
	NFA Protected species	-	-	-	-	-	-	-	-	-																												
	LNCA Protected species	-	-	-	-	-	-	-	-	-																												
I-12. IMPACTS ON HERITAGE SITES	NEMBA Protected species	-	-	-	-	-	-	-	-	-																												
	Cultural sites/ historic landmarks	-	-	-	-	-	-	-	-	-																												
	Graves / burial sites	-	-	-	-	-	-	-	-	-																												
	Sites of archaeological importance	-	-	-	-	-	-	-	-	-																												
	Sites of paleontological importance	-	-	-	-	-	-	-	-	-																												
-13. IMPACTS ON GRAPHIC AREAS SENSITIVE GEO-	Other	-	-	-	-	-	-	-	-	-																												
	National protected area buffer (10km)	-	-	-	-	-	-	-	-	-																												
	Provincial protected area buffer (5km)	-	-	-	-	-	-	-	-	-																												
	Private/other protected areas (1km)	-	-	-	-	-	-	-	-	-																												
	Protected area expansion strategy	-	-	-	-	-	-	-	-	-																												
	World heritage site	-	-	-	-	-	-	-	-	-																												
	Biosphere region core area	-	-	-	-	-	-	-	-	-																												
	International convention area	-	-	-	-	-	-	-	-	-																												
	Sensitive areas identified in EMF's	-	-	-	-	-	-	-	-	-																												
Land use compatibility	■	■	■	■	■	■	■	■	■	■																												

I2.5 ADAPTED MATRIX IMPACT RANKING METHOD		PROJECT DESCRIPTION: PROPOSED CULTIVATION ON THE REMAINDER OF DOORNHOEK 451-KT																									
LEGEND		ALTERNATIVE CULTIVATION SITES													SIGNIFICANCE ASSESSMENT												
POTENTIALLY SIGNIFICANT IDENTIFIED IMPACTS/RISKS		S ₁ Cultivation site 1	S ₂ Cultivation site 2	S ₃ Cultivation site 3	S ₄ Cultivation site 4	S ₅ Cultivation site 5	S ₆ Cultivation site 6	S ₇ Cultivation site 7	S ₈ Cultivation site 8	S ₉ Cultivation site 9							No-go alternative	Period	Extent	Duration	Consequence / intensity	Probability	Irreplaceable loss of resources	Impact significance w/o mitigation	Degree of impact mitigation	Predicted residual impact /risk	Residual Impact significance rating
POTENTIALLY NEGATIVE ○ Indirect ● Direct																											
POTENTIALLY POSITIVE □ Indirect ■ Direct																											
NOT APPLICABLE OR NO ANTICIPATED IMPACT [-]																											
RECEIVING ENVIRONMENT	POTENTIAL IMPACTS/RISKS OF THE CULTIVATION PROJECT																										

I-14.1 IMPACTS ON SURROUNDING LAND USES	Residential uses – rural & informal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Commercial uses - urban	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Institutional uses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tourism uses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Commercial agriculture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subsistence agriculture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Agricultural industries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Protected areas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I-14.2 IMPACTS ON EXISTING INFRA-STRUCTURE AND PUBLIC SERVICES	Roads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Stormwater infrastructure	-	-	-	○	○	○	○	○	○									PL	1	3	2	2	1	9	-4	5	L
	Downstream domestic water supply	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Downstream irrigation water supply	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electricity supply infrastructure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Waste disposal / waste site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I-15 CHANGES TO THE SENSORY ENVIRONMENT	Change in the sense of place	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Change in the visual environment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Change in the acoustic environment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Change in the ambient air quality	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
I-16 IMPACT AND RISK OF WASTE AND POLLUTION	General waste sources	■	○	○	○	○	○	○	○	○								■	C/O	1	3	0	2	1	7	-4	3	L
	Hazardous waste sources	○	○	○	○	○	○	○	○	○								■	C/O	1	3	1	1	1	7	-5	2	L
	Point source contamination risk	○	○	○	○	○	○	○	○	○								■	C/O	1	3	1	1	1	7	-5	2	L
	Non-point sources contamination risk	○	○	○	○	○	○	○	○	○								■	C/O	1	3	1	1	1	7	-5	2	L

13 CUMULATIVE IMPACT ASSESSMENT

This section provides a full description of the process followed to assess each identified potentially significant cumulative impact and risk within the approved site as contemplated in the accepted scoping report as required in GN R 326 of 17 April 2017, Appendix 3 Section 1 (j).

A “**Cumulative impact**”, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities [DEA 2017].

13.1 OBJECTIVES OF CUMULATIVE IMPACT ASSESSMENT

The aim is to determine if the combined impacts of the project and activities will result in a condition that may put the sustainability of the valued environmental and social components at risk.

13.2 RAPID CUMULATIVE IMPACT ASSESSMENT MODEL (RCIA)

The methodology for the Rapid Cumulative Impact Assessment (RCIA) follows the five-step approach as proposed by the IFC Good Practice Handbook (Cardinale & Greig, 2013).

Step 1: Selection of valued environmental and social components (VESC).

This method considers fifteen selected baseline environmental and social components (refer to Section F) namely: Groundwater, Climate Change, Surface Water (hydrology), Land cover (vegetation), Terrestrial biodiversity, Aquatic Biodiversity and Freshwater Ecology, Heritage Environment, Sensitive Geographic Areas, Land Use & Infrastructure, Acoustic Environment, Visual Environment, Air Quality, Pollution & Waste, Social Environment and the Economic Environment.

Step 2 : Determine the spatial contexts of VESCs

The spatial boundaries selected in this model include (a) the site, (b) the immediate surrounding area up to 500m, (c) the local area and (d) the municipality area.

Step 3 : Determine the temporal boundaries of VESCs

Is to consider the trend of each of the identified VESCs in terms of duration, frequency and reversibility.

Step 4 : Consider the cumulative impacts of VESCs.

Consider the trend of each of the identified VESCs in terms of magnitude and probability (how substantial the predicted residual effect is) and the likelihood of the residual effect.

Step 5 : Assign a cumulative significance prediction ranking of VESCs

The cumulative prediction assigns a low, moderate or high significance ranking on the identified VESCs.

Step 6 : Assigns a positive or negative cumulative prediction

Considering the past, current and predicted mitigated future effects on / to the VESCs, an overall positive or negative cumulative prediction can be assigned to the VESCs.

13.3 CUMULATIVE IMPACT ASSESSMENT MODEL LIMITATIONS

The limitations of the RCIA during the scoping process has been addressed as follows:

- **Data** – data used in the cumulative impact assessment was from preliminary primary data collection and largely from secondary sources. The latest primary data as provided by specialist on-site verification and specialist studies is being considered in the assessment.
- **Public consultation** –an initial public participation process was conducted and relevant comments are being considered in the assessment.

I3-4 RAPID CUMULATIVE IMPACT IDENTIFICATION AND PREDICTION MODEL			Step 1 Valued Environmental and Social Components (VESC)															
PROPOSED CULTIVATION FARMING ON THE REMAINDER OF THE FARM DOORNHOEK 451-IT FETAKGOMO TUBATSE MUNICIPAL AREA			GW=Groundwater CC=Climate change SW=Surface water LC=Land cover TB=Terrestrial biodiversity					AB=Aquatic Biodiversity HE=Heritage Environment SG=Sensitive Geographic Areas LU=Land Use & Infrastructure AE=Acoustic Environment VE=Visual Environment				AQ=Air Quality PW=Pollution & waste SE=Social Environment EE=Economic Environment N/A=None/ Not applicable Blank=No cumulative effect						
			Cumulative prediction criteria with mitigation included			GW	CC	SW	LC	TB	AB	HE	SG	LU	AE	VE	AQ	PW
Step 2	Spatial extent : the spatial occurrence of past, present and future additive / interactive impact components																	
Footprint area	The land/project site (potential cumulative effect remains within the site).		X	N/A	N/A	X	X		X	N/A	X	X	X	X	X	X	X	X
Immediate area	The area directly surrounding the project site (500 m).						X	X			X		X	X	X	X	X	X
Local area	The Kaspersnek valley / sub-catchment area.							X								X	X	
Sub-regional area	The Ward Area area / regional water catchment areas.															X	X	
Step 3	Temporal Context																	
Duration Period of the event causing the effect.	Short-term	Event occurs during the extent of clearing and construction through to project commissioning.																
	Mid-term	Event occurs during the first 10 years of operations.																
	Long-term	Ongoing event that extends greater than 10 years, over the life of the project and beyond.															X	X
Frequency How often would the event that caused the effect occur?	Accidental	Event occurs rarely over the life of the Project.																
	Isolated	Event is confined to a specified Project activity. Occasional event occurs intermittently and sporadically.																
	Occasional	Event occurs intermittently and sporadically over the life of the project.																
	Periodic	Event occurs intermittently however, repeatedly over the life of the project.																
Reversibility Period of time over which the effect extends.	Continuous	Event occurs continually over the life of the project.														X	X	
	Short-term	Event is limited to the project construction through to commissioning																
	Mid-term	Event extends during the first 10 years of operations.																
	Long-term	Event extends beyond the first 10 years of operations.														X	X	
	Permanent	The event is irreversible.																

RAPID CUMULATIVE IMPACT PREDICTION MODEL		Valued Environmental and Social Components (VESC)														
Cumulative impact prediction		GW	CC	SW	LC	TB	AB	HE	SG	LU	AE	VE	AQ	PW	SE	EE
Step 4.1	Residual Magnitude															
Negligible	No detectable change from existing (baseline) conditions.															
Low	Change is detectable and results in a limited effect on the VESC.															
Medium	Change is detectable and results in a moderate effect on the VESC.														X	X
High	Change is detectable and results in a severe effect on the VESC.															
Step 4.2	Residual Probability															
Low	Unlikely															
High	Likely														X	X
Step 5	Cumulative Significance Prediction															
Low Cumulative Impact																
Moderate Cumulative Impact															X	X
High Cumulative Impact																
Step 6	Positive or Negative cumulative significance predictions															
Null	The cumulative effect has no net loss or net benefit.															
Positive	Predictive significance outcome poses a positive cumulative impact														X	X
Negative	Predictive significance outcome poses a negative cumulative impact															

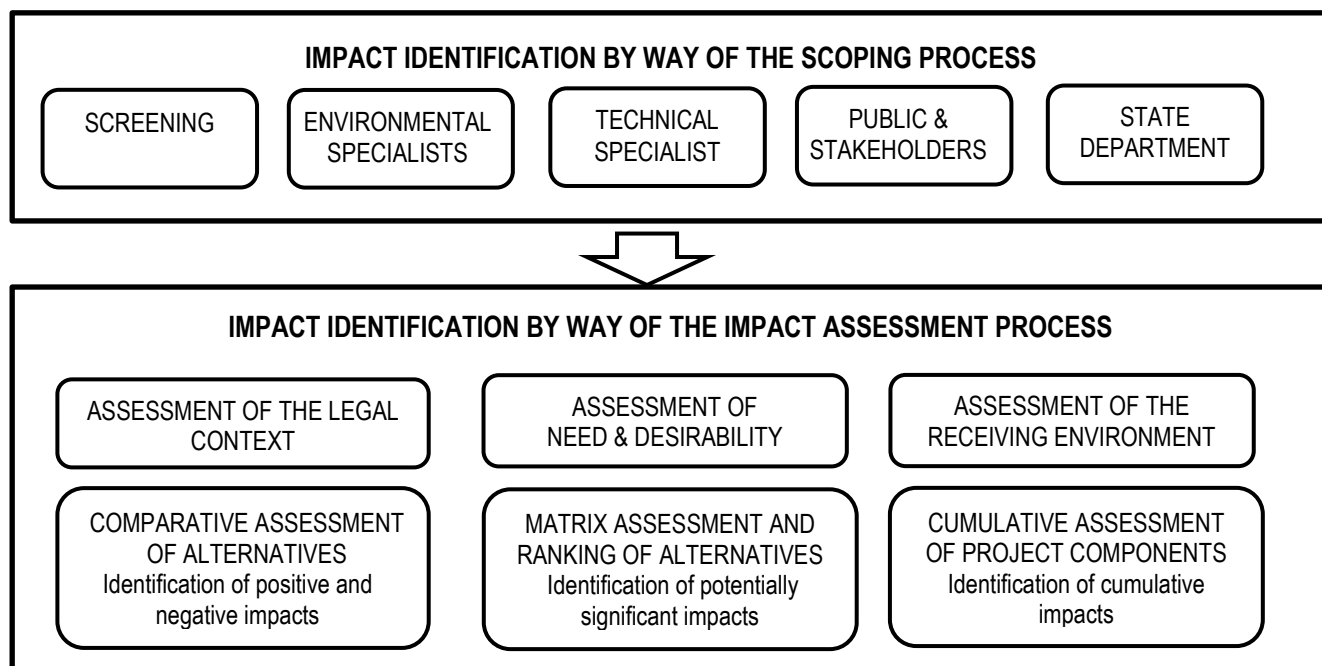
13.5 FINDINGS CUMULATIVE IMPACT PREDICTION

The impacts on/of most VESCs can be contained and or mitigated within the site and immediate surrounding area thus preventing or minimising any off-site cumulative impacts. Two project VESCs were identified that may pose additive or interactive cumulative impacts in the sub-regional area namely social and economic components. The socio-economic advantages would pose an overall positive cumulative effect on the local and surrounding communities in terms of short-term and permanent employment opportunities, local economic growth and ultimately contribute to poverty alleviation and overall a positive lookout on general livelihood for poverty stricken communities in the Ward Area.

SUMMARY OF IMPACT IDENTIFICATION

This section provides a description of the process followed to identify the impacts that the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, and a description of all environmental issues and risks that were identified during the scoping and environmental impact assessment process; as required in GN R326 of 17 April 2017, Appendix 3 Section 3(i)(i).

J1 THE IMPACT IDENTIFICATION PROCESS / METHOD



J2 DESCRIPTION OF POTENTIALLY SIGNIFICANT IMPACTS

The potentially negative impacts with a significance prediction ranking of “medium” to “very high” as indicated in the Matrix Ranking Table (Section I2.5), as well as the potential negative cumulative impacts/risk as predicted in the Rapid Cumulative Impact Identification and Prediction model (Section I3) is summarized in the table below.

J2.1	BROAD ISSUE CATEGORIES	POTENTIAL IMPACTS / RISKS
IMPACTS ON SOIL	Vegetation clearing and ridging earth works for orchard establishment and management roads will lead to soil erosion and loss of topsoil.	<i>The loss of topsoil and vegetative matter over the surface area of the cultivation site may leave bare and disturbed soil surfaces which may lead to sheet erosion by run-off over the lifetime of the orchard and can further result in the complete loss of topsoil and the deposition of sediment along the edges of the orchard.</i>
		<i>Dumping of topsoil and spoil material on the edge of the cultivation site during site establishment may impede natural run-off towards drainage lines and may channel such run-off towards areas sensitive to erosion.</i>
		<i>Channel and gully erosion of soil surfaces may occur from planting ridge contours and dumped spoil material which may over time degrade the land cover adjacent to the orchard.</i>
		<i>Re-compaction of the soil by heavy equipment during and after orchard establishment will affect the soil’s ability to absorb water which then accelerates run-off and poses a risk of soil erosion.</i>

J2.2	BROAD ISSUE CATEGORIES	IMPACTS / RISKS
IMPACTS ON SURFACE WATERCOURSES	Construction of waterways, ridges, roads and pipeline crossings within the orchards and gauging weir may alter and impede natural flow and deteriorate water quality and freshwater ecology..	<i>Construction work can lead to soil erosion and poor water quality downstream as a result of soil sediment deposition in the Kgwete River which will impact negatively on the local freshwater ecosystem.</i>
		<i>Run-off discharge from the orchard to adjacent drainage lines may result in soil erosion and the unnatural build-up of silt in the adjacent drainage lines which may alter the vegetation composition over time and which may lead to the loss of the natural filter and sink functions of the riparian zone.</i>
		<i>Earthworks and construction of roads and pipelines and gauging weir over watercourses may lead to flow impediment and flow deviation of run-off.</i>
	Repair and maintenance of the existing dam, dam wall and spillway, maintenance of the existing spill weir and construction of a new gauging weir may impact on aquatic biodiversity and freshwater ecology of the Kgwete River.	<i>Construction / repair of the dam wall, spillway and gauging weir may cause sediment deposition in the Kgwete River in large volumes which may negatively impact water quality, freshwater habitats and aquatic biodiversity.</i>
		<i>The dam walls can be exposed to soil erosion, land sliding and loss of dam wall stability and resultant sediment deposition.</i>
		<i>Poor maintenance of the dam wall embankments, spillway and weirs may lead to dam failure and potential significant degradation of the Kgwete River.</i>
		<i>Periodic maintenance and removal of silt from the dam may impact water quality.</i>

J2.3	BROAD ISSUE CATEGORIES	IMPACTS / RISKS
IMPACTS ON REMAINING BIODIVERSITY	Vegetation clearing may impact negatively on ecological services and biodiversity.	<i>Clearing of vegetation for orchard establishment along the Kgwete River can result in disturbance of the riparian zone that is important for maintaining freshwater ecology and an aquatic corridor for up-stream and downstream connectivity.</i>
		<i>Clearing of vegetation within and along ephemeral drainage lines that conveys significant run-off from the mountainous areas towards the Kgwete River may result in gully erosion.</i>
		<i>Indiscriminate vegetation clearing and careless operation of earth moving machinery along the edges of the cultivation site and disposal of topsoil, spoil and vegetative matter within the drainage lines will result in alteration of run-off flow paths, scoring and silt deposition downstream with resultant impact on riparian vegetation along the Kgwete River.</i>
		<i>The removal of indigenous vegetation within the cultivation site and resultant soil disturbance may create suitable conditions for the establishment of alien invader plants throughout the lifetime of the new orchards.</i>
		<i>Necessary perimeter fencing may lead to the permanent fragmentation of important habitats of local wildlife and impairment of ecological functions. However, keep in mind that the habitat is already degraded and fragmented</i>

4	BROAD ISSUE CATEGORIES	IMPACTS / RISKS
HAZARD AND POLLUTION IMPACTS	General hazards, risk and pollution may occur as a result of the orchard establishment operational farming activities	<i>Improper conduct of staff may lead to careless and destructive actions with resulting environmental degradation.</i>
		<i>Open work sites and pipeline trenches may pose a hazard to humans and animal.</i>
		<i>Fire hazards may pose a risk to property.</i>
		<i>Solid waste from orchard establishment and from operational activities may contaminate natural veld and watercourses.</i>
		<i>Solid litter pollution can affect the in-stream and riparian habitat through the transport of pathogens and interference with natural stream flow.</i>

4	BROAD ISSUE CATEGORIES	IMPACTS / RISKS
HAZARD AND POLLUTION IMPACTS	General hazards, risk and pollution may occur as a result of the orchard establishment operational farming activities	<i>Improper conduct of staff may lead to careless and destructive actions with resulting environmental degradation.</i>
		<i>Open work sites and pipeline trenches may pose a hazard to humans and animal.</i>
		<i>Fire hazards may pose a risk to property.</i>
		<i>Solid waste from orchard establishment and from operational activities may contaminate natural veld and watercourses.</i>
		<i>The uncontrolled and excessive use of fertiliser and pesticides may lead to environmental contamination (soil, plants and water) with resultant negative impacts on plant and animal species and biodiversity.</i>
		<i>Eroded sediment from agricultural lands commonly carries with it attached pollutants such as organic nitrogen and phosphorous from inorganic soil fertilisers and pesticides used in agricultural production. Such contaminants of water resources may impact on freshwater ecology.</i>
		<i>Wastewater from pesticide and fertilisers and waste chemical containers may contaminate soil and water resources.</i>
		<i>Indiscriminate crop spaying during the operational phase may impact on environmental health.</i>

5	BROAD ISSUE CATEGORIES	IMPACTS / RISKS
IMPACT ON WATER RESOURCES	The use of groundwater for irrigation may result in the depletion of water resources.	<i>Any overexploitation groundwater resources for irrigation purposes may lead to a permanent decline in the resources with resultant negative effect on the cultivation land use.</i>
		<i>Although no artesian eye or fountain that discharge groundwater into the Kgwete River was identified on the property (as confirmed during testing) such resources cannot be excluded. In such instance surface water flow in the Kgwete River may be negatively impacted by excessive use of groundwater with potentially adverse impacts on downstream water users.</i>

ASSESSMENT OF POTENTIALLY SIGNIFICANT IMPACTS

In Compliance with GN R 326 of 17 April 2017, Appendix 3 Section 3(i)(ii) and (j), this Section applies the impact and mitigation ranking methods (see Sections I1.2.1-I2.4) to provide an assessment of each identified potentially significant impact and risk as identified in the previous Section I .

K1. IMPACTS ON SOIL AS A NATURAL RESOURCE

	Nature of impact	Period	Extent	Duration	Intensity	Probability	Degree of loss of resources	Significance before mitigation	Degree of mitigation	Significance after mitigation
	<i>Vegetation clearing and ridging earth works for orchard establishment and management roads can lead to soil erosion and loss of topsoil.</i>									
a.	<i>The loss of topsoil and vegetative matter over the surface area of the cultivation site may leave bare and disturbed soil surfaces which may lead to sheet erosion by run-off over the lifetime of the orchard and can further result in the complete loss of topsoil and the deposition of sediment along the edges of the orchard.</i>	Co Op	1	3	2	3	2	11	-4	7
b.	<i>Dumping of topsoil and spoil material on the edge of the cultivation site during site establishment may impede natural run-off towards drainage lines and may channel such run-off towards areas sensitive to erosion.</i>	Co	1	2	2	2	3	10	-5	5
c.	<i>Channel and gully erosion of soil surfaces may occur from planting ridge contours and dumped spoil material which may over time degrade the land cover adjacent to the orchard.</i>	Co	1	1	3	2	2	9	-4	5
d.	<i>Re-compaction of the soil by heavy equipment during and after orchard establishment will affect the soil's ability to absorb water which then accelerates run-off and poses a risk of soil erosion.</i>	Co Op	1	3	2	2	2	10	-3	7

K1.2	Mitigation : Soil conservation considerations during the cultivation planning period.
a.	<i>The cultivation lands shall be planned in accordance with such method or be laid out in such manner that the run-off speed of run-off water is restricted.</i>
b.	<i>In this regard planting ridges shall be employed as soil conservation terraces.</i>
c.	<i>The direction of planting ridges should be secondary to the conservation requirements of the soil and must be aligned along the natural terrain contours (at right angle to the natural slope).</i>
d.	<i>This method of orchard layout will assist to retain run-off for longer periods that will promote soil water absorption and prevent high velocity run-off over the site that may otherwise result in sheet erosion.</i>
e.	<i>Grassed waterways or swales must be planned along the edges of the cultivation lands to safely convey runoff collected from in-field areas to vegetated buffer/filter strips and further towards natural water courses.</i>
f.	<i>Constructed waterways must be designed to be shallow and wide and the bed should be lined with natural vegetation and/or rock to decelerate run-off towards watercourses that should prevent channel and gully erosion along drainage lines.</i>
g.	<i>Compacted surfaces of service roads along the edges of the orchard would become impervious to water. Consequently considerable run-off collects on such roads so good drainage is important, not only to maintain the land around the road, but also to maintain the road itself.</i>
h.	<i>The correct number of road drains must be planned to meet the slope requirements of the road and all road drains to be adequately stabilised by grass cover or stone-pitching.</i>

K1.3	Mitigation : Soil conservation management during the orchard establishment (construction) period
a.	<i>Prolonged periods of inactivity after clearing of vegetation can result in uncontrolled run-off, sheet erosion and loss of topsoil and must be prevented. The cultivation site must be cleared and prepared only when the applicant is ready to commence immediately afterwards with the establishing of the orchard.</i>
b.	<i>Where possible large trees must be felled and logged by hand equipment in advance of heavy machinery during vegetation clearing. These logs must be removed and stacked on the edge of the cultivation area for later rehabilitation use (see EMPR erosion control methods). This will minimize large volumes of vegetation waste that need to be moved by machinery to the edge of the land which normally includes the loss of topsoil.</i>
c.	<i>The mechanical chipping of vegetation waste on-site directly after clearing must be considered rather than burning, however burning is not prohibited subject to the requirements of the local fire protection agency and relevant regulations.</i>
d.	<i>The use of vegetation chips as a mulch around the root/irrigation zone of newly planted seedlings is an accepted method to enhance the organic texture of the soil as to increase water absorption, minimise erosion and to prevent soil moisture loss around the tree root zone.</i>
e.	<i>Where practically possible small residues of vegetation waste not to be used as mulch around the tree root zones, should be spread out evenly on the topsoil for natural decomposition for achieving similar aim as indicated above.</i>
f.	<i>After clearing of vegetation, only apply light shearing and shallow shaping of topsoil within the cultivation site in such way that topsoil remains on the cultivation site and avoid pushing or moving topsoil on heaps towards the edges of the cultivation site.</i>
g.	<i>If practically possible employ minimal tillage during site preparation. By this method not all existing grass cover should be cleared before shaping of ridges. This will retain some measure of soil cohesion that will minimise the loss of topsoil by sheet erosion before completion of planting ridges and other soil conservation measures.</i>
h.	<i>When topsoil is sheared off for shaping of planting ridges, vegetative matter in the topsoil should not be removed. This will retain some measure of soil cohesion and accelerate the re-establishment of grass cover on and between the planting ridges.</i>
i.	<i>If deep and shallow soil ripping is required to loosen the soil structure for effective root development, rip along the proposed tree planting lines and maintain the natural grass cover in-between the tree planting lines where possible, if not used for secondary crop cultivation.</i>
j.	<i>Where unwanted surface rock is encountered that needs to be removed from the cultivation site, such rock must be heaped on the edge of the site for later re-use as stabilisation bedding of soil conservation works.</i>
k.	<i>Where shaping and ridging of the land resulted in bare areas denuded of natural grass cover, such areas must be rehabilitated and stabilised for re-vegetation in order to prevent soil erosion.</i>
l.	<i>After completion of shaping and ridging of the land, waterways must be constructed towards drainage lines and where necessary rehabilitation methods such as stone pitching, use of logs and re-vegetation must be applied within the waterways to prevent soil erosion.</i>
m.	<i>The National Veld and Forest Fire Act 32 of 1998 allows the owner to make a firebreak however, the requirement is that firebreaks should not cause erosion. This means that erosion protection works must be installed within fire breaks and a short grass layer must be maintained to prevent sheet erosion and the loss of topsoil.</i>

K1.4	Mitigation : Soil conservation management during the operational period.
a.	<i>Maintain the natural grass cover in-between tree rows throughout the life of the orchard.</i>
b.	<i>Check soil conservation structures seasonally for their optimal functioning and maintain and improve such structures throughout the life of the orchard.</i>
c.	<i>Implement the use of mulch within the orchard seasonally to prevent crust formation and to promote soil-genesis for optimal soil health. Research showed that hard crusts do not form under mulch and retained 89% more soil and 58% more water than bare plots. Other advantages of mulching include the suppression of weeds, decreased wind erosion and improved soil fertility.</i>
d.	<i>Where secondary crops will be cultivated minimum tillage is recommended in-between tree planting ridges.</i>
e.	<i>Prevent unnecessary soil compaction within the orchard. Where unavoidable due to the use of tractors in the orchard, the crust must be broken by very shallow ripping (200mm max) after which a mulch layer should be applied to protect the ripped surface.</i>

K2. IMPACTS ON SURFACE WATER RESOURCES

K2.1	Nature of impact	Period	Extent	Duration	Intensity	Probability	Degree of loss of resources	Significance before mitigation	Degree of mitigation	Significance after mitigation
	Construction of waterways, ridges, roads and pipeline crossings within the orchards and gauging weir may alter and impede natural flow and deteriorate water quality and freshwater ecology.									
a.	Construction work can lead to soil erosion and poor water quality downstream as a result of soil sediment deposition in the Kgwete River which will impact negatively on the local freshwater ecosystem.	Co	2	1	2	2	2	9	-4	5
b.	Run-off discharge from the orchard to adjacent drainage lines may result in soil erosion and the unnatural build-up of silt in the adjacent drainage lines which may alter the vegetation composition over time and which may lead to the loss of the natural filter and sink functions of the riparian zone.	Op	1	2	2	2	2	9	-4	5
c.	Earthworks and construction of roads and pipelines and gauging weir over watercourses may lead to flow impediment and flow deviation of run-off.	Co	1	2	2	2	2	9	-4	5

K2.2	Mitigation: Water quality considerations during the planning period.
a.	The implementation of primary soil conservation measures have been addressed in the previous section. This section therefore deals with secondary soil conservation measures from the waterways (grassed swales) towards the ephemeral drainage lines and further down towards the riparian areas of the Kgwete River. Good water quality needs to be maintained to prevent river degradation downstream of the cultivation site. This can be achieved by detailed mitigation planning of the surface hydrology within and along the edges of the orchard.
b.	An important planning aspect revealed by research is that vegetative buffer zones around cultivation sites are most effective in removing nitrates from shallow, uniform surface flow derived from up-slope run-off when the flow is non-submerged (shallow), and when entry is uniform along the length of the buffer strip. Research suggests that nitrate entering a vegetative buffer strip in surface flow is rapidly retained within the first few meters of entry. The reduced flow velocity caused as the surface flow reaches the vegetation promotes deposition of sediment and attached nutrients. It was also found that grassed and herbaceous buffer strips tend to show greater nitrate removal or retention abilities than forested zones, as they promote a more uniform overland flow. Forested buffer zones are more effective to remove nitrates from contaminated sub-surface water due to their deep root system.
c.	Taking the above into account it will be necessary to plan effective run-off attenuation where the orchard run-off channels enter a natural drainage lines. The greatest reductions in flow velocities are achieved by vegetation that is uniformly dense at ground level. This can be achieved by introducing additional indigenous grasses that occur locally as well as constructing soil erosion prevention structures to induce vigorous vegetative growth. The retaining of indigenous trees and shrubs along the core of natural drainage lines will make sub-surface water quality amelioration at deeper soil depths more effective. It is thus evident that vegetative buffer zones in and around orchards play a very important role.
e.	With regard to the planning of effective buffer zones soils and slope of the land also need to be considered. Moderately well drained soils are able to intercept large amounts of surface flow promoting deposition of sediment because they have the greatest permeability. In this regard the soils along the edges of the cultivation sites are considered generally adequate for this purpose but where compacted soil occur measures must include the loosening of the soil along the buffer zones.
f.	Furthermore a slope of greater than 15% will not allow for sufficient run-off retention time, and will therefore be ineffective at sediment trapping and pollutant removal. Some slopes along the edges of the cultivation sites towards the natural drainage lines are generally steep and erosion prevention planning must include retention measures at the outlet of the orchard waterways and road drains to reduce run-off speed.

g.	<i>The above deliberation confirms the importance to conserve the natural drainage lines on the proposed cultivation sites in order to convey natural run-off from the mountainous areas towards the valley-bottom and to include buffer zones for purposes mentioned above. This is in line with the requirements of CARA that stipulates that no land user shall drain or cultivate or utilise the vegetation within a water course or within 10 meters horizontally outside the watercourse in a manner that causes or may cause the deterioration of or damage to the natural resource. It is thus important to include buffer zones during the planning stage of the orchard establishment.</i>
h.	<i>The terrestrial and aquatic specialist investigations that were conducted as part of this assessment also recommends a vegetation buffer of at least 10m wide along the outer edge of the prominent ephemeral drainage lines on sites S2,S3, S4, S5, and S7. However, the poorly defined drainage lines on Sites S2, S6, S7, S8 and S9 only requires a constructed waterway within the orchard without a vegetative buffer strip. On sites S1, S2 and S3 a 20m wide riparian buffer zone along both sides of the Kgwete River must be excluded from the cultivation area. The watercourse buffer zones and constructed waterways therefore become important components of impact mitigation planning to achieve soil conservation and water quality objectives as part of the cultivation operations.</i>

K2.3	Mitigation: Water quality management during the orchard establishment (construction) period.
a.	<i>The drainage lines and buffer zones within and along the edges of the proposed cultivation sites must be adequately marked before commencement of vegetation clearing and earth works as to prevent any disturbance to soil and vegetation within these zones. Staff and contract workers must be informed of these restrictions.</i>
b.	<i>Vegetation or other litter emanating from the vegetation clearing may not be disposed of within these drainage lines and demarcated buffer zones.</i>
c.	<i>Topsoil or spoil material from the mechanical shaping of the cultivation lands may not be dumped or heaped along the edge or within the buffer zones as heavy rains may wash such material into the drainage lines. Such material can as a temporary measure be stored or heaped near to the middle of each cultivation land. The material can then be re-worked from the middle of the site evenly towards all sides.</i>
d.	<i>Solid waste generated during the construction period must be contained on-site within suitable waste containers located at least 30m away from any drainage lines until time that the waste can be removed for permanent disposal (by completion of construction work).</i>
e.	<i>Where constructed waterways or swales and road drainage structures are to be constructed adequate vegetation cover, stone pitching or other erosion control measures must be put in place to improve infiltration of surface run-off and the rapid uptake and transformation of soluble contaminants within the buffer strip.</i>

K2.4	Mitigation: Water quality management during the operational period.
a.	<i>Drainage lines and buffer strips must be monitored seasonally and throughout the life of the orchard for signs of soil erosion and degradation of natural land cover and functionality. Where soil erosion and degradation of land cover is detected, immediate action must be taken to repair such erosion and degradation.</i>
b.	<i>The buffer and drainage line banks must be inspected for erosion seasonally and any erosion must be repaired by implementing the most applicable method as indicated in the EMPR. All repair work on erosion should be done during the winter months and before the start of the rainy season.</i>
c.	<i>It is also important to maintain vegetation growth along the banks and bed of the watercourses. In this regard CARA requires that the land user shall remove vegetation in a watercourse to such an extent that it will not constitute an obstruction during a flood that could cause excessive soil loss as a result of erosion through the action of water.</i>
d.	<i>It needs to be noted however, that good management of the vegetative buffer strip alone is an insufficient substitute for good farming practices. In this regard the land user must implement best agricultural practices throughout the life of the orchard and must ensure supervised handling and application of agricultural chemicals according to manufacturer's data safety requirements, local agricultural Regulations and Standards (SANS 10206) in order to prevent excessive use of agricultural chemicals that may lead to contamination of surface and sub-surface water (refer to Section K4 for mitigation requirements regarding the handling, application and disposal agricultural chemicals).</i>

K2.5	Nature of impact	Period	Extent	Duration	Intensity	Probability	Degree of loss of resources	Degree of mitigation	Significance before mitigation	Significance after mitigation
	Repair and maintenance of the existing dam, dam wall and spillway, maintenance of the existing spill weir and construction of a new gauging weir may impact on aquatic biodiversity and freshwater ecology of the Kgwete River.									
a.	Construction / repair of the dam wall, spillway and gauging weir may cause sediment deposition in the Kgwete River in large volumes which may negatively impact water quality, freshwater habitats and aquatic biodiversity.	Co	2	1	2	2	2	9	-5	4
b.	The dam walls can be exposed to soil erosion, land sliding and loss of dam wall stability and resultant sediment deposition.	Op	1	3	1	2	2	9	-5	4
c.	Poor maintenance of the dam wall embankments, spillway and weirs may lead to dam failure and potential significant degradation of the Kgwete River.	Op	2	2	3	1	3	11	-5	6
d.	Periodic maintenance and removal of silt from the dam and weirs may impact water quality.	Op	1	1	2	2	2	8	-4	4

K2.6 Mitigation: Dam and weir repair and maintenance	
a.	Dam wall /weir embankment failure must be prevented by ensuring strict compliance to construction quality control, control of the correct dam /weir building material and supervision of the dam wall core compaction and dam / weir building methods.
b.	Proper design and construction quality of the earth/concrete/pipe interface. Special care is required in placing earth fill against concrete and pipe structures to prevent leakage.

K2.7 Mitigation: Dam and weir maintenance during the operational period	
a.	Regular monitoring of the integrity of the dam wall / weir embankment must be performed to identify potential areas of embankment damage that can cause slope failure. Upon identification of such areas the dam's water level must be lowered and the failure of the dam embankment must be repaired.
b.	Regular monitoring of the dam's freeboard and of the spillway must be conducted to identify obstructions and spillway erosion. Blocked overflow systems must be cleaned to allow the free outflow of water from the dam towards the watercourse. Erosion of the spillway bed and side walls must be repaired with hard material.
c.	Tree growth on the dam wall embankments can result in piping failures of the embankment and therefore regular maintenance of grass growth by way of cutting/slashing will prevent the establishment of trees on the dam walls.
d.	Burrowing animals can excavate tunnels in the dam wall embankment which may result in seepage or slope failure. Regular surveillance of the dam wall embankments must be conducted to identify and prevent animal habitation.

K3. IMPACTS ON BIODIVERSITY

K3.1	Nature of impact	Period	Extent	Duration	Intensity	Probability	Degree of loss of resources	Significance before mitigation	Degree of mitigation	Significance after mitigation
	Vegetation clearing may impact negatively on ecological services and biodiversity.									
a.	Clearing of vegetation for orchard establishment along the Kgwete River can result in disturbance of the riparian zone that is important for maintaining freshwater ecology and an aquatic corridor for up-stream and downstream connectivity.	Co	1	1	2	3	2	9	-5	4
b.	Clearing of vegetation within and along ephemeral drainage lines that conveys significant run-off from the mountainous areas towards the Kgwete River may result in gully erosion.	Co	1	1	2	3	2	9	-5	4

c.	<i>Indiscriminate vegetation clearing and careless operation of earth moving machinery along the edges of the cultivation site and disposal of topsoil, spoil and vegetative matter within the drainage lines will result in alteration of run-off flow paths, scoring and silt deposition downstream with resultant impact on riparian vegetation along the Kgwete River.</i>	Co	1	1	2	3	2	9	-4	5
d.	<i>The removal of indigenous vegetation within the cultivation site and resultant soil disturbance may create suitable conditions for the establishment of alien invader plants throughout the lifetime of the new orchards.</i>	Op	1	3	2	2	1	9	-3	6
e.	<i>Necessary perimeter fencing may lead to the permanent fragmentation of important habitats of local wildlife and impairment of ecological functions. However, keep in mind that the habitat is already degraded and fragmented</i>	Op	1	3	1	1	1	7	-3	4

K3.2 Mitigation : Biodiversity considerations during the planning period.

a.	<i>It is important to note that the Specialist Inputs in this assessment identified areas as sensitive to the loss of vegetation, important species and habitat. As such the mitigation was already applied in K2.2(h) by avoiding sensitive drainage lines and the selected cultivation sites (70.32 ha) remains largely within the footprint of historic agricultural modifications and heavily modified land through bush encroachment that displays moderate to heavy land cover degradation. The orchard development plan must include the mitigation recommendations.</i>
b.	<i>Although protected vegetation species were not identified mainly due to previous transformation, a thorough survey of the site during the vegetation clearing activities must be conducted. If any protected species is identified a permit must be obtained before removal / relocation. Protected plant species that occur within the cultivation area that cannot be rescued / relocated must be replaced by way of seedlings elsewhere on the property.</i>
c.	<i>A high percentage of the current land cover within the cultivation site constitutes indigenous bush encroachment and as such provides a poor habitat for local fauna. However, the cultivation site must be surveyed before clearing activities commence to identify any fauna species present on the site and must plan for their safe relocation or assist with their escape to the surrounding natural vegetation that comprise the remainder of the far.</i>
d.	<i>Prolonged periods of inactivity after vegetation clearing may result in uncontrolled run-off, establishment of pioneer and invader plant species and potential later repetition of the clearing activity. Planning is therefore important to ensure that orchard establishment commence directly after vegetation clearing.</i>

K3.3 Mitigation : Biodiversity management during the orchard establishment (construction) period.

a.	<i>Clearly demarcate the cultivation sites, drainage line crossing sites and the outside edges of the buffer zones before vegetation clearance starts. All site preparation activities may only occur within the demarcated sites.</i>
c.	<i>No clearing of indigenous vegetation may occur within the vegetative buffer zones with exception of listed indigenous and alien invasive species which must be removed.</i>
d.	<i>Protected trees that will be lost due to site preparation (if any) must be replaced on other areas of the farm not affected by the cultivation activities (refer to K3.2(b) above.</i>
e.	<i>No wild animals may under any circumstances be handled, removed, injured or killed during the orchard establishment period. Wildlife must be removed and relocated to the remaining natural areas of the farm before vegetation clearing work on site begins.</i>
f.	<i>Collection of firewood or any other plant resources in areas other than those cleared for purposes of cultivation and control of alien infestation and bush densification must be prohibited.</i>
g.	<i>Large trees that will be felled as a result of clearing must be cut into suitably sizes logs for use in site rehabilitation actions and excess should be made available for firewood.</i>
h.	<i>The applicant must inform LEFPA and follow the necessary procedures, preparations and safety and veld fire prevention measures in terms of the relevant regulations if fire is to be used during the site clearing activity.</i>
i.	<i>With regard to rehabilitation after completion of orchard establishment it is important that re-introduction of indigenous vegetation around the edges of the cultivation site conforms to the species composition that naturally occur within the area. It is important to establish dense grassy vegetation on the outer to middle zones of the</i>

	<i>buffer zones to ensure functionality as primary filter strips. In the absence of dense natural vegetation in the buffer zones, re-vegetation with naturally occurring and vigorously growing grass and shrub species will be required as part of the rehabilitation after the orchard establishment period.</i>
<i>j.</i>	<i>The riparian zone of the Kgwete River upstream towards the farm Kaspersnek should not be fenced and must remain an open corridor for migrating aquatic and terrestrial wildlife. The length of the riparian zone of the Kgwete River along the edges of Site 3 may be fenced as the District Road already restricts ecological services between the southern mountain areas and the river. However, the north-eastern riparian zone of the Kgwete River between Site 1 and Site 2 must remain unfenced thus providing corridors for wildlife between the low-lying watercourses and the high-lying grasslands. It is however understood that cultivation lands along and south-west of the District Road require all-round fencing and therefore alternative dedicated unfenced corridors must be planned and implemented at other areas of the farm or on the adjacent Kaspersnek farm to prevent complete fragmentation of suitable habitats for local fauna. In addition strategically placed watering points for wildlife outside the fenced orchards must be incorporated in the water supply to the cultivation sites as part of the irrigation installation plan. These measures are important to maintain pathways between the higher lying and low-lying habitats of the farm and to sustain a healthy wildlife population on the remainder of the farm.</i>
<i>k.</i>	<i>When combining electrification on the fence line a “live” wire within 200mm above ground level should be excluded as it is detrimental to reptiles such as tortoises. Place rock-beds in areas under fence lines where burrowing animals may breach the fence line.</i>
<i>l.</i>	<i>Section 16 of The National Veld and Forest Fire Act 32 of 1998 allows the owner to make a firebreak in spite of any prohibition on damaging protected plants, for the obvious reason that preparing a firebreak of any kind involves some form of damage to plants. However, the owner is obliged to take certain mitigation measures, that is, to transplant protected plants if possible, and to avoid damage to protected plants by placing the firebreak on a different alignment. A permit must be obtained beforehand from the relevant Authority when a protected plant will be affected.</i>

K3.4	Mitigation : Biodiversity management during the operational period.
<i>a.</i>	<i>While keeping a good vegetative cover to prevent erosion, the vegetation within the buffer zones must be managed to prevent it from becoming a fire hazard. It is therefore permissible to selectively slash or cut grasses and where necessary to control bush encroachment seasonally as to ensure a good vegetation cover.</i>
<i>b.</i>	<i>It is also important to seasonally control any alien vegetation including listed invasive indigenous species within the buffer and drainage lines and on the remaining natural veld of the farm. The method for controlling and removing alien and invasive vegetation is explained in more detail in the attached EMPR.</i>
<i>c.</i>	<i>In order to achieve optimal ecological functioning on the remainder of the farm it is suggested that the land user employ the services of a qualified person to attend to the planning and implementation of biodiversity management and veld management on the remainder of the farm.</i>

K4. HAZARDS AND POLLUTION IMPACTS

K4.1	Nature of impact	Period	Extent	Duration	Intensity	Probability	Degree of loss of resources	Significance before mitigation	Degree of mitigation	Significance after mitigation
	<i>General hazards, risk and pollution may occur as a result of the orchard establishment operational farming activities</i>									
<i>a.</i>	<i>Improper conduct of staff may lead to careless and destructive actions with resulting environmental degradation.</i>	Co Op	1	3	1	2	1	8	-5	3
<i>b.</i>	<i>Open work sites and pipeline trenches may pose a hazard to humans and animal.</i>	Co	1	1	0	2	1	5	-5	0
<i>c.</i>	<i>Fire hazards may pose a risk to property.</i>	Co	2	3	2	2	2	11	-5	6
<i>d.</i>	<i>Solid waste from orchard establishment and from operational activities may contaminate natural veld and watercourses.</i>	Co Op	1	3	3	2	2	11	-5	6

e.	<i>The uncontrolled and excessive use of fertiliser and pesticides may lead to environmental contamination (soil, plants and water) with resultant negative impacts on plant and animal species and biodiversity.</i>	Op	2	3	1	2	2	10	-4	6
g.	<i>Eroded sediment from agricultural lands commonly carries with it attached pollutants such as organic nitrogen and phosphorous from inorganic soil fertilisers and pesticides used in agricultural production. Such contaminants of water resources may impact on freshwater ecology.</i>	Op	2	2	2	2	2	10	-4	6
h.	<i>Wastewater from pesticide and fertilisers and waste chemical containers may contaminate soil and water resources.</i>	Op	2	2	2	2	2	10	-4	6
i.	<i>Indiscriminate crop spaying during the operational phase may impact on environmental health.</i>	Op	2	2	2	2	2	10	-4	6

K4.2	General mitigation measures concerning the conduct of staff									
a.	<i>All staff, service providers and contractors must be informed of environmental issues and specifically with regard to littering, the use of toilets, the use of hazardous materials, the prevention of pollution, the prohibition of clearing and defacing of natural vegetation and the prohibition of poaching or snaring of wildlife and fishing.</i>									
b.	<i>All construction staff must be made aware of the boundaries of the development site and must understand that trespassing onto adjacent properties is illegal and any incident in this regard may result in disciplinary action.</i>									
c.	<i>Routes for access and haul roads to the site are to be identified and all drivers must be informed to confine vehicle movement to these roads. Drivers of earth moving machinery must be well informed not to enter into or clear vegetation in the demarcated buffer zones and approved site boundaries.</i>									

K4.3	General mitigation measures concerning potential site hazards									
a.	<i>All potentially hazardous work areas during the orchard establishment and operational phases must be demarcated and staff must be made aware of the potential dangers to such site/activity.</i>									
b.	<i>Specifically deep trench excavations must be visibly marked until such excavations have been backfilled and such trenches must allow escape routes so that animals that falls into a trench does not become trapped and can exit easily.</i>									
c.	<i>Special care must be taken by the landowner when conducting any work underneath any overhead ESKOM powerlines, not to accidentally damage or touch overhead powerlines and all workers must be made aware of the potential hazard when conducting work beneath the powerlines.</i>									
d.	<i>Hazardous materials such as chemicals for alien vegetation control and fuels for earth moving equipment must be stored in a secure facility and shall be handled in a manner to prevent site contamination and ignition.</i>									

K4.4	Mitigation measures concerning the use of fire and implementation of fire breaks									
a.	<i>The National Veld and Forest Fire Act 32 of 1998 is aimed at preventing and combating veld fires through a system of prohibitions on burning veld under certain conditions, the preparation and maintenance of annual fire-breaks and the formation of fire protection associations. The Land User must take cognisance of the annually published LEFPA rules and minimum requirements for land owners with regard to firefighting equipment and trained personnel that is required on the property as well as the regulations on the burning of fire breaks and harvest residue as well as pre- and post -burning procedures.</i>									
b.	<i>The above requirements must be taken into account with regard to the planning and preparation of firebreaks on the application property. If it is specifically necessary to protect the orchard against fire, the effectiveness of the 10m buffer around the orchard including service roads and constructed grass waterways should be considered. The drainage lines and buffer zones must not be maintained as a fire breaks as this could impact negatively on vegetation composition and ecological functioning which are important to mitigate potentially significant sedimentation and contamination impacts on watercourses.</i>									

K4.5	Mitigation measures concerning solid waste management from farming activities
a.	<i>NEMWA (Section 21) requires that any person that stores or dispose of waste (such as a waste pit on a farm) must ensure that adequate measures are taken to prevent waste of being blown away and nuisance causing odours, visual impacts and breeding of vectors do not arise No person may dispose of waste at an unauthorised site, but this does not apply to waste generated as a result of normal household activities and below certain quantified thresholds and where the municipality does not render a waste collection service. This would apply to many farmers who will have a waste disposal site (pit) on their land. Despite this, landowners must adopt the most environmentally feasible option for the management of waste (Section 26) and littering is also prohibited in terms of Section 27 of the Act. Organic waste from pruning of trees and mowing of grass can be re-used as compost and mulch within the orchard in which case the NEMWA Norms & Standards on organic waste composting will apply.</i>
b.	<i>Under no circumstances may any solid waste be disposed of in the natural veld and in watercourses.</i>
c.	<i>The Policy previously imposed by DWS provides for the registration and use of small private non-commercial farm waste disposal sites, subject to compliance with the following conditions for such sites:</i> <ul style="list-style-type: none"> ▪ <i>the waste site is situated outside a water resource and above the 1:50 year flood line;</i> ▪ <i>the waste site is adequately fenced to prevent entry of people and animals;</i> ▪ <i>the waste site does not overlay an area with shallow or emergent water tables;</i> ▪ <i>the burning of waste does not cause any nuisance conditions to neighbours;</i> ▪ <i>the waste does not cause any nuisance conditions due to the breeding of flies or other vermin; and</i> ▪ <i>the waste hierarchy must be applied where and when possible, meaning to firstly prevent waste generation , and if not possible to aim to reduce, re-use and recycle waste before disposal.</i>
d.	<i>Although the disposal of household and general waste from farming activities below the thresholds as indicated by NEMWA is not a listed activity that requires authorisation, it is not allowed in terms of the relevant Regulations and Standards to burn or to dispose of hazardous waste substances (such as waste agricultural chemicals) and containers that previously contained such substances on the farm. Empty chemical containers or disused chemicals or expired chemicals must be returned to the supplier or else be disposed of at a suitably registered landfill site as stipulated by the Department of Agriculture's Standard (SANS 10206).</i>
K4.6	Mitigation measures concerning liquid waste including the storage, handing and disposal of agricultural chemicals
a.	<i>The unsafe storage, handing, application and disposal of agricultural chemicals can result in significant impacts on soil and water resources and these activities are therefore highly regulated (see Legislative context – Section E). This assessment does not evaluate the current implementation of these regulations and standards on the application property but aims at providing mitigation measured that may address potential pollution and contamination of natural resources relevant to this application.</i>
b.	<i>Storage facilities for agricultural chemicals shall not be permanently located on the application site. The existing farm shed/buildings that comply with the requirements of SANS 10206 shall be used for the storage of such chemicals. It is important to note that the floor of any chemical storage facility must drain towards a sealed sump where spillage can be collected for dilution and disposal / return to the chemical manufacturer / distributor.</i>
c.	<i>An important aim is firstly to minimise the use of agricultural chemicals on the farm as follows:</i> <ul style="list-style-type: none"> ▪ <i>only apply chemical crop protection products when absolutely necessary;</i> ▪ <i>if possible use non-chemical pesticides instead of chemical pesticides;</i> ▪ <i>adhere to chemical label statements regarding restrictions for managed bee pollination and select the least harmful pesticide for honey bees and other insect pollinators;</i> ▪ <i>do not apply a generic fertilizer and agro-chemical spray programme but base it on actual need determined by seasonal analyses of leaf and soil nutrient levels and weather conditions; and</i> ▪ <i>ensure that all equipment used in nutrient management, crop protection and agro-chemical practices are annually calibrated and maintained at a level to ensure efficiency of application.</i>
d.	<i>When pesticide waste and empty pesticide containers are being disposed of, the relevant instructions appearing on the label(s) shall be followed. To mitigate the resultant impacts of pesticide waste and disposal of pesticides on a farm, the following procedures shall be followed:</i> <ul style="list-style-type: none"> ▪ <i>the quantity bought shall be limited to what will be needed during one season thereby preventing large quantities in the store room reaching their expiry dates;</i>

	<ul style="list-style-type: none"> ▪ only the amount of pesticide that is needed at one time for a specific application shall be prepared, and shall be used strictly in accordance with the label instructions; ▪ when a dilution of a pesticide concentrate is being prepared, the container or other vessel used to measure out the required quantity of the concentrate shall be well drained and then triple-rinsed with the relevant diluent, and the rinsing effluent shall be added to the pesticide formulation before it is made up to the final volume; ▪ if all of the formulation prepared for a single application is not used, any formulation that remains after the application shall be store in its original plastic container for disposal at a site registered as a hazardous waste landfill site; ▪ alternatively pesticide waste and empty containers should be returned to the local supplier or sent to a registered disposal company; ▪ where no disposal organization operates in a farmer's district, the farmer shall consult the manufacturer about the disposal of surplus pesticides; ▪ empty containers shall not be disposed of by way of burying on the farm or by burning or by dumping into the natural environment or watercourses; ▪ empty pesticide containers, other than aerosol dispensers, shall be triple-rinsed with water and then shattered (in the case of glass containers), punctured (in the case of plastics and metal containers), or so otherwise rendered unserviceable as to prevent re-use before being disposed of; ▪ empty containers shall be kept in securely closed containers until they can be disposed of safely and correctly; ▪ after application of fertilisers and pesticides, washing of equipment must be done at a dedicated rinsing site in a manner that avoids contamination of soil and water; ▪ the rinse effluent from containers shall be returned to the spray tank, where after it must be sprayed onto the crops or kept secure until disposal is possible; and ▪ water that is used to rinse out spray tanks may not contaminate the soil or end up in ditches, rivers or storage dams. An impermeable rinsing and evaporation pit should be installed for rinsing out of spray tanks and spraying equipment. Alternatively, install a tank for contaminated water that can be emptied by a professional hazardous waste disposal company.
e.	<i>The applicant should pay special attention to the orchard management as over-fertilisation can impact on the soil and lead to acidification and nutrient imbalance.</i>
f.	<i>An irrigation plan must also be advised to prevent excessive irrigation that may increase the risk of leaching of chemical contaminants.</i>
g.	<i>Agrochemicals must be applied under the conditions and in the manner specified on the product label. These would typically include the concentration or application rate, the target crop, correct time (crop stage) and under the correct weather and soil conditions. Calibration of fertiliser equipment, placement and the correct fertiliser application would not only affect the crop but would also prevent over-fertilisation and impacts on soil and water resources.</i>
h.	<i>The applicant must ensure that any agricultural remedy to be used complies with the Act (Act 36 of 1947).</i>
i.	<i>When applying fertilizer within the orchard, any spilled fertiliser must be removed from the soil and must be returned to the fertiliser container for re-use.</i>
j.	<i>The chemical storage, preparation and rinsing site must not be located at the new cultivation site but at the existing farm shed that is ±100m away from a watercourse.</i>
k.	<i>Organic fertiliser stockpiles should not be placed near natural water sources or near groundwater where water can be contaminated.</i>
l.	<i>Farm workshops and wash-bay facilities for cleaning tractors and equipment must not be located at the proposed new cultivation site. Such facilities must be provided at the existing farm shed that is ±100m away from a watercourse. Run-off from such facility must be directed into a protected sump to prevent contamination of ground water or water courses.</i>
m.	<i>Servicing of vehicles in-field should not occur anywhere near a waterway or watercourse. Oils and diesel must be drained into containers and removed, together with discarded spares to a suitable recycling and disposal facility. Alternatively appoint a local service provider to collect waste oils on the farm.</i>

K4.7	Mitigation : Specific air quality management during the operational phase when applying crop spaying to prevent or minimise poisoning of insect pollinators.
a.	Adhere to chemical label statements regarding restrictions for managed bee pollination and select the least harmful pesticide for honey bees and other insect pollinators.
b.	Avoid spray drift by way of correct application of spraying within the orchard and refrain from spraying during windy conditions where spray might drift onto adjacent fields supporting foraging honey bees and other insect pollinators.
c.	Pay particular attention to wind speed and direction, air temperature and time of day before applying pesticides. Spray preferably late in the afternoon or at night as insect pollinators are generally only active between 7:00 am and 4:00 pm.
d.	Treatments made to crops in flower or upwind of adjacent plants in flower that are likely to be visited by honey bees and other insect pollinators at the time of application, should not occur during the daytime if temperatures within an hour after the completion of spraying are expected to exceed 12C°.
e.	It is recommended that orchard floors containing flowering plants be mowed just prior to spraying to lessen the number of pollinators in the orchard before spraying.
f.	Registered beekeepers that are known to have hives in, or nearby, the area to be sprayed must be notified no less than 48 hours prior to the time of the planned application so that honey bees can be removed or otherwise protected prior to spraying. Beekeepers must provide the crop grower access to hives and all information on the beehives.
g.	Inform any contracted pesticide applicators operating on the property of the locations of beehives and make sure that these guidelines as well as regulatory requirements are being adhered to by the contractor.
h.	It is also important to present the risk to insect pollinators by application of alternative methods of pesticide application such as chemigation through the irrigation system. Irrigation attracts insects if there are no other readily-available sources of water. Such method should therefore be applied during the evenings when pollinator activity is low.

K5. WATER USE IMPACT ON WATER RESOURCES

K5.1	Nature of impact	Period	Extent	Duration	Intensity	Probability	Degree of loss of resources	Significance before mitigation	Degree of mitigation	Significance after mitigation
	The use of groundwater for irrigation may result in the depletion of water resources.									
a.	Any overexploitation groundwater resources for irrigation purposes may lead to a permanent decline in the resources with resultant negative effect on the cultivation land use.	Op	2	3	3	1	1	10	-4	6
b.	Although no artesian eye or fountain that discharge groundwater into the Kgwete River was identified on the property (as confirmed during testing) such resources cannot be excluded. In such instance surface water flow in the Kgwete River may be negatively impacted by excessive use of groundwater with potentially adverse impacts on downstream water users.	Op	3	3	3	1	1	11	-4	7

K5.2	Mitigation : sustainable use of water resources
a.	The proposed groundwater use for irrigation will be licensed in terms of the NWA.
b.	The extraction rates as recommended by the Hydro-geological Reports must be strictly adhered to.
c.	Continuous monitoring and data logging of groundwater extraction volumes, groundwater levels, surface water levels in the Kgwete River and rainfall must be kept by the Water User and such data must be used to verify the sustainable use of groundwater within the recommended safe extraction rates. Such monitoring data must be made available to relevant Authorities/Agencies/Water Use Associations.

MITIGATION OUTCOMES

This Section lists impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation, based on the assessment, and where applicable, recommendations from specialist reports as required in terms of GNR 327, Appendix 3, Section 3(m).

L.1 IMPACT MANAGEMENT OBJECTIVE

The impact management objectives are the overall environmental goals for this project which need to be achieved by way of avoiding, preventing, preserving and minimising adverse environmental impacts associated with the project or specific activities thereof and where applicable rehabilitate and restore aspects associated with this project that may result in environmental damage.

L.2 IMPACT MANAGEMENT OUTCOMES

The environmental impact management outcomes are performance orientated, where possible quantifiable, verifiable and measurable, and applicable to the activities and mitigation measures that arises from the environmental objectives. Performance measurement during the planning and construction periods of the project can be achieved by way of verifying the implementation of plans, guidelines and standards as well as monitoring, reporting and auditing compliance to the EMPR and EA. Performance measurement during the operational period will need to determine the success and the efficiency of the implemented plans and guidelines by way of record keeping, operational audits and compliance to regulatory norms and standards.

L3.1 ORCHARD PLANNING OBJECTIVE		
<i>The orchard planning shall include soil conservation, water quality and biodiversity management measures.</i>		
L3.2	OUTCOMES	PERFORMANCE MEASURE
a.	<i>All of the planned project components shall be indicated on a final orchard site plan. All watercourse buffers shall be indicated on plan. A final orchard site plan will indicate the tree row and ridges orientation, irrigation infrastructure, access and service roads, gates and perimeter fencing and fire breaks. The water supply plan for irrigation must include watering points for wildlife outside the fenced orchards sites. The position of all soil conservation measures shall be determined accordingly and shall be indicated on plan including the buffer zones.</i>	<i>Verify and confirm that all components of the orchard including proposed soil conservation works and the riparian buffer zones are indicated on the site plan according to the mitigation recommendations indicated in Section J of this report and where relevant according to the relevant soil conservation guidelines and standards.</i>
b.	<i>The site plan and all of its components shall be laid out and marked precisely on site. The waterways and road drains shall be marked on the ground and the run-off outlet of each into the vegetative buffer zone shall be indicated. All temporary components of the construction work such as temporary lay down areas, batching areas etc. shall also be indicated on plan.</i>	<i>Verify the plan on site after it has been laid out. Check each run-off outlet point which shall be evaluated on-site in terms of slope, soil condition and vegetation cover as indicated in Section K4.2. Where the characteristics of the outlet point is found to be unsuitable it shall be relocated or otherwise improved by selecting the most applicable erosion protection and re-vegetation methods.</i>
c.	<i>After laying out the entire plan variations shall be indicated on a final plan according to the actual character of each individual cultivation site.</i>	<i>The final orchard site plan shall be verified for completeness before commencement of orchard establishment activities.</i>

L4.1	PRE-ORCHARD ESTABLISHMENT REGULATORY COMPLIANCE OBJECTIVE	
	<i>Regulatory requirements shall be complied with.</i>	
L4.2	OUTCOMES	PERFORMANCE MEASURE
a.	<i>The applicant shall obtain permits and commence with registering in terms of other laws applicable to the proposed cultivation and associated activities.</i>	<ul style="list-style-type: none"> ▪ Obtain a cultivation permit from DALRRD. ▪ Obtain permits for removal and relocation of protected plants (if applicable). ▪ Commence with obtaining a water use license for the borehole and all other Section 21 activities as indicated in Section E of this report. ▪ Commence with registering as a member of LEFPA.
b.	<i>Permanent and temporary employees and contractors shall be made aware of the relevant provisions of the Environmental Authorisation and EMPR, sensitive environmental features and security arrangements.</i>	<i>Obtain written confirmation of obligations and compliance to the EMPR by contractors with hand-over of the site or at the first project meeting.</i>
c.	<i>A notice of the intention to commence with construction shall be to relevant organs of state and potentially affected interested parties and stakeholders and a complaints register shall be maintained for the duration of the construction/establishment period.</i>	<i>All complaints are to be acknowledged within five (5) working days and are to be responded to within 10 working days of receipt, unless additional information and / or clarification are required.</i>

L5.1	PRE-ORCHARD ESTABLISHMENT OBJECTIVE	
	<i>The cultivation site shall be prepared to prevent environmental impacts during the orchard establishment period.</i>	
L5.2	OUTCOMES	PERFORMANCE MEASURE
a.	<i>All components of the cultivation sites that require protection including watercourses and buffer zones shall be delineated.</i>	<i>Visual marking by using markers or tape shall be verified on site, indicating all areas excluded from vegetation clearing and all roads and road crossings.</i>
b.	<i>Natural resources within the cultivation footprint area shall be rescued before clearing of vegetation.</i>	<i>A thorough search for resident fauna and protected flora shall be executed and where appropriate shall remove such species to a safe area on the remainder of the property.</i>
c.	<i>Natural resources (logs and rocks) within the cultivation footprint area can be used after completion of the orchard establishment for erosion protection purposes. .</i>	<i>All trees with a stem diameter of more than 100mm shall be identified for re-use and marked for cutting into logs once mass clearing of vegetation commence.</i>
d.	<i>Existing land cover degradation within the orchard buffer zone shall be identified for restoration to ensure its optimal ecological functioning simultaneous with orchard establishment activities.</i>	<i>Identify and map alien plant species and existing soil erosion within the riparian zone and watercourse buffer zones and plan for their systematic eradication and repair.</i>
e.	<i>The construction site shall be prepared to prevent potential occurrence of damaging activities before commencement of construction.</i>	<i>The development footprint, sensitive areas, lay-down areas and batching areas shall be marked on the ground. The site plan shall be used to verify the correct demarcation.</i>

L6.1	ORCHARD ESTABLISHMENT - ECOLOGICAL SUSTAINABILITY OBJECTIVE	
	<i>The orchard established shall include all works related to ecological objectives in terms of soil conservation, water course and water quality protection as well as biodiversity protection.</i>	
L6.2	OUTCOMES	PERFORMANCE MEASURE
a.	<i>The soil conservation works shall be constructed within the orchard and along the edges of the orchard and topsoil shall be re-used in the orchard.</i>	<i>Verify and confirm that all soil conservation structures have been constructed as indicated on the site plan.</i>
b.	<i>Erosion protection structures shall be constructed on the edge of the riparian buffer zone and previous erosion shall be repaired as to prevent erosion.</i>	<i>Verify and confirm that all erosion protection structures have been constructed as indicated on the site plan.</i>

c.	<i>Vegetated filter strips shall be established down the outflow from constructed waterways and re-vegetation (where necessary) shall be done within the drainage lines as to optimally perform their sediment deposition and chemical filtering functions.</i>	<i>Verify and confirm that adequate vegetation and /or rock-pitching are evident at outflow channels as indicated on the site plan.</i>
d.	<i>Alien invasive vegetation control shall be applied in the drainage lines to ensure restoration of biodiversity and optimal functioning of the riparian zone.</i>	<i>Verify and confirm that all alien invasive vegetation have been eradicated as indicated on the site plan.</i>
e.	<i>Re-habilitate bare soil susceptible to erosion within and along the edges of the orchard by any one of the erosion prevention and re-vegetation methods /guidelines.</i>	<i>Verify and confirm that all barren soil and degraded vegetation have been stabilised and re-vegetated or have been prepared for natural re-vegetation.</i>
f.	<i>A fire break shall not to disturb the soil surface and vegetation cover in such a manner that will increase run-off and induce soil erosion.</i>	<i>Verify and confirm that the implementation of a fire break has not disturbed soil and has not removed all vegetation that may result in erosion.</i>
g.	<i>An unfenced ecological corridor shall be maintained along the length of the Kgwete River. Watering points for wildlife must be installed as part of the installation of pipelines for irrigation as indicated on plan.</i>	<i>On-site verification as part of the final site audit that perimeter fencing of all orchard sites do not fragment habitat and that wildlife watering points have been installed.</i>

L7.1	ORCHARD ESTABLISHMENT – POLLUTION PREVENTION OBJECTIVE	
	<i>Pollution including noise, dust, solid waste and liquid waste shall be prevented or reduced during the orchard establishment period and operational phases.</i>	
L7.2	OUTCOMES	PERFORMANCE MEASURE
a.	<i>Solid waste emanating from construction activities shall be managed to prevent contamination of natural veld and watercourses.</i>	<i>Monitor and report the occurrence of litter and verify the manner of storage and disposal of solid waste during the construction period.</i>
b.	<i>Liquid waste emanating from construction activities shall be managed to prevent contamination of soil and water resources.</i>	<i>Monitor and report evidence of liquid contamination and verify the manner of storage and disposal of liquid waste during the construction period.</i>

L8.1	ORCHARD ESTABLISHMENT – HAZARD MANAGEMENT OBJECTIVE	
	<i>Potential construction site hazards shall be prevented or reduced during the orchard establishment and operational periods.</i>	
L8.2	OUTCOMES	PERFORMANCE MEASURE
a.	<i>Site hazards shall be clearly marked and shall be communicated with staff.</i>	<i>Verify markings on site.</i>
b.	<i>Fire shall not be used on the site without authorisation and precaution.</i>	<i>Verify correct procedures followed with Fire Protection Agency, before using fire on site.</i>

L9.1	OPERATIONAL OBJECTIVES WITH REGARD TO SUSTAINABLE AGRICULTURAL PRACTICES	
	<i>Soil condition, water resources and water quality and remaining biodiversity shall be maintained and where possible be enhanced and agricultural chemical contamination shall be prevented during the operational lifetime of the orchard.</i>	
L9.2	OUTCOMES	PERFORMANCE MEASURE
a.	<i>In-orchard soil conservation measures must be maintained in good order to perform their functions and must be upgraded/enhanced where necessary.</i>	<i>Verify the state and functionality of soil conservation measures seasonally before the start of the rainy season and repair and improve where necessary.</i>
b.	<i>The riparian buffers must be maintained in good order to perform their buffering and filtration functions and must be upgraded/enhanced where necessary.</i>	<i>Verify the state and functionality of riparian buffers seasonally, repair erosion and improve the vegetation cover where necessary.</i>

c.	<i>Biodiversity within the riparian areas and remaining areas of the property must be enhanced and maintained by implementing an annual alien and invasive species control plan. Maintain overall veld condition and habitat for wildlife on the remainder.</i>	<i>Verify indigenous species composition and occurrence of alien infestation seasonally, implement alien plant control seasonally and apply veld management practices such as selective slashing and patch burning to maintain a healthy habitat.</i>
d.	<i>Manage the storage, handing, application and disposal of agricultural chemicals during the operational period to prevent pollution and contamination that may pose a risk to humans, animals and pollinator insects.</i>	<i>Storage, handling and disposal of hazardous agricultural chemicals shall comply with legal requirements and shall be verified periodically against the relevant standard (SANS10602) by way of independent compliance audit.</i>

L10.1	DAM MAINTENANCE OBJECTIVES	
	<i>The dam wall, dam basin and dam spillway shall be maintained during the operational lifetime of the dam to prevent a hazard and water quality deterioration.</i>	
L10.2	OUTCOMES	PERFORMANCE MEASURE
a.	<i>The dam wall must be maintained in good order against erosion and failure.</i>	<i>Verify the state and functionality of the dam wall seasonally before the start of the rainy season, and repair and improve where necessary.</i>
b.	<i>The spillway from the dam towards the watercourse must be maintained in good order to prevent gully erosion and scouring of the banks of the watercourse.</i>	<i>Verify the state and functionality of spillway seasonally, and repair erosion damage where necessary.</i>
c.	<i>Natural grass cover along the dam walls must be maintained. Tree growth and alien plant species on and along the dam wall must be prevented.</i>	<i>Maintain a short grass cover by way of seasonal slashing. Remove tree growth and alien infestation seasonally from the dam wall.</i>

L11.1	WATER USE OBJECTIVES	
	<i>Groundwater shall be used sustainably within the limits and abstraction rates that were scientifically determined by way of hydro-geological investigation.</i>	
L11.2	OUTCOMES	PERFORMANCE MEASURE
a.	<i>Manage irrigation of orchards according to an irrigation Management Plan to ensure sustainable water use and maintaining the ecological reserve of the Kgwete River.</i>	<i>Verify, keep record and report on the implementation of water saving irrigation systems, including monitoring of:</i> <ul style="list-style-type: none"> ▪ Groundwater extraction rates, ▪ Groundwater levels, ▪ Surface water levels of the Kgwete River where the river enters and exists the property, and ▪ Rainfall. <i>Verify the use of groundwater within the safe sustainable abstraction rates and benchmarks indicated in the initial Hydro-Geological Report.</i>
b.	<i>Verify the sustainable use of groundwater and whether surface flow in the Kgwete River is influenced by groundwater use.</i>	<i>Monthly verification by way of comparing routine monthly monitoring records with the initial benchmark data of the Hydro-geological study.</i> <i>Make monitoring data available to DWS when required.</i> <i>Make amendments to groundwater extraction rates where groundwater levels (or surface water levels) are negatively affected by groundwater extraction.</i>

ENVIRONMENTAL IMPACT STATEMENT

This Section provides an environmental impact statement as required in terms of GNR 326, Appendix 3, Section 3(1)(i)(ii)(iii) as well as motivation for the preferred development footprint and project alternatives [Sect 3(g) & (n)].

M1 KEY FINDINGS OF THE IMPACT ASSESSMENT

Section D of this report identifies the regulated activities that will be triggered as part of the orchard establishment project and the environmental impact assessment process found the following:

Listing Notice 2 Activity 15: Vegetation clearance on an area larger than 20 hectare.

The vegetation clearing activity would not pose an overall detrimental impact as all nine cultivation site pose moderately to heavily modified land cover due to severe bush encroachment and historic agricultural activities. Ecosystem and biodiversity conservation priorities will not be compromised by the cultivation project and the restriction of the cultivation lands to the sites as determined by this assessment would allow adequate indigenous vegetation corridors for maintaining ecological processes.

Listing Notice 3 Activity 14: Development of structures of 10m² or more, 32m from the edge of a watercourse.

The repair or upgrading of existing structures and the construction and maintenance of new structures including dam wall repair, dam spillway repair, watercourse road crossings and a gauging weir including constructed waterways and erosion protection structures within watercourses, can be achieved without adversely impacting the bed and banks of watercourses, water flow and water quality, subject to implementation of mitigation measures as indicated in this assessment.

Listing Notice 1 Activity 19: Infilling or depositing of more than 10m³ from a watercourse.

The infilling or material and the excavation of material within watercourses associated with the repair, upgrading, construction and maintenance of existing or new structures within watercourses can be achieved without adversely impacting the bed and banks of watercourses, water flow and water quality, subject to implementation of mitigation measures as indicated in this assessment.

Overall the impact assessment found the following:

- *The assessment of the receiving environment revealed that the proposed cultivation and associated infrastructure can be accommodated on the proposed sites. In this regard it was found that the selected activity and development footprint will not pose any detrimental impact and risk on the following:*
 - *the physical and landscape characteristics of the site and its surroundings;*
 - *essential ecological integrity and the loss of biodiversity of the site and its surroundings;*
 - *the current and potential land-uses of the site and its surrounding;*
 - *heritage and cultural sites and the sense of place of the site and its surroundings;*
 - *the existing infrastructure and/or services in or around the site and holds no future opportunity cost;*
 - *the increase in levels of present and possible pollution or contamination of natural resources;*
 - *the health and safety of the public and different groups or individuals; and*
 - *social /economic welfare of current and future generations / communities located near the site and surroundings.*
- *A need and desirability assessment found the proposed cultivation project to be ecologically, economically and socially justifiable in support of sustainability objectives.*
- *A comparative assessment of the identified site alternatives are generally positive and the negative impacts can be mitigated to acceptable levels.*
- *The initial identification of potential impacts by way of the matrix assessment and rapid cumulative assessment methods identified the significance of impacts and risks related to the cultivation project, however none so much as to discard any of the selected sites. The option of not to cultivate on the selected sites may pose a negative impact on potential economic and social opportunities locally.*
- *The assessment of identified impacts with potential significance in Section K of this report indicates that negative impacts can be addressed by the recommended mitigation measures.*
- *Based on the above it can be stated that the cultivation project within the selected footprint areas as indicated on the Site Plan (Appendix A) would pose an overall LOW impact which is environmentally acceptable.*

VALIDATION AND RECOMMENDATIONS

This Section complies with GN R326, Appendix 3, Section 3(1)(n)-(r),(t)-(w).

N.1 Conditions of Authorisation

3(o) Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation [3(o)].

- *The recommended mitigation measures as contained in the EMPR (Appendix F) must be implemented during the various project phases and an ECO must conduct compliance monitoring and reporting.*
- *Where proposed mitigation measures are regulated by laws, regulations, norms and standards, the compliance monitoring and enforcement shall be the responsibility of the relevant Department that administers the relevant laws, regulations, norms and standards.*

N.2 Assumptions and uncertainties in the knowledge base

A description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed [3(P)]

It is assumed that primary and secondary sources of information and data as well as findings of scientific research and models, including information provided by interested and affected parties, the specialist, technical professionals and the Applicant are applicable, accurate, correct and valid and no uncertainties were identified in the knowledge base.

N.3 Reasoned opinion

A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation [3(q)].

The authorisation of the activities applied for can be recommended for the following reasons:

- *The proposed orchard establishment is considered to be environmentally, economically and socially justifiable.*
- *No aspect of the proposed orchard establishment and associated infrastructure is expected to pose any detrimental impact of the receiving environment.*
- *Comments or concerns from interested and affected parties were thoroughly investigated and addressed.*
- *Mitigation measures and recommendations as well as the environmental management programme are appropriate and practical for implementation and will reduce potentially significant impacts to acceptable levels.*

N.4 Authorisation period

The proposed activities do include operational aspects [3(r)].

The period for which the environmental authorisation is required is perpetual.

- *The initial orchard establishment period (construction period) is expected to be 24-36 months.*
- *The operational and maintenance period of the cultivation project will be ongoing according to the approved Environmental Management Program and in this regard the authorisation period is perpetually applicable.*

N.5 Financial provisions

Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts [3(t)].

Not applicable

N.6 Motivation of Deviations

An indication of any deviation from the approved scoping report, including the plan of study, including— any deviation from the methodology used in determining the significance of potential environmental impacts and risk [3(u)].

None

N.7 Specific Information

Any specific information that may be required by the competent authority [3(v)]

None

N.8 Other matters

Any other matters required in terms of section 24(4)(a) and (b) of the Act [3(w)].

None

AFFIRMATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

This Section complies with GNR 326, Appendix 3, Section 3(s).

AFFIRMATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

ON THE DRAFT ENVIRONMENTAL IMPACT REPORT

I, Riaan Visagie, practicing as Eco-8 Environmental Planners affirm to the best of my knowledge:

(i) the correctness of the information provided in the report;

(ii) written comments and inputs from stakeholders and interested and affected parties are included in this Report;

(iii) the inclusion of inputs and recommendations from the specialist reports where relevant;

(iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties is included in this report.



Riaan Visagie (EAP: EAPASA)
Eco-8 Environmental Planners

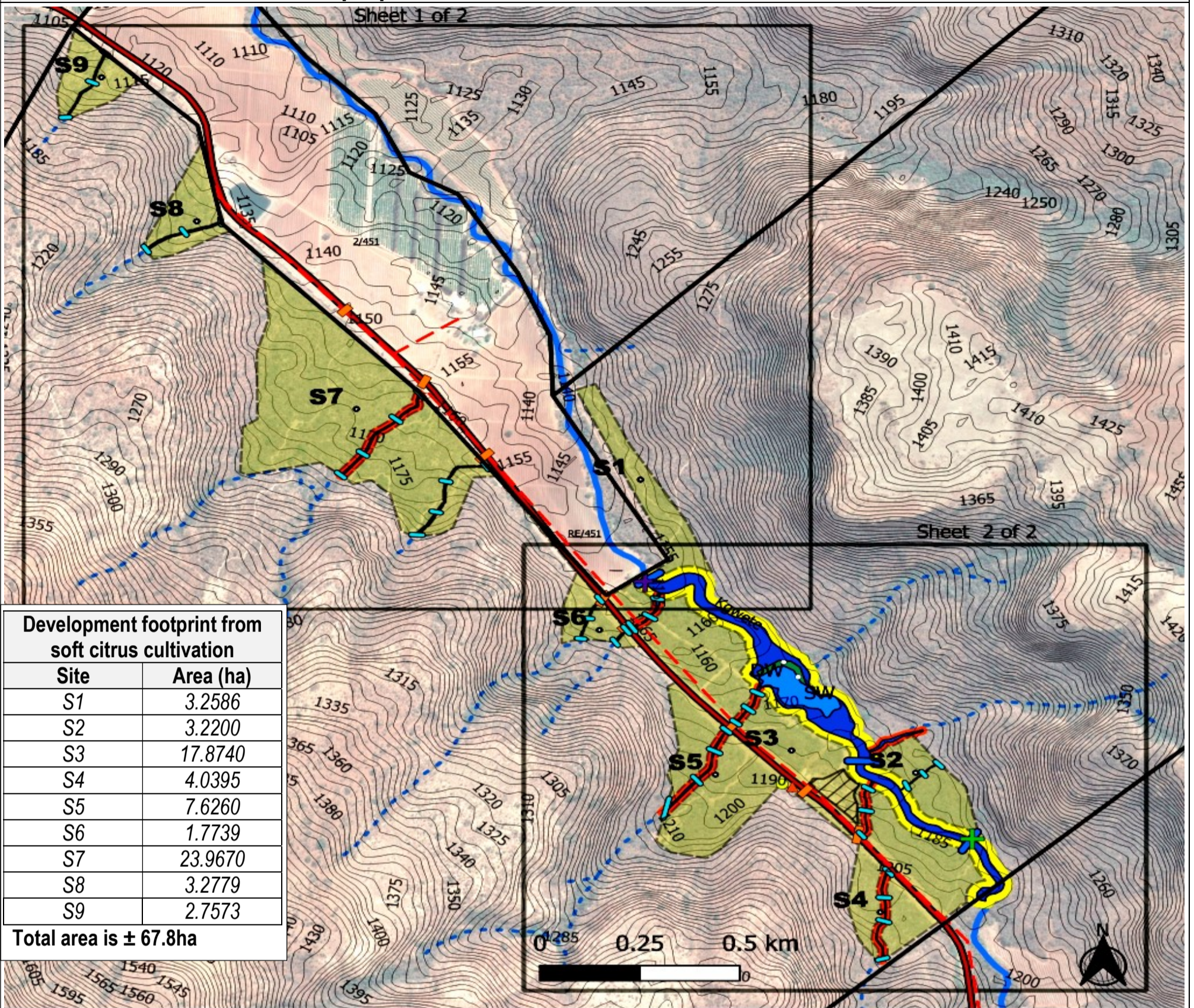
9 August 2022

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APPENDIX A: CONSOLIDATED SITE PLAN

Site S1-S9 illustrate the proposed cultivation on the Remainder of the farm Doornhoek 451 KT



Outlines and existing infrastructures	Natural sensitive features and buffers	Proposed infrastructure and rehabilitation
<ul style="list-style-type: none"> Farm boundary Sheet block outline Existing electrical line Existing stormwater road crossings District Road 2538 Cattle Kraal ● Existing borehole to be licensed + Existing split weir Existing dam 	<ul style="list-style-type: none"> Kgwete river Ephemeral drainage lines Site verified drainage lines Buffer of 10 meter on either side Buffer of 20 meter on either side 	<ul style="list-style-type: none"> Proposed cultivation sites + Proposed split weir Proposed ephemeral stream crossings ▲ Proposed pump house SW Rehabilitate existing dam spillway Proposed Kgwete watercourse crossings Proposed dam wall to be repaired

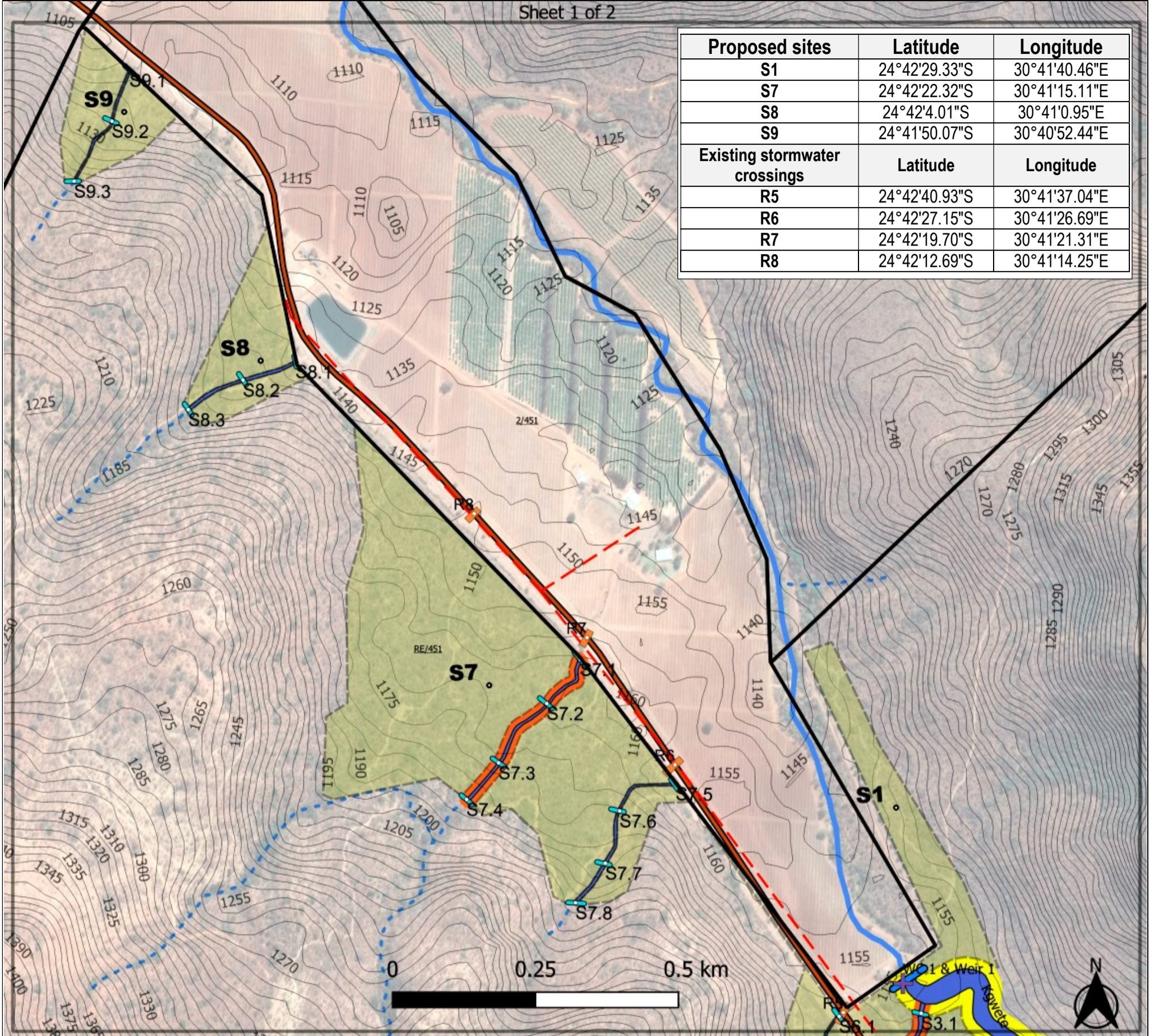
Sites	Latitude	Longitude	Sites	Latitude	Longitude
S1	24°42'29.33"S	30°41'40.46"E	S6	24°42'43.86"S	30°41'36.62"E
S2	24°42'58.01"S	30°42'4.75"E	S7	24°42'22.32"S	30°41'15.11"E
S3	24°42'55.88"S	30°41'53.75"E	S8	24°42'4.01"S	30°41'0.95"E
S4	24°43'11.48"S	30°42'1.81"E	S9	24°41'50.07"S	30°40'52.44"E
S5	24°42'58.01"S	30°41'47.12"E			

Listed project activity with site layout reference		
Site Reference	Activity	Description
Refer to Sheet 1 and 2	GNR 327 LN 1-19	It is proposed to construct storm water retention ponds within two watercourses on the property. The soil excavation and infilling volumes associated with these structures is expected to be more than 10m ³ .
S1-S9	GNR 325 LN 2-15	The proposed cultivation is ±67.8ha that is more than the 20 hectare of indigenous vegetation that will be cleared
Refer to Sheet 1 and 2	GNR 324 LN 3-14	The construction, installation, repair, and future maintenance of road crossings and water pipeline crossings as well as any run-off management and erosion prevention structures within the watercourses and buffer zones in and around the cultivation sites that are associated with the initial establishment and future maintenance of the proposed cultivation lands, waterways, road and pipeline crossings, erosion prevention structures and existing dam wall and spillway.
Geological zones :	Majority is Hutton and Glenrosa or Mispah is evident on the high slopes	Digital Elevation Model : ASTER GDEM-ERSDAC
Contours intervals :	5 meter	Plan no: 24/06/2022V1
Land type :	Map 2430 Pilgrims Rest (ISCW)	Plan version : Version 1

APPENDIX A: SITE PLAN (SHEET 1 OF 2)

Site S1, S7, S8 & S9 illustrate the proposed cultivation on the Remainder of the farm Doornhoek 451 KT

Sheet 1 of 2



Proposed sites	Latitude	Longitude
S1	24°42'29.33"S	30°41'40.46"E
S7	24°42'22.32"S	30°41'15.11"E
S8	24°42'4.01"S	30°41'0.95"E
S9	24°41'50.07"S	30°40'52.44"E
Existing stormwater crossings	Latitude	Longitude
R5	24°42'40.93"S	30°41'37.04"E
R6	24°42'27.15"S	30°41'26.69"E
R7	24°42'19.70"S	30°41'21.31"E
R8	24°42'12.69"S	30°41'14.25"E

Outlines and existing infrastructures	Natural sensitive features and buffers	Proposed infrastructure and rehabilitation
<ul style="list-style-type: none"> Farm boundary Sheet block outline Existing electrical line Existing stormwater road crossings District Road 2538 Cattle Kraal Existing borehole to be licensed Existing split weir Existing dam 	<ul style="list-style-type: none"> Kgwete river Ephemeral drainage lines Site verified drainage lines Buffer of 10 meter on either side Buffer of 20 meter on either side 	<ul style="list-style-type: none"> Proposed cultivation sites Proposed split weir Proposed ephemeral stream crossings Proposed pump house Proposed dam spillway system Proposed Kgwete watercourse crossings Proposed dam wall to be repaired

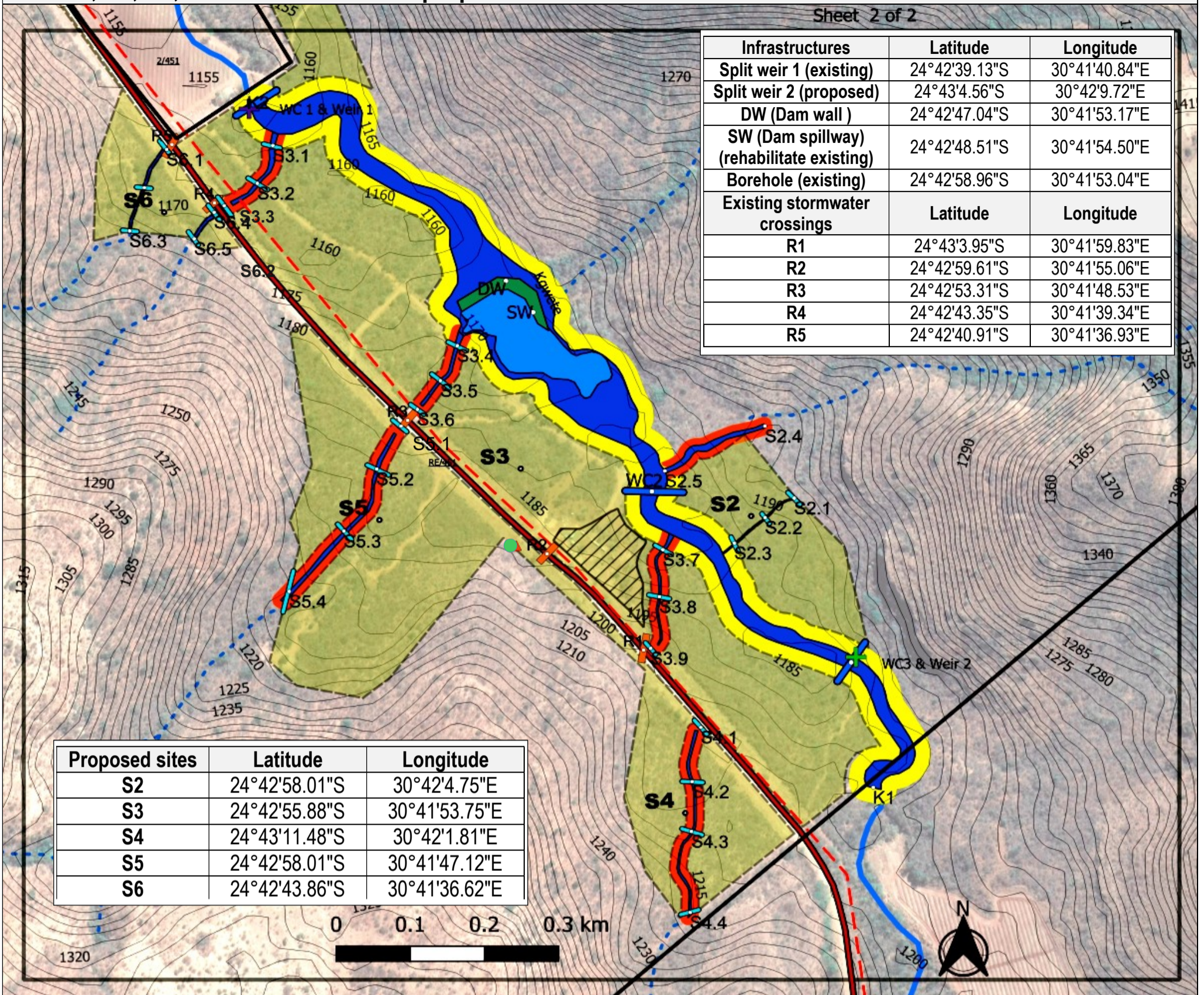
Stream crossings	Latitude	Longitude	Stream crossings	Latitude	Longitude
S7.1	24°42'20.94"S	30°41'20.77"E	S8.1	24°42'4.38"S	30°41'2.82"E
S7.2	24°42'23.30"S	30°41'18.59"E	S8.2	24°42'5.47"S	30°40'59.66"E
S7.3	24°42'26.83"S	30°41'15.70"E	S8.3	24°42'6.95"S	30°40'56.52"E
S7.4	24°42'28.90"S	30°41'13.40"E			
S7.5	24°42'27.80"S	30°41'26.58"E	S9.1	24°41'48.13"S	30°40'52.71"E
S7.6	24°42'29.74"S	30°41'23.23"E	S9.2	24°41'50.59"S	30°40'51.60"E
S7.7	24°42'32.59"S	30°41'22.35"E	S9.3	24°41'54.33"S	30°40'49.43"E
S7.8	24°42'34.89"S	30°41'20.47"E			

Geological zones :	Majority area is Hutton. Glenrosa or Mispah is evident on the high slopes	Digital Elevation Model :	ASTER GDEM-ERSDAC
Contours intervals :	5 meter	Plan no:	24/06/2022V1 (Sheet 1)
Land type :	Map 2430 Pilgrims Rest (ISCW)	Plan version :	Version 1

APPENDIX A: SITE PLAN (SHEET 2 OF 2)

Site S2, S3, S4, S5 & S6 illustrate the proposed cultivation on the Remainder of the farm Doornhoek 451 KT

Sheet 2 of 2

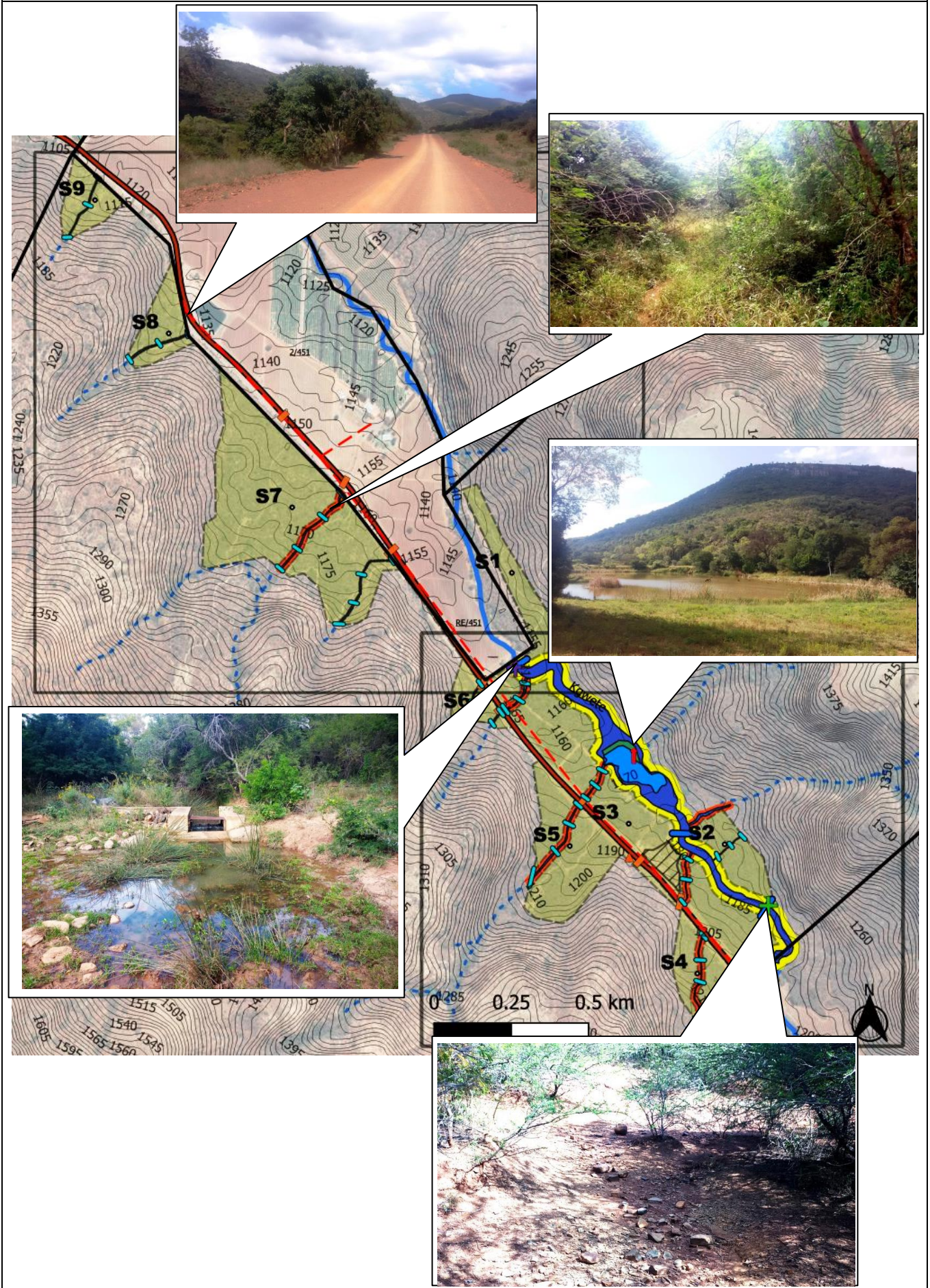


Infrastructures	Latitude	Longitude
Split weir 1 (existing)	24°42'39.13"S	30°41'40.84"E
Split weir 2 (proposed)	24°43'4.56"S	30°42'9.72"E
DW (Dam wall)	24°42'47.04"S	30°41'53.17"E
SW (Dam spillway) (rehabilitate existing)	24°42'48.51"S	30°41'54.50"E
Borehole (existing)	24°42'58.96"S	30°41'53.04"E
Existing stormwater crossings	Latitude	Longitude
R1	24°43'3.95"S	30°41'59.83"E
R2	24°42'59.61"S	30°41'55.06"E
R3	24°42'53.31"S	30°41'48.53"E
R4	24°42'43.35"S	30°41'39.34"E
R5	24°42'40.91"S	30°41'36.93"E

Proposed sites	Latitude	Longitude
S2	24°42'58.01"S	30°42'4.75"E
S3	24°42'55.88"S	30°41'53.75"E
S4	24°43'11.48"S	30°42'1.81"E
S5	24°42'58.01"S	30°41'47.12"E
S6	24°42'43.86"S	30°41'36.62"E

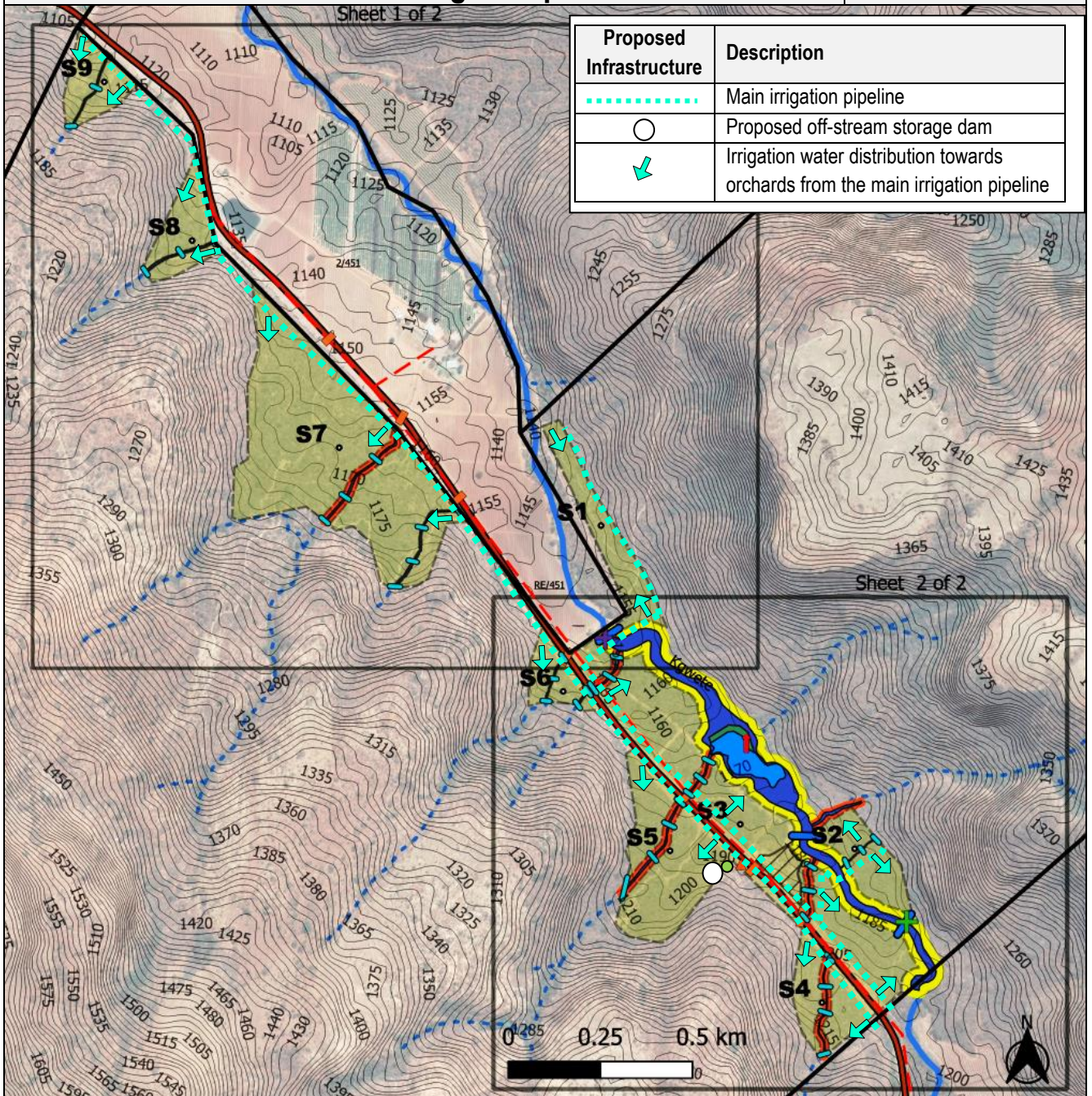
Outlines and existing infrastructures			Natural sensitive features and buffers			Proposed infrastructure and rehabilitation			
<ul style="list-style-type: none"> Farm boundary Sheet block outline Existing electrical line Existing stormwater road crossings District Road 2538 Cattle Kraal Existing borehole to be licensed Existing split weir Existing dam 			<ul style="list-style-type: none"> Kgwete river Ephemeral drainage lines Site verified drainage lines Buffer of 10 meter on either side Buffer of 20 meter on either side 			<ul style="list-style-type: none"> Proposed cultivation sites Proposed split weir Proposed ephemeral stream crossings Proposed pump house SW Rehabilitate existing dam spillway Proposed Kgwete watercourse crossings Proposed dam wall to be repaired 			
Stream crossings	Latitude	Longitude	Stream crossings	Latitude	Longitude	Stream crossings	Latitude	Longitude	
S2.1	24°42'56.98"S	30°42'7.04"E	S3.8	24°43'1.62"S	30°42'0.56"E	S5.4	24°43'1.31"S	30°41'42.67"E	
S2.2	24°42'57.95"S	30°42'5.51"E	S3.9	24°43'3.91"S	30°41'59.99"E				
S2.3	24°42'59.12"S	30°42'4.12"E				S6.1	24°42'41.03"S	30°41'36.92"E	
			S4.1	24°43'7.51"S	30°42'2.39"E	S6.2	24°42'42.79"S	30°41'35.77"E	
S3.1	24°42'40.92"S	30°41'41.92"E	S4.2	24°43'10.11"S	30°42'2.05"E	S6.3	24°42'44.77"S	30°41'35.03"E	
S3.2	24°42'42.63"S	30°41'41.32"E	S4.3	24°43'12.42"S	30°42'1.98"E	S6.4	24°42'43.91"S	30°41'39.18"E	
S3.3	24°42'43.64"S	30°41'39.70"E	S4.4	24°43'16.02"S	30°42'1.95"E	S6.5	24°42'45.08"S	30°41'38.28"E	
S3.4	24°42'49.94"S	30°41'50.81"E				Proposed river crossings		Latitude	Longitude
S3.5	24°42'51.65"S	30°41'49.94"E	S5.1	24°42'53.59"S	30°41'48.12"E	WC1	24°42'39.13"S	30°41'40.84"E	
S3.6	24°42'52.90"S	30°41'48.91"E	S5.2	24°42'55.79"S	30°41'46.90"E	WC2	24°42'56.75"S	30°42'0.19"E	
S3.7	24°42'59.46"S	30°42'0.68"E	S5.3	24°42'58.50"S	30°41'45.30"E	WC3	24°43'4.56"S	30°42'9.72"E	
Geological zones :			Majority area is Hutton. Glenrosa or Mispah is evident on the high slopes			Digital Elevation Model :			ASTER GDEM-ERSDAC
Contours intervals :			5 meter			Plan no:			24/06/2022V1 (Sheet 2)
Land type :			Map 2430 Pilgrims Rest (ISCW)			Plan version :			Version 1

PHOTO'S OF THE PROPOSED SITE

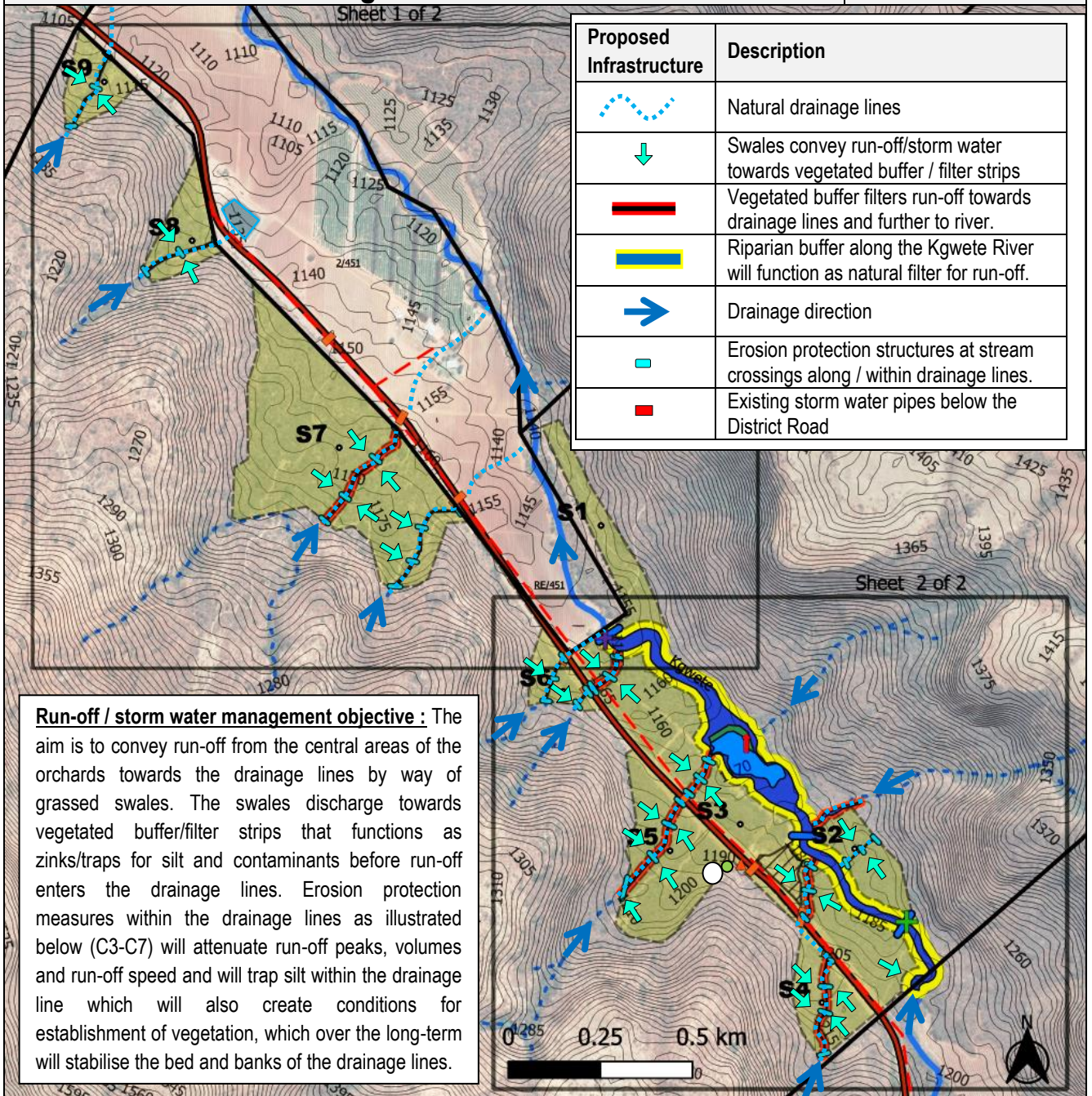


Schematic illustration of the irrigation plan

APPENDIX C.1



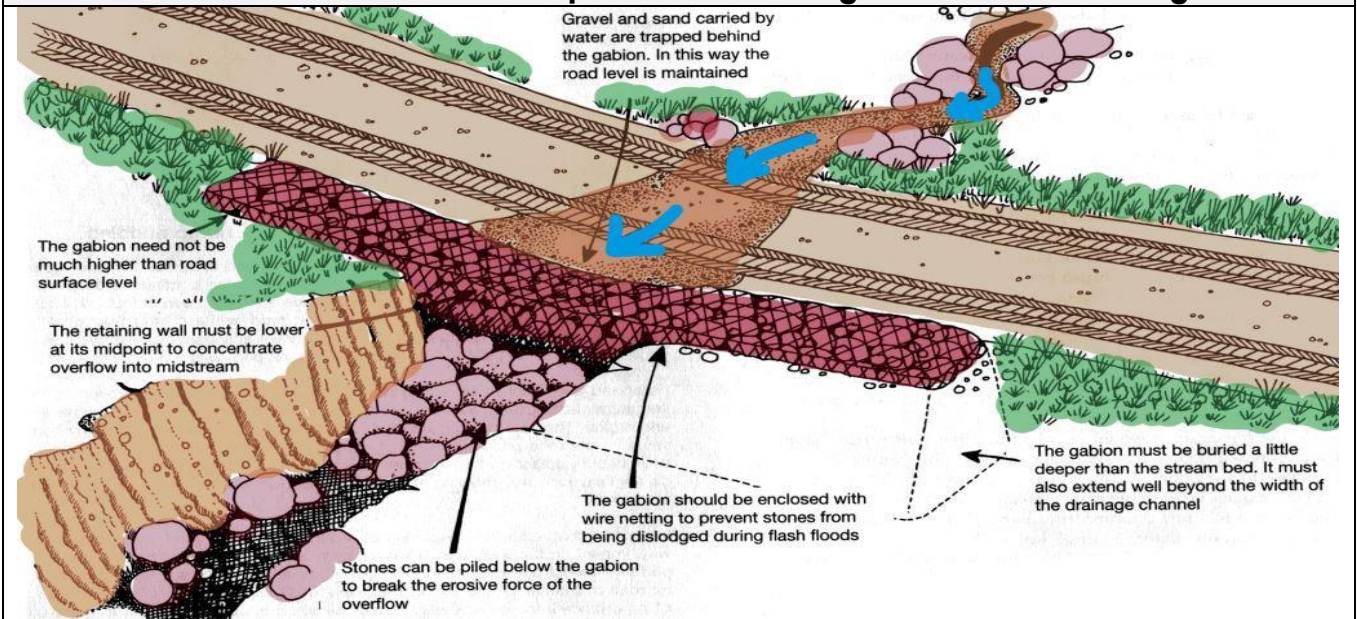
Outlines and existing infrastructures	Natural sensitive features and buffers	Proposed infrastructure and rehabilitation
<ul style="list-style-type: none"> Farm boundary Sheet block outline Existing electrical line Existing stormwater road crossings District Road 2538 Cattle Kraal ● Existing borehole to be licensed + Existing split weir Existing dam 	<ul style="list-style-type: none"> Kgwete river Ephemeral drainage lines Site verified drainage lines Buffer of 10 meter on either side Buffer of 20 meter on either side 	<ul style="list-style-type: none"> Proposed cultivation sites + Proposed split weir Proposed ephemeral stream crossings ▲ Proposed pump house Proposed dam spillway system Proposed Kgwete watercourse crossings Proposed dam wall to be repaired



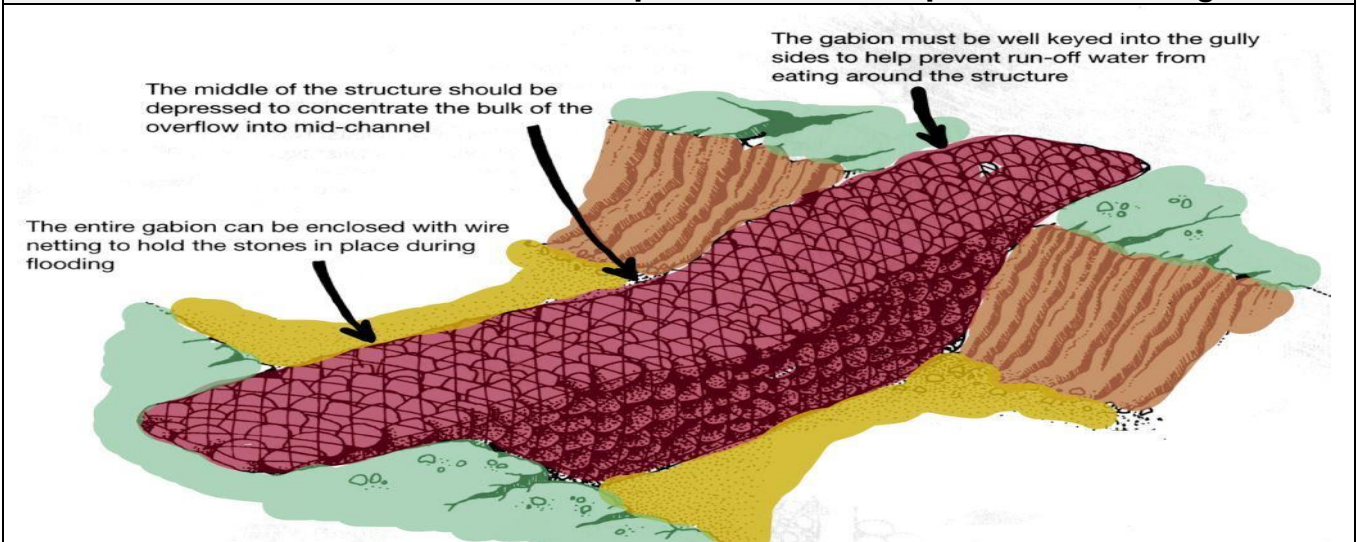
Run-off / storm water management objective : The aim is to convey run-off from the central areas of the orchards towards the drainage lines by way of grassed swales. The swales discharge towards vegetated buffer/filter strips that functions as zinks/traps for silt and contaminants before run-off enters the drainage lines. Erosion protection measures within the drainage lines as illustrated below (C3-C7) will attenuate run-off peaks, volumes and run-off speed and will trap silt within the drainage line which will also create conditions for establishment of vegetation, which over the long-term will stabilise the bed and banks of the drainage lines.

Outlines and existing infrastructures	Natural sensitive features and buffers	Proposed infrastructure and rehabilitation
<ul style="list-style-type: none"> Farm boundary Sheet block outline Existing electrical line Existing stormwater road crossings District Road 2538 Cattle Kraal Existing borehole to be licensed Existing split weir Existing dam 	<ul style="list-style-type: none"> Kgwete river Ephemeral drainage lines Site verified drainage lines Buffer of 10 meter on either side Buffer of 20 meter on either side 	<ul style="list-style-type: none"> Proposed cultivation sites Proposed split weir Proposed ephemeral stream crossings Proposed pump house Proposed dam spillway system Proposed Kgwete watercourse crossings Proposed dam wall to be repaired

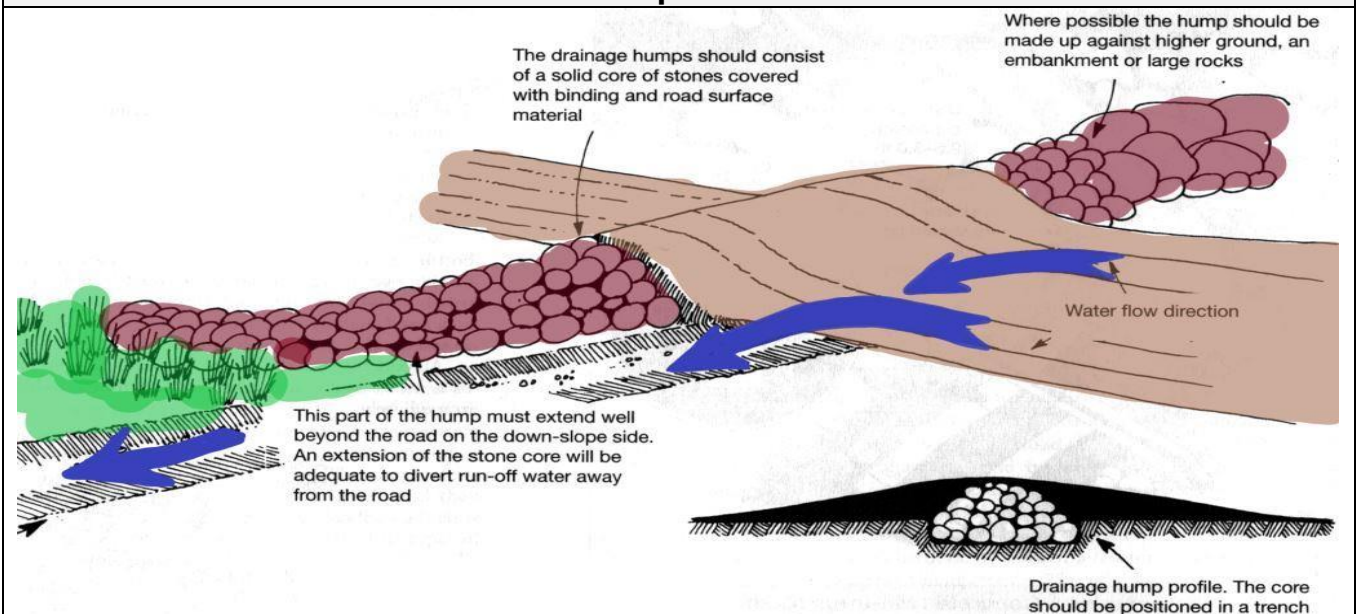
C3. Schematic illustration of an ephemeral drainage line road crossing



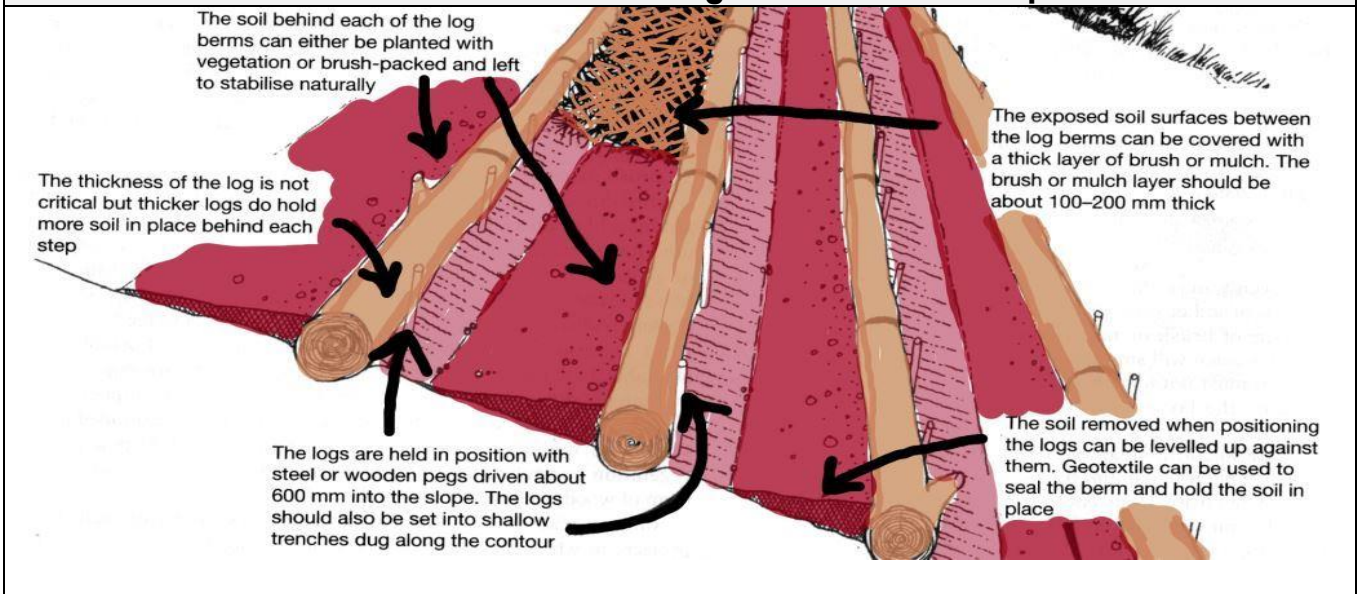
C4. Schematic illustration of erosion protection in an ephemeral drainage line



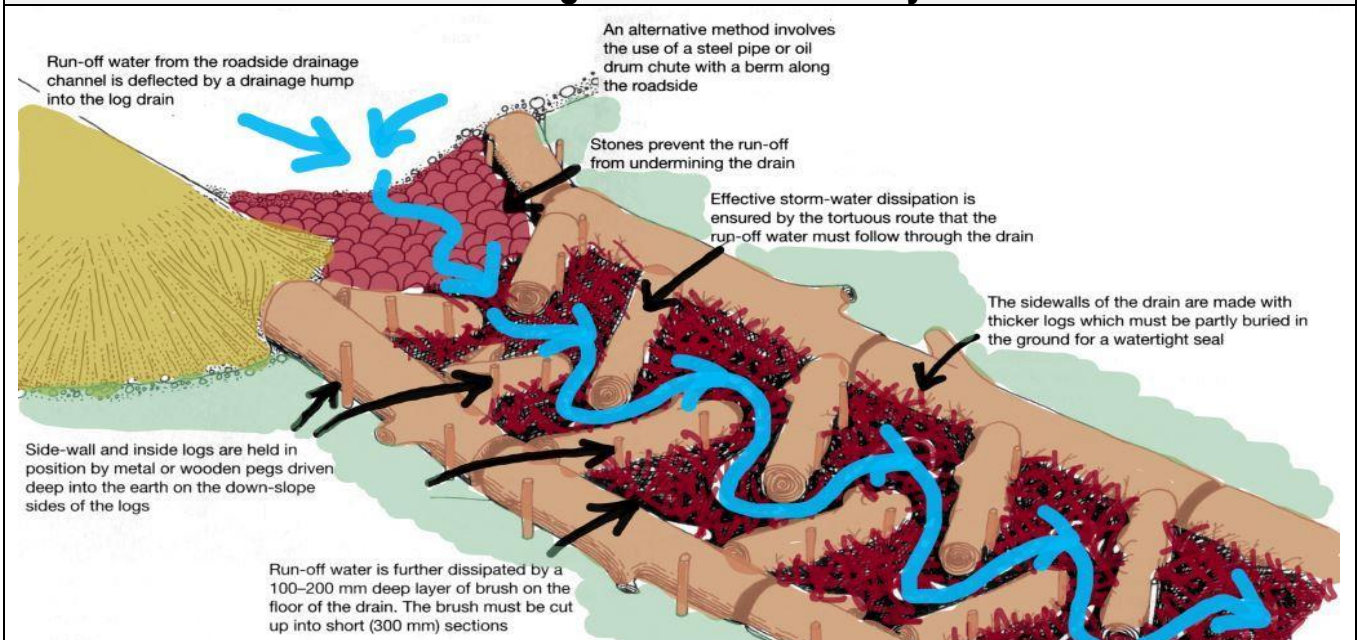
C5. Schematic illustration of road hump as erosion control measure



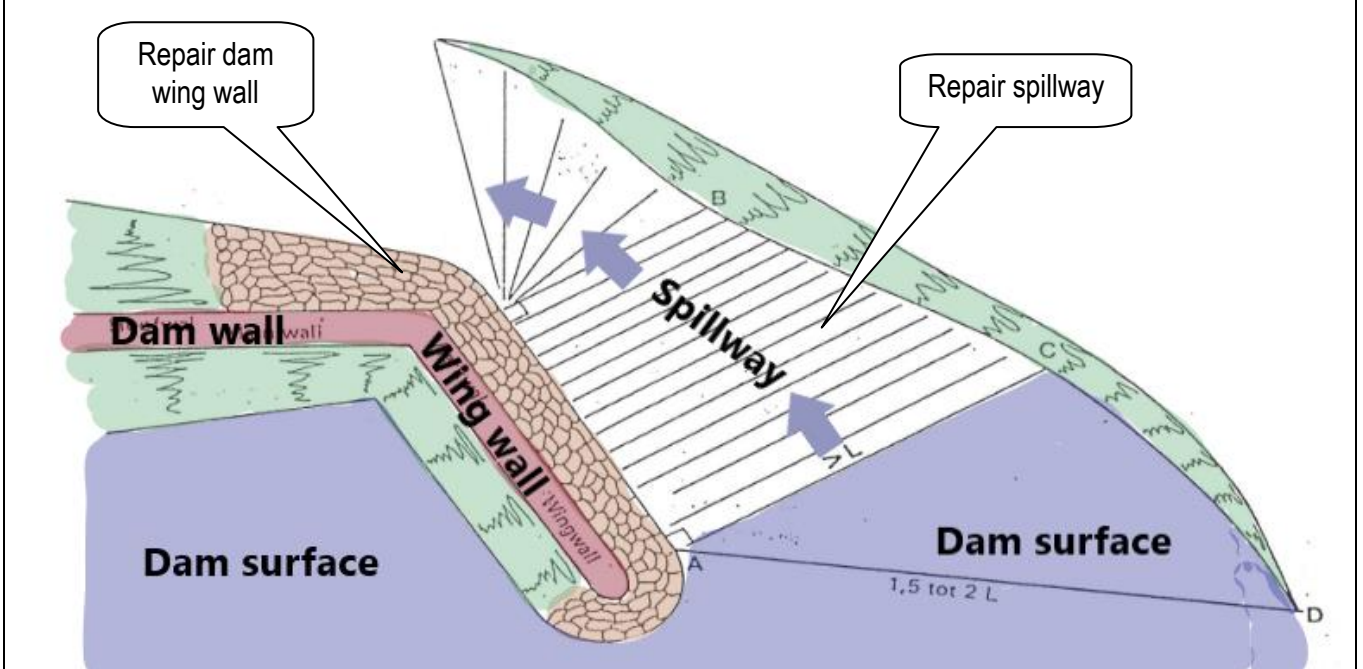
C6. Schematic illustration of the use of logs to stabilise a slope



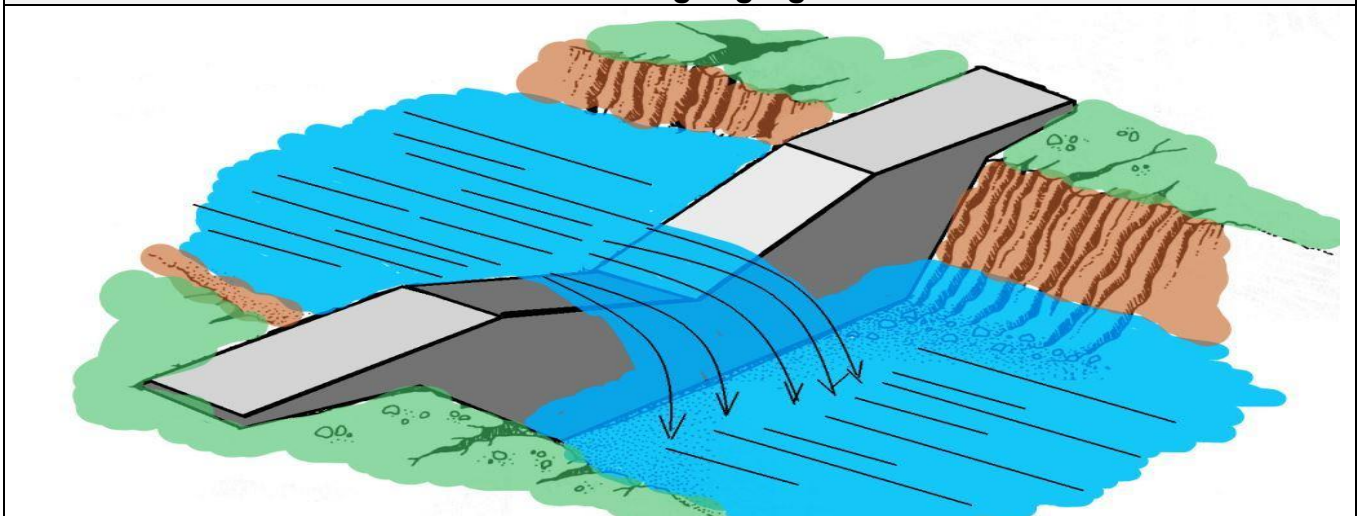
C7. Schematic illustration of a log and brush waterway drain



C8. Schematic illustration of the repair of the dam wall spill way



C9. Schematic illustration of a V-Notch gauging weir



COMMENTS & RESPONSE REPORT

SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

In compliance with Appendix 3, Section 3(h)(iii) of GNR326 (2017), the Section below provides a summary of the issues raised by interested and affected parties and an indication of the manner in which the issues are incorporated or the reasons for not including them (the unabridged comments can be viewed in Appendix E).

#	Summary of comments/issues received on the Scoping Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
Ref	11 March 2022 Comment by Namoneng, represented by Mr. C Blignout (Ptn 2 Doornhoek 451-KT and Re Namoneng 612-KT)	Response by Eco 8-Environmental Planners. Assisted by Insitu Consulting upon request by Eco-8	N/A
1	This farm doesn't have any water rights from the river or its resources from the catchment area it falls within.	<p><i>Namoneng Citrus (Pty) Ltd (Mr Christiaan Blignout)</i> <i>The water use is for groundwater and in accordance with the National Water Act – Act No. 36 of 1998 (NWA), the water user can apply for a groundwater use license with or without surface water rights. The “legal water entitlements” as Mr. Blignaut stipulate is for surface water use and not for groundwater use and in terms of the NWA, two different resources. To the best of our knowledge Namoneng Citrus only have surface water rights, and the twenty-four boreholes reported by Namoneng during the 2018 and 2020 hydro-census, with a combined yield of 1558.365m³/day, does not constituted as surface water. As indicated above in point 1, addressed to the Irrigation Board, no groundwater maybe abstracted from drainage region B60G without a WUL. The “eye” of the river as Mr. Blignaut state is not on Kaspersnek or Doornhoek alone. Granted, there are two fountains on Kaspersnek with an averaged measured yields of 1.53l/s (fountain 1, measured in 2020) and 0.2l/s (fountain 2) that accumulate to 1.73l/s discharging to the alluvium and Kgwete Stream. Stream measurement Point 1 indicated an average flow rate of 10.76l/s in 30/11/2020, suggesting natural discharge further upstream form Kaspersnek boundary. The difference between Stream Measure Points 1 and 2 is also largely attributed to natural discharge from the dolomitic compartment, hence the Geohydrological study to prevent over abstraction and exploitation of surface and groundwater sources and to give guidelines to the correct management of these resources, and as stated in our reports, with dedicated monitoring the</i></p>	<p>Sect F6.6 Sect F6.7 Sect 14.2</p>
2	This valley is a mountain catchment area and any new development without the right there of will effect water resources from and above ground.		
3	The property is still in the origin of the Kgwete (Kaspersnek) river and the drilling of boreholes will affect the downstream of the river severely.		
4	This will have a dramatic effect the water users downstream and this puts everyone's business downstream at high risk.		
5	The system (rivers and boreholes) downstream showed this the past few years with the drought and over extracting of water from these sources and in the “eye” of the river cannot continue and furthermore this farm doesn't have water rights-they planted already far more than they should and this will result in using more water than they should they land.		

6	The system cannot sustain any further developments. This is not sustainable and a huge risk for downstream users and their business.	<i>interaction could be quantified. All these concerns are address in Sections 4, 5, and 7 of our reports. As stipulated by Mr. Blignaut “The system (River & Borehole) downstream showed the last few years with the drought and over extracting of water from these sources” is of concern to us as well. The over abstraction of groundwater below the northern boundary dyke is clearly visible in the step of -9.27m that was recorded (2018) in the water table across the dyke between borehole MH5 located up gradient of the dyke and MH4 located downgradient of the dyke in the adjacent compartment. This is an indication of over exploitation of groundwater in the downstream compartment. No signs of over abstraction were evident upstream from the dyke (Kaspersnek and Doornhoek), water levels remained the same between 2018 and 2020. Borehole density down the Kgwele River valley below the Kaspersnek compartment appears high with unbridled overexploitations, apart from affecting downstream base flow and will also influence the Kaspersnek compartment in the long run.</i>	
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#	Summary of comments/issues received on the Scoping Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
	15 March 2022 Comment by Kaspersnek Vyehoek Irrigation Board, represented by Mr. C Blignout and the assisted by Steenekamp Brookman attorneys	18 March 2022 Response by Eco 8-Environmental Planners	N/A
A	The Water Board has had sight of the hydrological report filed by the Applicant for purposes to support an application to be issued with a water use licence. The Water Board has consulted with a professional Geo- Hydrologist with regard to the conclusions contained in the hydrological report of the Applicant.	<ol style="list-style-type: none"> 1. <i>Your letter dated 15 March 2022 (ref JJ Steenekamp/ks/SK0098) and your comments to our Notice of 11 February 2022 is herewith acknowledged.</i> 2. <i>You have been registered as interested and affected party on behalf of the Kaspersnek Vygehoek Rivers Irrigation Board (KVRIB).</i> 3. <i>Your comment that is Annexed to your letter (Annexure B), in support of objections to the application for a water use license on the remainder of the farm Doornhoek is noted, however we also noted the following:</i> <ol style="list-style-type: none"> a. <i>You mention that the Water Board consulted with a professional geo-hydrologist who reviewed the Hydrological Report by Insitu Consulting and who provided advise and comment thereon (Par 1; 2; 3; 4).</i> b. <i>However, you failed to append evidence of such review and comments by a professional geo-hydrologist to your letter.</i> 4. <i>Both the Environmental Impact Assessment (EIA) and the Water Use License Application (WULA) processes require scientific evidence to be provided to the decision-making authorities.</i> 5. <i>In this regard the Applicant (Nendicure (Pty) Ltd provided such evidence by way of a specialist study and Hydro-Geological Report that complies with the minimum requirements as required by Department of Water and Sanitation and which study assessed both the effect of groundwater abstraction on the aquifer and the effect of such abstraction on the surface water quantity of the Kgwele River.</i> 	N/A

		<p>6. There is no evidence that your comments (Par 1; 2; 3 ; 4) has any scientific basis and can therefore not be regarded as sufficient for decision-making by any decision-making authority.</p> <p>7. You are therefore requested to provide the scientific evidence in support of your comments by sending us a report compiled and signed by an independent and qualified geo-hydrologist, dealing with and providing scientific evidence as basis to each of your comments mentioned in Par 1; 2; 3 and 4 of Annexure B to your letter.</p> <p>8. Upon failure by you to supply us with the requested information, your comments will be regarded as unfounded assumptions only, and we and the decision-making authorities will not be able to consider your comment in any way as part of the decision-making process which forms part of the EIA and WULA processes.</p> <p>9. Upon your failure to comply with our request, the Applicant will also be under no obligation to reply further on your relevant comments (Par. 1; 2; 3 and 4) attached as Annexure B to your letter.</p> <p>10. As it is clear in your letter that you have already received some form of written report from your appointed geo-hydrologist we request that you provide the information requested above, to us by 25 March 2022.</p>	
		<i>Additional response by Eco 8-Environmental Planners, assisted by Insitu Consulting.</i>	
1	The entire catchment area within the area of jurisdiction of the water board is situated, is of such a nature that there is a very high direct integration between surface water and underground water.	<i>The interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports. The statement in point 1 "The entire catchment area within which the area of jurisdiction of the water board is situated, is of such a nature that there is a very high direct integration between surface water and underground water" is not correct as dolomitic aquifers is not restricted to catchments, it is defined by compartments and must be evaluated in its entirety, not just the area of jurisdiction of the water board. The provided summary report from WSM Leshika addressed to Mr. Christiaan Blignaut stated "During dry periods the board has allowed groundwater abstraction to supplement the surface water shortage". Our question to the Water Board is, if there is such a "very high direct integration between surface water and underground water," why do they allow the downstream users to supplement their "surface water" allocations with groundwater abstraction from boreholes without the necessary permits or licences? Surface and groundwater are deemed as two different resources and a surface water entitlement does not constitute the right to use groundwater for irrigation purposes. Section 21(a) of the National Water Act requires that, where water is taken from a water resource for irrigation purposes, that use has to be registered as a general authorisation if abstraction volumes are less than the relevant gazetted water volumes, or licensed if the abstraction volumes are more than the relevant gazetted water volumes. The majority of downstream water users fall within drainage region B60G, and no groundwater may be abstracted without a licence in terms of the relevant gazetted water volumes.</i>	Sect F6.7
2	The above implies that it is completely insufficient to consider the underground water source in isolation from the surface water characteristics of the area.	<i>As stipulated above, the interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports; stating that</i>	Sect F6.7

		<i>the groundwater sources were not considerate in isolation from the surface water. As indicated in our reports, with dedicated monitoring this interaction could be quantified.</i>	
3	The hydrological report on which the applicant relied only considered the underground water resource and in this regards the following can be remarked.	<i>Statement is not true, as indicated above.</i>	N/A
3a	The tests conducted were for a very short period of time.	<i>DWAF's (April 1997) "Minimum Standards and Guidelines for Groundwater Resource Development for the Community Water Supply and Sanitation Programme" were adhered to in terms of the aquifer testing perform as well as SANS 0299-4:1998 - Code of Practice; Development, Maintenance and Management of Groundwater Resources – Part 4: Test-pumping of water boreholes, to meet the requirements of the National Water Act – Act No. 36 of 1998. For agricultural purposes, the minimum requirements are 48 hours. Tests on production boreholes were conducted for 72 hours. And with dedicated long-term monitoring the interaction would be quantified.</i>	Sect F14.2
3b	The testing procedures entailed that the water pumped from the underground source, was released in the surface water and due to the fact that there is a high integration between surfaces and underground, such water would immediately replenish the underground source with the result that little reliance can be placed on the tests done.	<i>This statement is not true. As per above, the minimum standards were adhered to, and discharge hose of a 100m in length was used on production holes pump tested.</i>	Sect F14.2
3c	There was no testing done at all with regard to the surface water source stability and its impact on the underground water.	<i>Please refer to above and to Section 4.2.2 in our reports addressing this matter.</i>	N/A
4	As a result of the above, the hydrological report is wholly insufficient to justify an additional water use license to the Applicant.	<i>This statement is not true.</i>	N/A
5	The Water board notes that an initial borehole water use license has already been granted to the Applicant, and the Water Board has immediately filed an appeal, opposing the issuing of the license and his appeal is currently pending.	<i>This appeal is based on the assumption that the Water Board was not consulted during the previous public participation process; to the best of our knowledge, the Water Board was consulted during this process.</i>	N/A
6	The water board also states as follows	<i>The Water Board or the planned "Water Use Association" must comply with the rules and regulations of the National Water Act: Act 36 of 1998 (NWA) and it seems as if the current board is missing this point; as they grant the use of groundwater by their members to supplement the shortage of surface water (as stated in point 1 no groundwater maybe abstracted in drainage region B60G, without a WUL). Their obligation is to manage the surface and groundwater use in a sustainable manner and to protect the ecology of the Kgwete, Vyehoek and Kaspersnek Rivers for the benefit to all its members and water users, not just for the benefit of a few. During the studies conducted in 2018 and 2020, the Kgwete river was dry from below the split weir due to over abstraction. In our previous public participation response dated 2019/01/30 we gave the following opinion; "In our opinion Kaspersnek Vyehoek River Irrigation Board need to implement stricter monitoring to regulate existing surface water usage (flow meters installed by all water users to document their usage on a monthly base) and the Board should install measuring points to determine the actual river flow along the Kgwete, Vyehoek and Kaspersnek rivers. During droughts when the river flow diminishes all water, users must reduce their usage. With closer monitoring the correlation between the rainfall and associated flows and discharges could be quantified." We also recommended that all the water users with in the jurisdiction of the Kaspersnek Vyehoek River Irrigation Board, should register their boreholes and where applicable Water Use License be obtained. All irrigation usage, surface and groundwater, must be metered</i>	N/A
6a	The Water Board is currently finalising its existence as a water use Association in terms of Chapter eight of the National Water Act 36 of 1998.		N/A
6b	As part of the above-mentioned process, the Water Board is finalising its water use rules and constitution, as foreseen in the act in the normal legal way.		N/A
6c	The Water Board also takes notice that borehole license are normally issued to an Applicant subject to the condition that the Applicant shall become part of your produce associations and shall be subject to the rules, regulations and constitutions of such a water board regulation.		Sect E1
6d	The Water Board states unequivocally that it is awaiting an integrated hydrological and geo-hydrological report of the area, which will contain very clear guidelines as to the total reasonable constraints on the water use by water users within the area of jurisdiction of the Water Board.		N/A
6e	In its rules and regulations, the Water Board foresees that is will cap each member of the water use association, to a water use quantity that could be less than the quantity allowed to the current Applicant in terms of its application for the underground water use license.		N/A

		<i>and recorded on a monthly basis. The remainder of the points to be addressed by legal representatives as it seems bias. In-Situ Consulting would like to request a copy of the report as mentioned in point 6.d, when it becomes available.</i>	
7	It is, given the above, completely inappropriate for the Department to issue a water use license that can be in conflict with the envisaged water use rules and regulations of the water board.	<i>As stated above, the Water Board must adhere to the NWA and the Department, not the other way around.</i>	N/A
8	For the above reasons, the water board clearly objects to the issue of the water use license.	<i>Noted</i>	N/A

#	Summary of comments/issues received on the Scoping Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
	25 March 2022 Additional comment by Kaspersnek Vyehoek Rivers Irrigation Board, assisted by Geohydrologist Messrs. WSMLESHIK	31 March 2022 Response by Eco 8-Environmental Planners, assisted by Insitu Consulting	
1	<p>Background</p> <p>The Kaspersnek Vyehoek Irrigation Board has a total water allocation of 657ha at 7500m³/ha/annum or 4927500m³/annum. Its members are located in the eastern portion of the B60G quaternary catchment along the Kgwete, Vyehoek, and Kaspersnek rivers. The property of Nendicure (Pty) Ltd (Kaspersnek Fruits) is located in the upper catchment area of the Kgwete river where a significant portion of the runoff and base flow is generated for use by the Kaspersnek Vyehoek Irrigation board.</p> <p>Each of the property owners belonging to the Kaspersnek Vyehoek Irrigation board including Nendicure (Pty) Ltd have a legal allocation which is managed by the board. <u>During dry periods, the board has allowed groundwater abstraction to supplement the surface water shortage. The total water usage (groundwater and surface water) is not allowed to exceed the allocations.</u> This shows that the existing allocations are under stress during low flow periods.</p> <p>Nendicure (Pty) Ltd intend expanding their operation to between 120 and 140 ha. This will require an additional 380 250m³/annum (120ha at 4 500m³/ha/annum = 540 000m³/annum, less the existing rights, 21,3ha at 7 500m³/ha/annum = 159 750m³/annum). They intend to source the additional water from groundwater resources. They have recently received a Water Use License (License No: 06/B60G/A/10858) for the abstraction of groundwater (227 634,44m³/annum) on the remaining extent of the farm Kaspersnek 481 KT and are in the process of applying for 2 additional Water Use Licences for the balance of their water requirement on the recently purchased property, the remainder of Doornhoek 451 KT, and again on the remaining extent of the farm Kaspersnek 481 KT.</p>	<p><i>The interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports. The statement in point 1 “The entire catchment area within which the area of jurisdiction of the water board is situated, is of such a nature that there is a very high direct integration between surface water and underground water” is not correct as dolomitic aquifers is not restricted to catchments, it is defined by compartments and must be evaluated in its entirety, not just the area of jurisdiction of the water board.</i></p> <p><i>The provided summary report from WSM Leshika addressed to Mr. Christiaan Blignaut stated “During dry periods the board has allowed groundwater abstraction to supplement the surface water shortage”. Our question to the Water Board is, if there is such a “very high direct integration between surface water and underground water,” why do they allow the downstream users to supplement their “surface water” allocations with groundwater abstraction from boreholes without the necessary permits or licences?</i></p> <p><i>Surface and groundwater are deemed as two different resources and a surface water entitlement does not constitute the right to use groundwater for irrigation purposes. Section 21(a) of the National Water Act requires that, where water is taken from a water resource for irrigation purposes, that use has to be registered as a general authorisation if abstraction volumes are less than the relevant gazetted water volumes, or licensed if the abstraction volumes are more than the relevant gazetted water volumes. The majority of downstream water users fall within drainage region B60G, and no groundwater may be abstracted without a licence in terms of the relevant gazetted water volumes.</i></p>	Sect F6.7

<p>2</p>	<p>Hydrogeological Assessment by IN-SITU Consulting</p> <p>Impacts of abstraction on base flow in the river cannot be determined from short duration test pumping and stream flow measurements as initially water is removed from aquifer storage. The time of response is greatly affected by distance from the river and aquifer parameters and stream bed conductance.</p> <p>Groundwater abstraction can deplete both groundwater storage and groundwater base flow in a non-linear fashion depending on the transmissivity and storability of the aquifer, the distance from the stream channel and the time since pumping started and the volume of recharge in that month.</p> <p>The depletion of base flow is critical to determine as this will impact on existing allocations downstream. The test pump results indicate leaky conditions from the flattening of the CRD curve. This leakage is probably from the river further indicating impact on stream flow.</p> <p>The calculations show that the bulk of recharge is discharged to the river. Surely then abstraction will largely result in streamflow depletion, otherwise what is the fate of this water? No piezometric map of the compartment is available to determine the flow towards the Kgwete River.</p> <p>The water balance done for the Kaspersnek Compartment shows a significant amount of allocatable groundwater available. This is misleading as most of this is available in the B60D and B60B catchments. In fact, there is no allocatable groundwater available in the B60G catchment according to the Gazetted Reserve Determination for the Olifants and Letaba catchments, see Government Gazette No 41887 of 7 September 2018, Reserve Determination of water resources for the catchments of the Olifants and Letaba in terms of section 16(1) and (2) of the National Water Act, 1998 (Act 36 of 1998), Table 6.1. The Gazette further indicates (Table 6.1) that the groundwater stress factor is high (0.82) and that when the reserve is considered no additional groundwater should be allocated. This is a legal requirement that should have been considered when evaluating the license application for Nendicure (Pty) Ltd.</p>	<p><i>As stipulated above, the interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports; stating that the groundwater sources were not considered in isolation from the surface water. As indicated in our report, with dedicated monitoring this interaction could be quantified.</i></p> <p><i>DWAF's (April 1997) "Minimum Standards and Guidelines for Groundwater Resource Development for the Community Water Supply and Sanitation Programme" were adhered to in terms of the aquifer testing perform as well as SANS 0299-4:1998 - Code of Practice; Development, Maintenance and Management of Groundwater Resources – Part 4: Test-pumping of water boreholes, to meet the requirements of the National Water Act – Act No. 36 of 1998. For agricultural purposes, the minimum requirements are 48 hours. Tests on production boreholes were conducted for 72 hours. And with dedicated long-term monitoring the interaction would be quantified.</i></p> <p><i>This statement is not true. As per above, the minimum standards were adhered to, and discharge hose of a 100m in length was used on production holes pump tested.</i></p> <p><i>Please refer to above and to Section 4.2.2 in our report addressing this matter. This objection is based on the assumption that the Water Board was not consulted during the previous public participation process; to the best of our knowledge, the Water Board was consulted during this process.</i></p> <p><i>The Water Board or the planned "Water Use Association" must comply with the rules and regulations of the National Water Act: Act 36 of 1998 (NWA) and it seems as if the current board is missing this point; as they grant the use of groundwater by their members to supplement the shortage of surface water (as stated in point 1 no groundwater maybe abstracted in drainage region B60G, without a Water Use License).</i></p>	<p>Sect F6.7</p>
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3	<p>Conclusions</p> <p>The area under jurisdiction of the Kaspersnek Vyehoek Irrigation Board is already under stress to supply sufficient water to meet the legal allocations of its members. Any additional allocation will place further stress on the water resources threatening the investments made in the area. Significant quantities of groundwater discharge to the surface water resources supplying the base flow of the rivers. Any abstraction of groundwater will thus impact on the surface water resources affecting existing allocations. The Gazetted allocatable groundwater for the B60G catchment is zero, therefore no additional groundwater use should be approved.</p>	<p><i>The Irrigation Board's obligation is to manage the surface and groundwater use in a sustainable manner and to protect the ecology of the Kgwete, Vyehoek and Kaspersnek Rivers for the benefit to all its members and water users, not just for the benefit of a few. During the studies conducted in 2018 and 2020, the Kgwete river was dry from below the split weir due to over abstraction. In our previous public participation response dated 2019/01/30 we gave the following opinion; "In our opinion Kaspersnek Vyehoek River Irrigation Board need to implement stricter monitoring to regulate existing surface water usage (flow meters installed by all water users to document their usage on a monthly base) and the Board should install measuring points to determine the actual river flow along the Kgwete, Vyehoek and Kaspersnek rivers. During droughts when the river flow diminishes all water, users must reduce their usage. With closer monitoring the correlation between the rainfall and associated flows and discharges could be quantified." We also recommended that all the water users with in the jurisdiction of the Kaspersnek Vyehoek River Irrigation Board, should register their boreholes and where applicable Water Use License be obtained. All irrigation usage, surface and groundwater, must be metered and recorded on a monthly basis. The remainder of the points to be addressed by legal representatives as it seems bias. In-Situ Consulting would like to request a copy of the report as mentioned in point 6.d, when it becomes available.</i></p> <p><i>As stated above, the Water Board must adhere to the NWA and the Department, not the other way around.</i></p>	F14.2
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#	Summary of comments/issues received on the Draft Environmental Impact Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
	<p>7 July 2022</p> <p>Comment from the Environmental Impact Management Directorate of the Department of Economic development, Environment & Tourism</p>	Response by Eco 8-Environmental Planners.	
1.	The Environmental Impact Assessment Report (EIAR) received by the Department on 30 June 2022 is hereby acknowledged.	<i>Noted</i>	N/A
2.	The EIAR is under review, the Department will inform on the progress of the project within 107 days from the date of the receipt of the EIAR as required by the Environmental Impact Assessment Regulations of 2014, promulgated in terms of the National Environmental Management Act (Act 107 of 1998) as amended	<i>Noted</i>	N/A
3.	Kindly bring to the attention of the applicant the fact that this development must not commence prior to the Department deciding on the application.	<i>Noted</i>	N/A

	27 July 2022 Comment from Kaspersnek Vyehoek Irrigation Board, represented by Mr. C Blignout and the assisted by Steenekamp Brookman attorneys (also refer to the same comments received on 15 March 2022)	Response by Eco 8-Environmental Planners. (also refer to Eco-8 response dated 18 March 2022)	
	Our letter of 27 July 2022, with attached report of WSM Leshika Consulting (Pty) Ltd refers. Kindly note that the attached report clearly serves as an objection to the approval of any license or rights applied for, which is opposed.	<i>Noted</i>	
1.	Background The Kaspersnek Vyehoek Irrigation Board has a total water allocation of 657ha at 7500m ³ /ha/annum or 4927500m ³ /annum. Its members are located in the eastern portion of the B60G quaternary catchment along the Kgwete, Vyehoek and Kaspersnek rivers. The property of Nendicure (Pty) Ltd (Kaspersnek Fruits) is located in the upper catchment area of the Kgwete river where a significant portion of the runoff and baseflow is generated for use by the Kaspersnek Vyehoek Irrigation Board.	<i>It is important to note that the commenter refers to run-off and (river) baseflow which is regarded as surface water.</i> <i>Note that the Applicant will not make use of surface water for irrigation purposes.</i> <i>The Applicant will make use of groundwater for irrigation purposes from a sustainable groundwater resource that was scientifically tested for this purpose. It is important to note that the Applicant will <u>not</u> obtain groundwater from the baseflow of the Kgwete River which is also referred to as an alluvial aquifer.</i>	
	Each of the property owners belonging to the Kaspersnek Vyehoek Irrigation Board including Nendicure (Pty) Ltd have a legal (<i>surface water</i>) allocation which is managed by the Board. During dry periods the Board has allowed groundwater abstraction to supplement the surface water shortage. The total water usage (groundwater and surface water) is not allowed to exceed the allocations. This shows that the existing allocations are under stress during low flow periods.	<i>It is illegal for the Irrigation Board to "allow" groundwater abstraction by its members to supplement to surface water for irrigation purposes.</i> <i>The use of groundwater is only permissible by way of a water use license which the Applicant intends to obtain. It is our understanding that none of the downstream Irrigation Board Members are in possession of Water Use Licenses for groundwater abstraction.</i>	
	Nendicure (Pty) Ltd intend expanding their operation to between 120 and 140 ha. This will require an additional 380250m ³ /annum (120ha at 4500m ³ /ha/annum = 540000m ³ /annum, less the existing rights, 21,3ha at 7500m ³ /ha/annum = 159750m ³ /annum). They intend to source the additional water from groundwater resources. They have recently received a Water Use License (License No: 06/B60G/A/10858) for the abstraction of groundwater (227634,44m ³ /annum) on the remaining extent of the farm Kaspersnek 481 KT and are in the process of applying for 2 additional Water Use Licences for the balance of their water requirement on the recently purchased property, the Remainder of Doornhoek 451 KT, and again on the remaining extent of the farm Kaspersnek 481 KT.	<i>Doornhoek 451KT/0 does not have an existing surface water irrigation allocation from the Kaspersnek Vyehoek Rivers Irrigation Board (Kgwete River) and the Applicant does not intend to make use of surface water for irrigation.</i> <i>The proposed irrigation on the property will be met through groundwater abstraction and not by extraction from the alluvial aquifer or baseflow of the Kgwete River.</i> <i>The Applicant is planning to develop ±60ha of soft citrus cultivation on the Remainder of farm Doornhoek 451KT using low flow drip irrigation which calculates at 734.4m³/d or 268056m³/annum.</i> <i>The Water Use License (License No: 06/B60G/A/10858) that was granted to the Applicant on the adjacent property should have no influence on the proposed application on this property as the groundwater aquifer is compartmented.</i>	
2.	Hydrogeological Assessment by IN-SITU Consulting Impacts of abstraction on baseflow in the river cannot be determined from short duration test pumping and stream flow measurements as initially water is removed from aquifer	<i>The hydro-geological study indicates that the no stream flow (including baseflow) reduction was observed in the Kgwete River during the 72-hour constant discharge test. The Hydro-</i>	

<p>storage. The time of response is greatly affected by distance from the river and aquifer parameters and stream bed conductance. Groundwater abstraction can deplete both groundwater storage and groundwater baseflow in a non-linear fashion depending on the transmissivity and storativity of the aquifer, the distance from the stream channel and the time since pumping started and the volume of recharge in that month.</p> <p>The depletion of baseflow is critical to determine as this will impact on existing allocations downstream.</p> <p>The test pump results indicate leaky conditions from the flattening of the CRD curve. This leakage is probably from the river further indicating impact on stream flow.</p> <p>The calculations show that the bulk of recharge is discharged to the river. Surely then abstraction will largely result in streamflow depletion, otherwise what is the fate of this water?</p> <p>No piezometric map of the compartment is available to determine the flow towards the Kgwete River (B60G catchment).</p> <p>The water balance done for the Kaspersnek Compartment shows a significant amount of allocatable groundwater available. This is misleading as most of this is available in the B60D and B60B catchments, which are outside the area of the proposed abstraction which is in the B60G catchment.</p> <p>In fact, there is no allocatable groundwater available in the B60G catchment according to the Gazetted Reserve Determination for the Olifants and Letaba catchments, see Government Gazette No 41887 of 7 September 2018, Reserve Determination of water resources for the catchments of the Olifants and Letaba in terms of section 16(1) and (2) of the National Water Act, 1998 (Act 36 of 1998), Table 6.1.</p> <p>The Gazette further indicates (Table 6.1) that the groundwater stress factor is high (0.82) and that when the reserve is considered no additional groundwater should be allocated. This is a legal requirement that should have been considered when evaluating the license application for Nendicure (Pty) Ltd.</p>	<p><i>geologists acknowledge that it is unlikely that groundwater abstraction will have no effect on the Kgwete River flow. However, a positive recharge was observed and by applying a safe daily abstraction rate (metered abstraction) and continuous monitoring of both surface and ground water flow throughout the lifetime of the irrigation use, any potential losses can be calibrated to reduce water abstraction and thus prevent any impact on downs-stream surface water users.</i></p> <p><i>DWAF's (April 1997) "Minimum Standards and Guidelines for Groundwater Resource Development for the Community Water Supply and Sanitation Programme" were adhered to in terms of the aquifer testing perform as well as SANS 0299-4:1998 – Code of Practice; Development, Maintenance and Management of Groundwater Resources – Part 4: Test-pumping of water boreholes, to meet the requirements of the National Water Act – Act No. 36 of 1998.</i></p> <p><i>For agricultural purposes the minimum requirements are 48 hours. However, a tests on production boreholes were conducted for 72 hours which is regarded as adequate.</i></p> <p><i>The interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports; stating that the groundwater sources were not considerate in isolation from the surface water. As indicated in our reports, with dedicated monitoring this interaction could be quantified.</i></p> <p><i>A very detailed and scientific Groundwater Conceptual Model was developed by the Hydro-Geologist as indicated in Section 7 of the Hydrogeological Report. Figures 7.1 – 7.5 provides detailed maps of the delineated Kaspersnek compartment.</i></p> <p><i>The groundwater reserve determination of the Kaspersnek Compartment as indicated in Section 7.6 of the Hydro-geological Report include recharge, groundwater extraction, groundwater use for basic human needs, the ecology and IFR requirement, groundwater flux towards rivers, groundwater outflow from the area, amount allowed to be intercepted from outflow as well as the groundwater inform into the area. Taking all the above into account, the model calculations indicates an extra possible groundwater allocation of 16.9097937Mm³/annum or 46328.202m³/day as shown in Table 4.2 of the Hydro-geological report.</i></p> <p><i>Government Gazette No41887 of 7 September 2018 does not prevent any person from applying to DWS for a Water use License in terms of the National Water Act in the B60G catchment area. Based on the above, positive groundwater conditions the Applicant intends to apply for a water use license and the DWS shall, based on their own data and on the information presented, in the Hydro-geological report make a decision with regard to the issuing of a water use license.</i></p>	
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3.	<p>Conclusions</p> <p>The area under jurisdiction of the Kaspersnek Vyehoek Irrigation Board is already under stress to supply sufficient water to meet the legal allocations of its members. Any additional allocation will place further stress on the water resources threatening the investments made in the area.</p> <p>Significant quantities of groundwater discharge to the surface water resources supplying the baseflow of the rivers. Any abstraction of groundwater will thus impact on the surface water resources affecting existing allocations.</p> <p>The Gazetted allocatable groundwater for the B60G catchment is zero, therefore no additional groundwater use should be approved.</p> <p>The comments made here were also made previously in the appeal of the Water use License (Licence No: 06/B60G/A/10858) for the abstraction of groundwater (227634,44m³/annum) on the Remaining Extent of the farm Kaspersnek 481-KT. This additional licence will further aggravate the situation in the Kaspersnek Vyehoek area.</p>	<p><i>The Applicant is not applying with the Irrigation Board for an additional allocation of surface water and therefore the proposed cultivation and irrigation on the Remainder of Doornhoek should not pose an impact on the existing surface water allocations downstream.</i></p> <p><i>The commenter makes an assumption that significant quantities of groundwater discharge to surface water and baseflow of the Kgwete River, without providing any proof thereof.</i></p> <p><i>The applicant provided proof by way of a hydro-geological study that no impact on the Kgwete River was measured during a 72 hour draw-down test of the borehole and thus there is little likelihood of significant discharge of groundwater to river baseflow. Specific mitigation is proposed by way of continuous monitoring, measuring and reporting of both groundwater extraction and surface flow of the Kgwete river to identify any impact on surface water. These monitoring measures will be provided to both DWS and the Irrigation Board on a continuous base and if necessary of safe extraction rates can be adjusted accordingly.</i></p> <p><i>The B60G catchment area is not listed for General Authorisation of groundwater resources in the relevant Gazetted Regulation, but only allows for a Water Use License. Thus any person that intends to utilise groundwater in this catchment must conduct a hydro-geological investigation to determine sustainable use of the groundwater resource after which an application for a water use license can be lodged to DWS. The Applicant previously obtained a Water use License for a separate borehole on an adjacent property within this catchment which is an indication that the DWS is willing to approve the use of groundwater for irrigation in this catchment, based on scientific proof of availability and sustainable use of the resource.</i></p>	
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#	Summary of comments/issues received on the Draft Environmental Impact Report	Response and manner in which the comment/issue has been incorporated / or not	Report Reference
	<p>28 July 2022</p> <p>Comment from Mr L Mbulaheni of the Department of Water and Sanitation Mpumalanga (who has jurisdiction of water resources in the Olifants River Water Management Area)</p>	<p>Response by Eco 8-Environmental Planners.</p>	
	<p>DEPARTMENT OF WATER AND SANITATION COMMENTS FOR THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED CULTIVATION ON THE REMAINDER OF THE FARM DOORNHOEK 451-KT GREATER TUBATSE FETAKGOMO LOCAL MUNICIPALITY.</p> <p>Reference is made to the above-mentioned report, dated 27 June 2022 and site inspection conducted on the 14th of July 2022. The Department has the following comments with regards to the proposed development.</p>	<p><i>Noted</i></p>	

1.	<p>Water Uses and Water Use Authorisations</p> <p>1.1 The applicant should note that the following activities will trigger section 21 water uses in terms of the National Water Act, Act 36 of 1998 (NWA) and should be authorised by the Department of Water and Sanitation.</p> <ul style="list-style-type: none"> • Section 21(a) for ground water abstraction. • Section 21(b) for storage of water. • Section 21(c)&(i) for the position of the existing spill weir and construction of a new gauging weir for stream flow metering in Kgwete River. • Section 21(c)&(i) for the position road and pipeline crossings over water courses (Kgwete River and ephemeral drainage lines). 	<p><i>The water use licensing requirements are noted and are included in Section E of the final EIR.</i></p>	<p>Ref. Sect E.1 (page 9)</p>
1.2	<p>Your attention is drawn to Government Notice No. 509 dated 26 August 2016 in Government Gazette No. 40229 which states that a General Authorisation (GA) is not applicable to the following:</p> <p>(a) To the use of water in terms of section 21(c) or (i) of the Act for the rehabilitation of a wetland/watercourse as contemplated in General Authorisation 1198 published in Government Gazette 32805 dated 18 December 2009,</p> <p>(b) To the use of water in terms of section 21(c) or (i) of the Act within the regulated area of a watercourse where the Risk Class is Medium or High as determined by the Risk Matrix. This Risk Matrix must be completed by a suitably qualified SACNASP professional member;</p> <p>(c) In instances where an application must be made for a water use license for the authorisation of any other water use as defined in section 21 of the Act that may be associated with a new activity;</p> <p>(d) Where storage of water results from the impeding or diverting of flow or altering the bed, banks, course or characteristics of a watercourse; and</p> <p>(e) To any water use in terms of section 21(c) or (i) of the Act associated with construction, installation or maintenance of any sewerage pipelines, pipelines carrying hazardous materials and to raw water and wastewater treatment works.</p>	<p>(a) Section 21(c) and (i) activities in this case includes the rehabilitation of a watercourse an existing dam spillway and therefore a GA will not be applicable and these activities will be included in an application for a Water Use License.</p> <p>(b) The Risk Class if the watercourse (Kgwete River) is expected to be Medium and therefore a GA will not be applicable and these activities will be included in an application for a Water Use License.</p> <p>(c) An application for a Section 21 (a) activity – ground water extraction is applicable and therefore a GA will not be applicable and these activities will be included in an application for a Water Use License.</p> <p>(d) In this case an off-stream water storage dam is proposed so no watercourse will be impeded or diverted.</p> <p>(e) The farming activity does not include the installation of sewerage pipelines, pipelines carrying hazardous materials and to raw water and wastewater treatment works.</p> <p>None of the above are applicable therefore a General Authorisation would not be appropriate. The Applicant will continue with a Water Use License for the individually listed activities under Section 21 of the NWA.</p>	<p>Ref. Sect E.1 (page 9)</p>
1.3	<p>The Applicant will require authorisation from the Department for any activity within the riparian habitat or the 1:100-year floodline, whichever is the greatest distance. Furthermore, the Applicant must note that any activity within a 500m radius from the boundary of a wetland requires a water use authorisation in terms of Section 21(c) and (i) of the NWA.</p>	<p><i>Section 144 of the NWA refers to the determining and indication of a 1:100 year flood line on a township layout plan. The Act does not require the 1:100 year flood line to be calculated and indicated on an agricultural cultivation plan. Therefore, this assessment identified and delineated the riparian habitat along the banks of the Kgwete River as identified by an Aquatic Ecologist and clearly indicated in Appendix G3.3 Aquatic Biodiversity Compliance Report. No wetlands were identified on or near the proposed cultivation sites. Apart from road crossings, no vegetation clearance associated with orchard establishment shall occur within the riparian zone of the Kgwete River and for that purpose an appropriate buffer zone was determined and indicated on the site plan (Appendix A).</i></p>	<p>App G3.3</p>
1.4	<p>The river, stream and associated buffers must be treated as sensitive environment areas: caution must be exercised near the watercourses.</p>	<p><i>Noted. Apart from road crossings, no vegetation clearance associated with orchard establishment shall occur within the riparian zone of the Kgwete River and for that purpose an appropriate buffer zone was determined and indicated on the site plan (Appendix A).</i></p>	

1.5	Please note that no person may use water unless permitted under the NWA. Should the applicant engage in any water use activity without the necessary water use authorisation, it will be regarded as an unlawful water use. The Applicant will thus be guilty of an offence and liable for a fine or imprisonment as stipulated in Section 151 of the NWA. A Pre-Water Use Authorisation Application meeting is recommended.	<i>Noted. The applicant will commence with the necessary applications for water use licenses as indicated in Section E of this report and as included in the regulatory compliance outcomes in Section L4.2 of this report.</i>	Sect. L.4.2
2	Solid Waste Management The requirements of this Department with respect to solid waste must be strictly enforced and complied with. The waste management hierarchy must be implemented for all solid waste generated.	<i>Noted. The principles of the waste hierarchy is included in the DWS requirements for small non-commercial farm waste disposal sites.</i>	Ref. K.4.5.c
2.1			
2.2	The Applicant should note that contaminated soil or other hazardous material must be disposed of at a permitted hazardous landfill site that is authorized to accept the said material and proof of this must be made available to this Department when required.	<i>Noted and sufficiently addressed in Sections K4.5 and K4.6.</i>	Ref K4.5 and K4.6
2.3	Should private contractors be used, all solid waste must be disposed of at a permitted landfill site and proof of this must be made available to this Department when required.	<i>Noted. Very little solid waste is expected to be generated by the farming activity and such waste will be handled as indicated in Section K4.5 of this report.</i>	Ref. K4.5
2.4	The recycling of suitable material is encouraged by this Department, provided it is properly managed.	<i>The only recyclable waste of the agricultural activity is organic matter from pruning of trees and mowing of grass. This can be re-used as compost or mulch within the orchard and will be managed in terms of the NEMWA norms and standards for organic waste composting.</i>	Ref. E.4 K4.5.a
3.	Sewage and Wastewater Management		
3.1	Washing, refuelling, maintaining of vehicles or the transfer of hazardous substances must be conducted within a bunded area. All drainage arising from the bunded area must be treated as a water containing waste and disposed of safely.	<i>The safe handling of potentially hazardous liquid waste or wastewater is described in Section 4.6 of this report.</i>	Ref 4.6
3.2	The following is applicable should small volumes of wastewater be generated during the construction phase: <ul style="list-style-type: none"> • Water containing waste must not be discharged into the natural environment, and; • Measures to contain the water containing waste and safely dispose thereof must be implemented. 	<i>The safe handling of potentially hazardous liquid waste or wastewater is described in Section 4.6 of this report.</i>	Ref. 4.6
4.	Storm-water Management		
4.1	It is imperative that there is proper management of storm water at the project site. This Department requests a storm-water Management Plan.	<i>A run-off / storm water management plan is included in Appendix C of this report.</i>	App C.
4.2	The storm water management plan should indicate the separation of clean and dirty water and illustrate treatment and disposal location of dirty water.	<i>Run-off from the cultivation lands contains inorganic matter (soil particles) and organic matter (vegetation matter) that collects naturally in the run-off water from the orchards. The only means to separate dirty water that contains soil/silt and organic matter end produce clean water is to discharge run-off from the orchard to grass swales and vegetated buffer strips along watercourses. This is described in detail in Section K2.2 of the report.</i>	Ref. K2.2.
4.3	The Engineer or Contractor must ensure that only clean storm-water runoff enters the environment, ensure that all drainage locations are well monitored to prevent clogging and blockage of drainage lines.	<i>The Land user shall maintain soil conservation works, constructed waterways and vegetated buffer zones or filter strips in optimal condition as indicated in Section 2.4 of this report.</i>	Ref. K2.4
4.4	Drainage must be controlled to ensure that runoff from the project area does not culminate in off-site pollution, flooding or result in any damage to properties downstream of any storm-water discharge point(s).	<i>The Land User shall maintain the watercourses and in-stream dam on the property to optimally perform their functions as indicated in Sections K2.6 and K2.7 of this report.</i>	Ref. K2.6 & K2.7

5	Erosion Control Soil erosion onsite must be prevented at all times, i.e. pre-, during- and post-construction activities. Erosion control measures must be implemented in areas prone to erosion such as near water supply points, edges of slopes, etc. These measures could include the use of sand bags, hessian sheets, bidim, retention and replacement of vegetation.	<i>Soil conservation measures during the orchard establishment period as well as the operational period is described in detail in Sections K1.2, K1.3 and K1.4 of this report.</i>	Ref. K1.2, K1.3, K1.4
5.1	Where the land has been disturbed during construction/excavation it must be rehabilitated and re-vegetated back to an acceptable state after construction/excavation.		
5.2	Stockpiling of soil or any other materials used during the construction phase must not be allowed on or near steep slopes, near a watercourse or water body. This is to prevent pollution or the impediment of surface run-off. The Applicant must control and establish suitable mitigation measures to prevent the erosion of stockpiles.		
6	Spillages Management Storage of material, chemicals, fuels etc. must not pose a risk to the surrounding environment, and this includes surface and groundwater. Temporary bunds must also be constructed around chemical or fuel storage areas to contain possible spillages.	<i>The safe storage and handing of potentially hazardous substances, spillages and liquid waste is dealt with in detail in Sections 4.6 and 4.7 of this report.</i>	Ref. 4.6 and 4.7
6.1	It is important that any significant spillage of chemicals, fuels, etc. during the construction phase and/or operational phase is reported to this Office and other relevant authorities. In the event of a spill, the following steps can be taken: <ul style="list-style-type: none"> • Stop the source of the spill; • Contain the spill; All significant spills must be reported to this Department and other relevant authorities; • Remove the spilled product for treatment and authorised disposal; • Determine if there is any soil, groundwater or other environmental impact; • If necessary, remedial action must be taken in consultation with this Department; and • Incident must be documented. 		
6.2			
7	General No form of secondary pollution should arise from the disposal of sewage and refuse. The contractor must be clearly briefed on the method of disposal of such waste and compliance must be ensured/monitored. Any pollution problems arising from the above project is to be addressed immediately by the Applicant.	<i>Noted and addressed adequately in Sections K4.5, K4.6 and K4.7</i>	Ref K4.5; K4.6 K4.7
7.1	This Office reserves the right to inspect the site without prior notice in order to ensure that its requirements, as mentioned above, are adhered to. Should any problems be noted, measures must be undertaken immediately to rectify the situation.		
7.2	This Department reserves the right to revise/withdraw these comments and request further information from the applicant should any other information that contradicts the above comes to light.	<i>Noted.</i>	
7.3	Notwithstanding the above, the responsibility rests with the Applicant to identify all sources or potential sources of pollution from his undertaking and to take appropriate measures to prevent any pollution of the environment.	<i>All potential sources of pollution were identified in Section F16 of this report.</i>	Ref.F16.
7.4	The applicant is advised to apply for all water uses relevant to the proposed activity in terms of section 21 of the National Water Act, 1998 (Act No 36 of 1998) on the DWS	<i>Noted. It is the intention of the Applicant to commence with the Water use License applications directly after Environmental Authorisation has been obtained as the eWULAAS</i>	

	online system referred to as electronic Water Use Licence Application Administration System (eWULAAS), which is accessible on the Departmental website: www.dws.gov.za .	<i>process required copies of the EIR, EMPR and Environmental Authorisation.</i>	
	Should you have any queries, please do not hesitate to contact Mr L Mbulaheni on email address: Mbulaheni@dws.gov.za .	<i>Noted</i>	

SCOPING & EIR : PUBLIC PARTICIPATION PROCESS

This Section provides a summary of the issues raised during the Public Participation Process for Environmental Scoping in compliance with, and complies with GN R326 of 17 April 2017, Appendix 2 Section 2(1)(g)(ii) & (iii).

The public participation process for Environmental Scoping commenced on 11 February 2022 during which time directly adjacent land owners, potential stakeholders and State Departments were notified of the availability of a Draft Scoping Report and the opportunity to comment thereon within a period of 30 days.

E1.1 PUBLIC NOTICES : SITE NOTICE AND NEWSPAPER NOTICE : 11 FEBRUARY 2022

ADVERTISED IN THE NATIONAL GOVERNMENT GAZETTE

STAATSKOERANT, 11 FEBRUARIE 2022

No. 45903 287

NON-GOVERNMENTAL ORGANIZATION

NOTICE 826 OF 2022

ENVIRONMENTAL AUTHORISATION APPLICATION NOTICE

Notice is given in terms of the 2014 EIA Regulations (as amended) under the National Environmental Management Act (NEMA, 1998 as amended) that Kaspersnek Fruits (Pty) Ltd, (the Applicant) submitted an application for Environmental Authorisation with an Environmental Scoping Report as part of an Environmental Impact Assessment with the Limpopo Department of Economic Development, Environment & Tourism for the clearing of vegetation (Activity 15 GNR325) and activities associated with the excavation and installation of structures within 32m from the edge of a watercourse (Activity 19 GNR327 and Activity 14 GNR324) for the proposed new cultivation of ±70 ha of land on the Remainder of the farm Doornhoek 451-KT near to Ohrigstad in Limpopo Province. A copy of the Scoping Report is available to interested or affected parties for review and comment and can be requested from the Consultant mentioned below. All written comments must be submitted to Eco-8 Environmental Planners within 30 days from date of this notice. Tel: 013-7449468 / email: eco8@vodamail.co.za / P.O. Box 12898, Nelspruit, 1200.

This gazette is also available free online at www.gpwonline.co.za

**NOTICE
ENVIRONMENTAL
AUTHORISATION
APPLICATION NOTICE**

Notice is given in terms of the 2014 EIA Regulations (as amended) under the National Environmental Management Act (NEMA, 1998 as amended) that Kaspersnek Fruits (Pty) Ltd, (the Applicant) submitted an application for Environmental Authorisation with an Environmental Scoping Report as part of an Environmental Impact Assessment with the Limpopo Department of Economic Development, Environment & Tourism for the clearing of vegetation (Activity 15 GNR325) and activities associated with the excavation and installation of structures within 32m from the edge of a watercourse (Activity 19 GNR327 and Activity 14 GNR324) for the proposed new cultivation of ±70 ha of land on the Remainder of the farm Doornhoek 451-KT near to Ohrigstad in Limpopo Province. A copy of the Scoping Report is available to interested or affected parties for review and comment and can be requested from the Consultant mentioned below. All written comments must be submitted to Eco-8 Environmental Planners within 30 days from date of this notice.
Tel: 013-744-9468 /
email: eco8@vodamail.co.za /
P.O. Box 12898,
Nelspruit, 1200.

CP007294



E1.2 NOTIFICATION TO ADJACENT LANDOWNERS ON THE 11 FEBRUARY 2022

Our ref: e-398

11 February 2022

To: Adjacent Land Owners: pieter@mahela.co.za; sean@mahela.co.za; 'Smutsfield'; maorabjang1@gmail.com; phokuwilfred@gmail.com; richardg@daff.gov.za; Johan.kotze@vodamail.co.za; bronrich@polka.co.za; bronbeef@mweb.co.za; 'Christiaan Blignaut'; koos@lerouxfarms.co.za; smit@lerouxfarms.co.za; pieterburger@live.com; papie@ballmail.co.za; ohrpack@lerouxfarms.co.za, eddie@lerouxfarms.co.za



Dear Sir/Madam

NOTICE IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (1998) AND THE NATIONAL WATER ACT (1998) : ACTIVITIES ASSOCIATED WITH THE PROPOSED CULTIVATION LAND USE AND GROUNDWATER USE ON THE REMAINDER OF THE FARM DOORNHOEK 451-KT, FETAKGOMO TUBATSE LOCAL MUNICIPALITY

Eco-8 was appointed to facilitate an application process for authorisation of activities associated with the proposed cultivation land use and irrigation water use on the Remainder of the farm Doornhoek 451-KT near Ohrigstad in Limpopo Province.

As an adjacent landowner, you have been identified as potentially interested and/or affected party and you are therefore notified of the following :

1. Notice is given in terms of the 2014 EIA Regulations (as amended) under the National Environmental Management Act (NEMA, 1998 as amended) that Kaspersnek Fruits (Pty) Ltd, (the Land User and Applicant) submitted an application for Environmental Authorisation with an Environmental Scoping Report as part of an Environmental Impact Assessment with the Limpopo Department of Economic Development, Environment & Tourism for the clearing of vegetation (Activity 15, GNR325) and activities associated with the excavation and installation of structures within 32m from the edge of a watercourse (Activity 19, GNR327 and Activity 14, GNR324) for the proposed new cultivation of ± 70 ha of land on the Remainder of the farm Doornhoek 451-KT.
2. Notice is given in terms of the National Water Act 1998 that Nendicure (Pty) Ltd (the Landowner and Applicant) intends to apply with the Department of Water and Sanitation for a Water Use License for the taking of an expected 268056 cubic meters per annum of groundwater for irrigation purposes [Section 21(a)] and for the storing of groundwater for irrigation purpose in an off-stream irrigation dam [Section 21(b)] on the Remainder of the farm Doornhoek 451-KT.

An Environmental Scoping Report on the identification of potential impacts associated with the cultivation activities and a Hydrogeological Report on the sustainable use of groundwater for the irrigation activity is available for review and comment at the following on-line internet link (please note that you do not need to register on this website in order to access the documents and if you experience any difficulty in accessing these documents please inform Eco-8 within two days after receiving this e-mail notice).

<https://www.dropbox.com/sh/4edioqlzlyc5ux/AAAxgD9s6RsM5NGxv5X0xUuHa?dl=0>

Any person/organisation/enterprise that has an interest in the matter or who may be affected by the activities associated with the proposed cultivation land use or the proposed water uses may register as such by completing the attached Registration and Commenting Form and can submit written comments and concerns not later than 15 March 2022, addressed to Eco-8 Environmental Planners at the postal or e-mail address indicated above.

Yours sincerely



Riaan Visagie
Environmental Assessment Practitioner (EAPASA)

E1.3 NOTIFICATION TO PRE-IDENTIFIED STAKEHOLDERS ON THE 11 FEBRUARY 2022

Our ref: e-398

11 February 2022

To: Potential Interest Groups: OhrigstadBV@vodamail.co.za; gakimohlala@gmail.com;
ohrigstadBV@gmail.co.za

eco 8



environmental
planners
P.O. BOX 12898
NELSPRUIT 1200
Tel : 013 - 744 9468
eco8@vodamail.co.za

Dear Sir/Madam

NOTICE IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (1998) AND THE NATIONAL WATER ACT (1998) : ACTIVITIES ASSOCIATED WITH THE PROPOSED CULTIVATION LAND USE AND GROUNDWATER USE ON THE REMAINDER OF THE FARM DOORNHOEK 451-KT, FETAKGOMO TUBATSE LOCAL MUNICIPALITY

Eco-8 was appointed to facilitate an application process for authorisation of activities associated with the proposed cultivation land use and irrigation water use on the Remainder of the farm Doornhoek 451-KT near Ohrigstad in Limpopo Province.

You have been identified as potentially interested and/or affected party and you are therefore notified of the following :

3. Notice is given in terms of the 2014 EIA Regulations (as amended) under the National Environmental Management Act (NEMA, 1998 as amended) that Kaspersnek Fruits (Pty) Ltd, (the Landuser and Applicant) submitted an application for Environmental Authorisation with an Environmental Scoping Report as part of an Environmental Impact Assessment with the Limpopo Department of Economic Development, Environment & Tourism for the clearing of vegetation (Activity 15, GNR325) and activities associated with the excavation and installation of structures within 32m from the edge of a watercourse (Activity 19, GNR327 and Activity 14, GNR324) for the proposed new cultivation of ± 70 ha of land on the Remainder of the farm Doornhoek 451-KT.
4. Notice is given in terms of the National Water Act 1998 that Nendicure (Pty) Ltd (the Landowner and Applicant) intends to apply with the Department of Water and Sanitation for a Water Use License for the taking of an expected 268056 cubic meters per annum of groundwater for irrigation purposes [Section 21(a)] and for the storing of groundwater for irrigation purpose in an off-stream irrigation dam [Section 21(b)] on the Remainder of the farm Doornhoek 451-KT.

An Environmental Scoping Report on the identification of potential impacts associated with the cultivation activities and a Hydrogeological Report on the sustainable use of groundwater for the irrigation activity is available for review and comment at the following on-line internet link (please note that you do not need to register on this website in order to access the documents and if you experience any difficulty in accessing these documents please inform Eco-8 within two days after receiving this e-mail notice).

<https://www.dropbox.com/sh/4ediogzlqyc5ux/AAAxgD9s6RsM5NGxv5X0xUuHa?dl=0>

Any person/organisation/enterprise that has an interest in the matter or who may be affected by the activities associated with the proposed cultivation land use or the proposed water uses may register as such by completing the attached Registration and Commenting Form and can submit written comments and concerns not later than 15 March 2022, addressed to Eco-8 Environmental Planners at the postal or e-mail address indicated above.

Yours sincerely



Riaan Visagie
Environmental Assessment Practitioner (EAPASA)

E1.4 NOTIFICATION TO STATE DEPARTMENT ON THE 11 FEBRUARY 2022

Our ref: e-398

11 February 2022

To: Relevant State Departments & Municipalities: tjatjiet@sekhukhune.gov.za;
mmatlir@sekhukhune.gov.za; psmashilangoako@tubatsa.gov.za;
kfshongwe@tubatse.gov.za; TshifhiwaMath@daff.gov.za; MbulaheniL@dws.gov.za;
NgoashengTR@ledet.gov.za; MaceveleS@dws.gov.za; mm@thabachweemun.gov.za;
dmmashoeu@tubatse.gov.za; Nthabisengmo@daff.gov.za;
emkhonto@thabachweemun.gov.za

eco 8



environmental
planners
P.O. BOX 12898
NELSPRUIT 1200
Tel : 013 - 744 9468
eco8@vodamail.co.za

Dear Sir/Madam

NOTICE IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (1998) AND THE NATIONAL WATER ACT (1998) : ACTIVITIES ASSOCIATED WITH THE PROPOSED CULTIVATION LAND USE AND GROUNDWATER USE ON THE REMAINDER OF THE FARM DOORNHOEK 451-KT, FETAKGOMO TUBATSE LOCAL MUNICIPALITY

Eco-8 was appointed to facilitate an application process for authorisation of activities associated with the proposed cultivation land use and irrigation water use on the Remainder of the farm Doornhoek 451-KT near Ohrigstad in Limpopo Province.

You have been identified as potentially interested and/or affected party and you are therefore notified of the following :

5. Notice is given in terms of the 2014 EIA Regulations (as amended) under the National Environmental Management Act (NEMA,1998 as amended) that Kaspersnek Fruits (Pty) Ltd, (the Landuser and Applicant) submitted an application for Environmental Authorisation with an Environmental Scoping Report as part of an Environmental Impact Assessment with the Limpopo Department of Economic Development, Environment & Tourism for the clearing of vegetation (Activity 15, GNR325) and activities associated with the excavation and installation of structures within 32m from the edge of a watercourse (Activity 19, GNR327 and Activity 14, GNR324) for the proposed new cultivation of ± 70 ha of land on the Remainder of the farm Doornhoek 451-KT.
6. Notice is given in terms of the National Water Act 1998 that Nendicure (Pty) Ltd (the Landowner and Applicant) intends to apply with the Department of Water and Sanitation for a Water Use License for the taking of an expected 268056 cubic meters per annum of groundwater for irrigation purposes [Section 21(a)] and for the storing of groundwater for irrigation purpose in an off-stream irrigation dam [Section 21(b)] on the Remainder of the farm Doornhoek 451-KT.

An Environmental Scoping Report on the identification of potential impacts associated with the cultivation activities and a Geo-hydrological Report on the sustainable use of groundwater for the irrigation activity is available for review and comment at the following on-line internet link (please note that you do not need to register on this website in order to access the documents and if you experience any difficulty in accessing these documents please inform Eco-8 within two days after receiving this e-mail notice).

<https://www.dropbox.com/sh/4edioqlzlgyc5ux/AAAxgD9s6RsM5NGxv5X0xUuHa?dl=0>

Any person/organisation/enterprise that has an interest in the matter or who may be affected by the activities associated with the proposed cultivation land use or the proposed water uses may register as such by completing the attached Registration and Commenting Form and can submit written comments and concerns not later than 15 March 2022, addressed to Eco-8 Environmental Planners at the postal or e-mail address indicated above.

Yours sincerely

Riaan Visagie
Environmental Assessment Practitioner (EAPASA)

E1.5 REGISTER OF NOTIFIED PARTIES

The register below includes the names of pre-identified adjacent land owners, stakeholders and state departments as well as registered parties that were notified after submitting of the application for environmental authorisation to the competent authority on 11 February 2022. Public notification and participation commenced on 11 February 2022 and all adjacent land owners and pre-identified stakeholders as well as relevant state departments were provided with access to a copy of the Draft Scoping Report for review and comment. Simultaneously a public notice was placed in the national and local newspaper and a notice board was placed on site. The Draft Environmental Impact Assessment report was made available for a 30-day review period to registered parties and to State Departments on

NAME / INSTITUTION	PROPERTY DESCRIPTION	CONTACT DETAILS	Notification Draft Scoping Review	Method*	Registered / Commented	Notification Draft EIR Review	Method	Commented
ADJACENT LAND OWNERS AND POTENTIAL AFFECTED DOWNSTREAM OWNERS								
Bronrich Farms Mr. Les Schulze	Bronrich farms 608-KT	bronrich@polka.co.za bronbeef@mweb.co.za	11/02/2022	e	Not registered	N/A	-	N/A
Maorabjang Community Property Association Mr. Wilfred Phoku	Buffelsfontein 452-KT Doornboom 478-KT	maorabjang1@gmail.com phokuwilfred@gmail.com	11/02/2022	e	Not registered	N/A	-	N/A
Morgenzon Forest Reserve Mr. Richard Green - DAFF	Normandale 482-KT	richardg@daff.gov.za	11/02/2022	e	Not registered	N/A	-	N/A
Mahela Boerdery Mr. Pieter Vorster	Doornhoek 451-KT	pieter@mahela.co.za sean@mahela.co.za smutsfield@mahela.co.za eddie@mahela.co.za	15/02/2022	e	Not registered	N/A	-	N/A
Namoneng Citrus Mr. Christiaan Bignaut	Doornhoek 451-KT	christiaan@namoneng.co.za	11/02/2022	e	Registered & commented	28/06/2022	e	No comment
Vygenhoek farm Mr. Johan Kotze	Vygenhoek 447 KT	Johan.kotze@vodamail.co.za	11/02/2022	e	Not registered	N/A	-	N/A
Mr. J.E. Le Roux	Farming Enterprise: Inesda Trust	ohrpac@lerouxfarms.co.za koos@lerouxfarms.co.za smit@lerouxfarms.co.za;	11/02/2022	e	Not registered	N/A	-	N/A
Mr P. Burger	Kaspersnek Orchards	pieterburger@live.com	11/02/2022	e	Not registered	N/A	-	N/A
Mr. Chris Papenfus	Nooitgedacht 487 KT/1	papie@ballmail.co.za	11/02/2022	e	Not registered	N/A	-	N/A

POTENTIAL STAKEHOLDERS								
Mr. Christiaan Blignaut (Steenekamp, Broekman)	Chairman of the Kaspersnek-Vyehoek Rivers Irrigation Board	OhrigstadBV@vodamail.co.za	15/02/2022	e	Registered & commented	28/06/2022	e	Provided comment on 27/07/2022
Ward councillor of Thaba Chweu Local Municipality Cllr. Mohlala S	Ward Councillor (Ward 31)	gakimohlala@gmail.com	11/02/2022	e	Not registered	28/06/2022	e	No comment

STATE DEPARTMENTS THAT HAS JURISDICTION IN THE APPLICATION AREA								
Ms. N Maseko	Sekhukhune DM: Municipal Manager	tjatjiet@sekhukhune.gov.za	11/02/2022	e	No comment	28/06/2022	e	No comment
Mr. A Matjiya	Sekhukhune DM: Director: Planning & Economic Development	mmatir@sekhukhune.gov.za	11/02/2022	e	No comment	28/06/2022	e	No comment
Ms. N.P. Busane	FTLM: Municipal Manager	psmashilangoako@tubatsa.gov.za dmmashoeu@tubatse.gov.za;	15/02/2022	e	No comment	28/06/2022	e	No comment
Mrs. K.F. Shongwe	FTLM: Economic Development	kfshongwe@tubatse.gov.za	11/02/2022	e	No comment	28/06/2022	e	No comment
Mr. T Mathase	DAFF	TshifhiwaMath@daff.gov.za Nthabisengmo@daff.gov.za;	15/02/2022	e	No comment	28/06/2022	e	No comment
Mr. L Mbulaheni	DWS Olifants Proto CMA Department of Water & Sanitation	MbulaheniL@dws.gov.za	11/02/2022	e	Conducted site visit on 14 July 2022	28/06/2022	e	Provided comment on 28/07/2022
Me. S Matsi	Thaba Chweu Local Municipality	mm@thabachweumun.gov.za	11/02/2022	e	No comment	28/06/2022	e	No comment
Mr. S Macevele	DWS	MaceveleS@dws.gov.za	11/02/2022	e	No comment	28/06/2022	e	No comment
Mr. TR Ngoasheng	LEDET Sekhukhune region	NgoashengTR@ledet.gov.za;	11/02/2022	e	No comment	28/06/2022	e	No comment
Ms. E Mkhonto	Personal Assistant for the Municipal Manager of Thaba Chweu Local Municipality	emkhonto@thabachweumun.gov.za	15/02/2022	e	No comment	28/06/2022	e	No comment

NOTES: *e*- This symbol refers to the notion that the medium used to notify a person was that of an email

h-This symbol refers to the notion that the medium used to notify a person was that of hand delivery

E1.6 PROOF OF DELIVERY OF THE FIRST NOTICES

ADJACENT LAND OWNERS

From: Eco8 <eco8@vodamail.co.za>
Sent: Friday, 11 February 2022 17:51
To: pieter@mahela.co.za; sean@mahela.co.za; 'Smutsfield';
maorabjang1@gmail.com; phokuwilfred@gmail.com;
richardg@daff.gov.za; Johan.kotze@vodamail.co.za;
bronrich@polka.co.za; bronbeef@mweb.co.za; 'Christiaan Blignaut';
koos@lerouxfarms.co.za; smit@lerouxfarms.co.za;
pieterburger@live.com; papie@ballmail.co.za;
ohrpac@lerouxfarms.co.za
Subject: NOTICE 1 EIA & WUL APPLICATIONS FOR CULTIVATION LAND USE AND IRRIGATION WATER USE :
REMAINDER OF FARM DOORNHOEK 451-KT
Attachments: EIA & WUL Notice 1 Re Doornhoek 451KT_AL.pdf; EIA & WUA Notice 1 Registration & Commenting
Form Re451KT.pdf

From: Eco8 <eco8@vodamail.co.za>
Sent: Tuesday, 15 February 2022 14:21
To: 'Mahela Eddie'
Subject: FW: NOTICE 1 EIA & WUL APPLICATIONS FOR CULTIVATION LAND USE AND IRRIGATION WATER USE :
REMAINDER OF FARM DOORNHOEK 451-KT
Attachments: EIA & WUL Notice 1 Re Doornhoek 451KT_AL.pdf; EIA & WUA Notice 1 Registration & Commenting
Form Re451KT.pdf

INTEREST GROUPS

From: Eco8 <eco8@vodamail.co.za>
Sent: Friday, 11 February 2022 17:32
To: 'Christiaan Blignaut'; OhrigstadBV@vodamail.co.za; gakimohlala@gmail.com
Cc: hennie@kaspersnekfruits.co.za; cobus@rederberg.co.za
Subject: NOTICE 1 EIA & WUL APPLICATIONS FOR CULTIVATION LAND USE AND IRRIGATION WATER USE :
REMAINDER OF FARM DOORNHOEK 451-KT
Attachments: EIA & WUL Notice 1 Re Doornhoek 451KT_IG.pdf; EIA & WUA Notice 1 Registration & Commenting
Form Re451KT.pdf

From: Eco8 <eco8@vodamail.co.za>
Sent: Tuesday, 15 February 2022 08:38
To: ohrigstadBV@gmail.co.za
Subject: NOTICE 1 EIA & WUL APPLICATIONS FOR CULTIVATION LAND USE AND IRRIGATION WATER USE :
REMAINDER OF FARM DOORNHOEK 451-KT
Attachments: EIA & WUL Notice 1 Re Doornhoek 451KT_IG.pdf; EIA & WUA Notice 1 Registration & Commenting
Form Re451KT.pdf

STATE DEPARTMENTS

From: Eco8 <eco8@vodamail.co.za>
Sent: Friday, 11 February 2022 17:22
To: tjatjiet@sekhukhune.gov.za; mmatlir@sekhukhune.gov.za;
psmashilangoako@tubatsa.gov.za; kfshongwe@tubatse.gov.za;
TshiffhiwaMath@daff.gov.za; MbulaheniL@dws.gov.za;
NgoashengTR@ledet.gov.za; MaceveleS@dws.gov.za;
mm@thabachweumun.gov.za
Subject: NOTICE 1 EIA & WUL APPLICATIONS FOR CULTIVATION LAND USE AND IRRIGATION WATER USE :
REMAINDER OF FARM DOORNHOEK 451-KT
Attachments: EIA & WUL Notice 1 Re Doornhoek 451KT_SD.pdf; EIA & WUA Notice 1 Registration & Commenting
Form Re451KT.pdf

From: Eco8 <eco8@vodamail.co.za>
Sent: Tuesday, 15 February 2022 08:22
To: dmmashoeu@tubatse.gov.za; Nthabisengmo@daff.gov.za; emkhonto@thabachweumun.gov.za
Subject: FW: NOTICE 1 EIA & WUL APPLICATIONS FOR CULTIVATION LAND USE AND IRRIGATION WATER USE :
REMAINDER OF FARM DOORNHOEK 451- KT
Attachments: EIA & WUL Notice 1 Re Doornhoek 451KT_SD.pdf; EIA & WUA Notice 1 Registration & Commenting
Form Re451KT.pdf

E1.7.1 COMMENTS RECEIVED ON THE DRAFT SCOPING REPORT

PUBLIC PARTICIPATION PROCESS
IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT 1998 (NEMA) AND
THE NATIONAL WATER ACT 1998 (NWA)

NOTIFICATION OF REVIEW OF THE DRAFT SCOPING REPORT AND HYDRO-GEOLOGICAL
REPORT FOR THE PROPOSED CULTIVATION LAND USE AND GROUNDWATER USE ON THE
REMAINDER OF THE FARM DOORNHOEK 451-KT

REGISTRATION AND COMMENT FORM

SURNAME		Bismant		TITLE	Mr.
FIRST NAME		Christiaan		INITIALS	C.C.
ORGANISATION / FARMING ENTERPRISE Namoheng Orens					
ADDRESS	Postal address	P.O. Box 93, Orlinda 1122			
	Farm Name & No	Namoheng 612 KT & Doornhoek 451 KT P.2 & others			
TELEPHONE		087 658 1407			
CELL PHONE		082 825 2400			
E-MAIL		christiaan@namoheng.co.za			
Please register me as an interested and affected party (tick appropriate box)				<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
Please send me a copy of the environmental reports for comment (tick appropriate box)				<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
Preferred method of communication (tick appropriate box)				<input checked="" type="checkbox"/> Telephone	<input type="checkbox"/> E-mail
				<input type="checkbox"/> Registered Post	

PLEASE DECLARE YOUR INTEREST IN THE MATTER

Please disclose any direct business, financial, personal or other interest which you or your organisation / enterprise may have in the approval or refusal of the application (Regulations 56 of the 2014 EIA Regulations).

Direct neighbour and downstream water user with legal water entitlements from the same resources.

PLEASE PROVIDE US WITH YOUR COMMENTS REGARDING THE PROPOSED VEGETATION CLEARANCE ON THE ABOVE-MENTIONED PROPERTY AS PART OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT 1998 APPLICATION (Please use separate sheet if necessary)

This farm doesn't have any water right from the river or it's resources from the catchment area it falls within. This valley is a mountain catchment area and only new developments without the right there will affect water resources from and above ground. The property is still in the trigger of the Kogelberg (Kogelberg) river and the drilling of boreholes will affect the downstream of the river severely. This will have a dramatic effect the water users downstream and this put every ones business downstream at high risk.

PLEASE PROVIDE US WITH YOUR COMMENTS REGARDING THE USE OF GROUNDWATER FOR IRRIGATION PURPOSES ON THE ABOVE-MENTIONED PROPERTY AS PART OF THE NATIONAL WATER ACT 1998 APPLICATION (Please use separate sheet if necessary)

We can not allow this to happen and continue the way they plan. The system (Rivers & bore holes) downstream showed this the past few years with the drought and over extracting of water from these sources and in the "eye" of the river can not continue and further more → This farm doesn't have water rights - They planted already far more than they should and this will result in using more water than they should or they can. The system cannot sustain any further development - This is not sustainable and a huge risk for downstream users - on their business

SIGNATURE

Christiaan Bismant 4/03/22

In order to participate in this Public Participation Process, please complete and sign this Registration and Commenting Form and return it to Eco-8 Environmental Planners (Eco-8) by 15 March 2022 by any of the following means: Registered Post P.O. Box 12898, Nelspruit, 1200 or E-mail: eco8@vodamail.co.za.

Disclaimer regarding the Protection of Personal Information Act, 2013: By undersigning this "Public Participation Registration and Commenting Form" you provide consent to Eco-8 in terms of provisions of the Promotion of Access to Information Act, Act 2 of 2000 ("PAIA") and the Protection of Personal Information Act, Act 4 of 2013 ("POPI-Act"), (available online at www.gov.za/documents/acts) to process any of the information provided by you within the legislative and regulatory framework, for purpose of the relevant Applications in terms of the NEMA and NWA.

E1.7.2 COMMENTS RECEIVED ON THE DRAFT SCOPING REPORT

STEENEKAMP BROEKMAN ING.

LEXNUMERIGEBOU / BUILDING
KERKSTRAAT 46 CHURCH STREET
POSBUS / P O BOX 237
LYDENBURG 1120
DOCEX 1 LYDENBURG

TEL (013) 235 2175/6/7
FAX (013) 235 2419 / 086 613 4157
sb@lexlaw.co.za

U Verw. / Your Ref. Mr R Visagie
Ons Verw. / Our Ref. Mr JJ Steenekamp/ks/SK0098

15 March 2022

Eco8 Environmental Planners
P O Box 12898
NELSPRUIT
1200

BY E-MAIL : eco8@vodamail.co.za

**OUR CLIENT : KASPERSNEK VYEHOEK IRRIGATION BOARD
OBJECTION TO PROPOSED GROUNDWATER USE ON THE REMAINDER OF THE FARM
KASPERSNEK 481 K.T.
OBJECTIONS TO PROPOSED CULTIVATION LAND USE AND GROUND WATER USE ON
THE REMAINDER OF THE FARM DOORNHOEK 451 K.T.**

We confirm that we are acting on behalf of the Kaspersnek Vyehoeek Irrigation Board in these matters.

See attached objections to the various proposals with reasons.

Kindly address all future correspondence also to this office.

Yours faithfully

STEENEKAMP BROEKMAN INC



PROKUREURS / ATTORNEYS
Reg Nr. 2006/005213/21

J J Steenekamp BLC. L.L.B. *
J J Broekman B. Proc. *
W F Watson B. Com. L.L.B. *
* Direkteure / Directors
* Professionele / Professional Assistant
Indlening / Lodgment nr/no : 1447

WARNING : Cyber criminals are often intercepting e-mails changing banking details on invoices, letters or other documents sent to the client for payment. **Never** effect payment of any invoice or other amount referred to in a letter or document with such content without contacting this office and confirming our banking details, notwithstanding how authentic the invoice or e-mail may appear.

PUBLIC PARTICIPATION PROCESS
IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT 1998 (NEMA) AND
THE NATIONAL WATER ACT 1998 (NWA)

NOTIFICATION OF REVIEW OF THE DRAFT SCOPING REPORT AND HYDRO-GEOLOGICAL
REPORT FOR THE PROPOSED CULTIVATION LAND USE AND GROUNDWATER USE ON THE
REMAINDER OF THE FARM DOORHOEK 451-KT

REGISTRATION AND COMMENT FORM

SURNAME		Blignaut		TITLE	Mr
FIRST NAME		Christiaan		INITIALS	C.C.
ORGANISATION / FARMING ENTERPRISE					
Kaspersnek Vyehoeck Irrigation Board					
ADDRESS	Postal address	P.O. Box 93 Orkneyd 1122			
	Farm Name & No	All farms enlisted on Annexure "A" under the jurisdiction of the Irrigation Board			
TELEPHONE					
CELL PHONE					
082 825 2400					
E-MAIL					
christiaan@naimoheng.co.za					
Please register me as an interested and affected party (tick appropriate box)				YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Please send me a copy of the environmental reports for comment (tick appropriate box)				YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Preferred method of communication (tick appropriate box)			Telephone	E-mail <input checked="" type="checkbox"/>	Registered Post <input type="checkbox"/>

PLEASE DECLARE YOUR INTEREST IN THE MATTER

Please disclose any direct business, financial, personal or other interest which you or your organisation / enterprise may have in the approval or refusal of the application (Regulations 56 of the 2014 EIA Regulations).

We are the ruling statutory constituted Irrigation Board.

PLEASE PROVIDE US WITH YOUR COMMENTS REGARDING THE PROPOSED VEGETATION CLEARANCE ON THE ABOVE-MENTIONED PROPERTY AS PART OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT 1998 APPLICATION (Please use separate sheet if necessary)

The purpose of the application for vegetation clearance is to make provision for an area to execute the ground water rights which are simultaneously applied for. The ground water rights application is vehemently opposed - see Annexure "B".

PLEASE PROVIDE US WITH YOUR COMMENTS REGARDING THE USE OF GROUNDWATER FOR IRRIGATION PURPOSES ON THE ABOVE-MENTIONED PROPERTY AS PART OF THE NATIONAL WATER ACT 1998 APPLICATION (Please use separate sheet if necessary)

See Annexure "B" attached hereto.

SIGNATURE



In order to participate in this Public Participation Process, please complete and sign this Registration and Commenting Form and return it to Eco-8 Environmental Planners (Eco-8) by 15 March 2022 by any of the following means: Registered Post P.O. Box 12898, Nelspruit, 1200 or E-mail: eco8@vodamail.co.za.

Disclaimer regarding the Protection of Personal Information Act, 2013: By undersigning this "Public Participation Registration and Commenting Form" you provide consent to Eco-8 in terms of provisions of the Promotion of Access to Information Act, Act 2 of 2000 ("PAIA") and the Protection of Personal Information Act, Act 4 of 2013 ("POPI-Act"), (available online at www.gov.za/documents/acts) to process any of the information provided by you within the legislative and regulative framework, for purpose of the relevant Applications in terms of the NEMA and NWA.

Annexure A

KASPERNEK - VYEHOEK OPVANGSGEBIED

KASPERNEK - VYEHOEK BESPROEINGSRAAD

PLAAS	NOMMER	BESIGHEID	KONTAK PERSOON	WATER INLYSTING/HA	TOTAAL	KONTAKBESONDERHEDE	
						Tel nommer	Email
Kaspernek	481 KT/0	Bakker Landgoed	Koos Bakker	23.1	23.1	082 925 9723	joorabakker@xinet.co.za
Doornhoek	451 KT/1	Mahela Boerdery	Pieter Vorster	13.7	47.9	083 259 5511	pieter@mahela.co.za
Rodepoort	448 KT/4		Sean Colyn	34.2		082 561 6277	sean@mahela.co.za
Doornhoek	451 KT/2	Namoring Citrus	Christiaan Bilgaut	34.3		082 825 2400	christiaan@namoring.co.za
Rodepoort	448 KT/12			31.7			
Namoring	607 KT			118.3	266.8		
Rodepoort	448 KT/Rem.			25.7			
Rodepoort	448 KT/8			25.7			
Nootgedaght	457 KT/4			5.4			
Haakdoringsdraai	439 KT/1			25.7			
Boschoek	438 KT/0	Inesta Trust	Koos le Roux	25.7		082 555 9682	koos@lerouxtrust.co.za
Rodepoort	448 KT/2		Smile Roux	6.1	161.5	082 874 8040	smile@lerouxtrust.co.za
Nootgedaght	437 KT/18			92			
Haakdoringsdraai	439 KT/3			37.7			
Nootgedaght	487 KT/1	Papenfus	Chris Papenfus	42.8	42.8	082 093 4126	paple@ballyhill.co.za
Vygenhoek	447 KT/0	Strategic Incent	Johan Koire	17.2	17.2	082 463 3425	johan.koire@vodafone.co.za
Vygenhoek	447 KT/2	RSA	Nape	34.3	80	082 521 1989	
Nootgedaght	437 KT/5	RSA	Johannes	25.7		072 297 4489	
Haakdoringsdraai	438 KT/0	Kaspernek Orchards	Mathew Cobbet	37.7	37.7	082 956 8070	micocobbet@gmail.com
			Pieter Burger			078 394 8278	pieterburger@iva.com

COMMENTS IN SUPPORT OF
OBJECTIONS TO THE APPLICATION FOR A WATER USE LICENCE ON THE
REMAINDER OF THE FARM DOORNHOEK 451

The Water Board has had sight of the hydrological report filed by the Applicant for purposes to support an application to be issued with a water use licence.

The Water Board has consulted with a professional Geo- Hydrologist with regard to the conclusions contained in the hydrological report of the Applicant. The Water Board was advised as follows:

1. The entire catchment area within which the area of jurisdiction of the water board is situated, is of such a nature that there is a very high direct integration between surface water and underground water.
2. The above implies that it is completely insufficient to consider the underground water source in isolation from the surface water characteristics of the area.
3. The hydrological report on which the Applicant relies only considered the underground water source, and in this regard the following can be remarked:
 - a. The tests conducted were for a very short period of time.
 - b. The testing procedures entailed that the water pumped from the underground source, was released in the surface water and due to the fact that there is a high integration between surface and underground, such water would immediately replenish the underground source with the result that little reliance can be placed on the tests done.

- c. There was no testing done at all with regard to the surface water source stability and its impact on the underground water.
4. As a result of the above, the hydrological report is wholly insufficient to justify an additional water use licence to the Applicant.
5. The Water Board notes that an initial borehole water use licence has already been granted to the Applicant, and the Water Board has immediately filed an appeal, opposing the issuing of the licence and this appeal is currently pending.
6. The Water Board also states as follows:
 - a. The Water Board is currently finalising its existence as a water use Association in terms of Chapter eight of the National Water Act 36 of 1998.
 - b. As part of the above-mentioned process the Water Board is finalising its water use rules and constitution, as foreseen in the act in the normal legal way.
 - c. The Water Board also takes notice that borehole licences are normally issued to an Applicant subject to the condition that the Applicant shall become part of your produce associations and shall be subject to the rules, regulations and constitution of such a water board regulation.
 - d. The Water Board states unequivocally that it is awaiting an integrated hydrological and geo-hydrological report of the area, which will contain very clear guidelines as to the total reasonable constraints on the water use by water users within the area of jurisdiction of the Water Board.
 - e. In its rules and regulations, the Water Board foresees that it will cap each member of the water use association, to a water use quantity that

could be less than the quantity allowed to the current Applicant in terms of its application for the underground water use licence.

7. It is, given the above, completely inappropriate for the Department to issue a water use licence that can be in conflict with the envisaged water use rules and regulations of the water board.
8. For the above reasons, the water board clearly objects to the issue of the water use licence.

E1.8 RESPONSE TO THE COMMENTS RECEIVED FROM THE IRRIGATION BOARD (SEE E1.7.1)

From: Eco8 <eco8@vodamail.co.za>
Sent: Friday, 18 March 2022 16:43
To: 'Steenekamp Broekman Ing'
Subject: KVIB Registration and commenting on Nendicure - Groundwater use Re Doornhoek 451-KT

Good day Mr. Steenekamp

REGISTRATION AS INTERESTED AND AFFECTED PARTY : WATER USE LICENSE APPLICATION BY NENDICURE (PTY) LTD FOR GROUNDWATER USE ON THE REMAINDER OF THE FARM DOORNHOEK 451-KT

1. Your letter dated 15 March 2022 (ref JJ Steenekamp/ks/SK0098) and your comments to our Notice of 11 February 2022 is herewith acknowledged.
2. You have been registered as interested and affected party on behalf of the Kaspersnek Vygehoek Rivers Irrigation Board (KVRIB).
3. Your comment that is Annexed to your letter (Annexure B), in support of objections to the application for a water use license on the remainder of the farm Doornhoek is noted, however we also noted the following:
 - a. You mention that the Water Board consulted with a professional geo-hydrologist who reviewed the Hydrological Report by Insitu Consulting and who provided advise and comment thereon (Par 1; 2; 3; 4).
 - b. However, you failed to append evidence of such review and comments by a professional geo-hydrologist to your letter.
4. Both the Environmental Impact Assessment (EIA) and the Water Use License Application (WULA) processes require scientific evidence to be provided to the decision-making authorities.
5. In this regard the Applicant (Nendicure (Pty) Ltd provided such evidence by way of a specialist study and Hydro-Geological Report that complies with the minimum requirements as required by Department of Water and Sanitation and which study assessed both the effect of groundwater abstraction on the aquifer and the effect of such abstraction on the surface water quantity of the Kgwete River.
6. There is no evidence that your comments (Par 1; 2; 3 ; 4) has any scientific basis and can therefore not be regarded as sufficient for decision-making by any decision-making authority.
7. You are therefore requested to provide the scientific evidence in support of your comments by sending us a report compiled and signed by an independent and qualified geo-hydrologist, dealing with and providing scientific evidence as basis to each of your comments mentioned in Par 1; 2; 3 and 4 of Annexure B to your letter.
8. Upon failure by you to supply us with the requested information, your comments will be regarded as unfounded assumptions only, and we and the decision-making authorities will not be able to consider your comment in any way as part of the decision-making process which forms part of the EIA and WULA processes.
9. Upon your failure to comply with our request, the Applicant will also be under no obligation to reply further on your relevant comments (Par. 1; 2; 3 and 4) attached as Annexure B to your letter.
10. As it is clear in your letter that you have already received some form of written report from your appointed geo-hydrologist we request that you provide the information requested above, to us by 25 March 2022.

Yours sincerely

Riaan Visagie (EAP:EAPASA)

ECO-8 ENVIRONMENTAL PLANNERS

Tel: 013- 744 9468 , Cell: 082 5200 461

eco8@vodamail.co.za

From: Steenekamp Broekman Ing [mailto:sb@lexlaw.co.za]

Sent: Tuesday, 15 March 2022 13:11

To: eco8@vodamail.co.za

Subject: EIA & WUL Applications

Good day.

Please see attached our letter dated 15 March 2022 and attachments or your attention.

Regards

STEENEKAMP
BROEKMAN ING.

LEXNUMERIGEBOU / BUILDING
KERKSTRAAT 46 CHURCH STREET
POSBUS / P O BOX 237
LYDENBURG 1120
DOCEX 1 LYDENBURG

TEL (013) 235 2175/6/7
FAX (013) 235 2419 / 086 613 4157
sb@lexlaw.co.za

E1.9 COMMENTS RECEIVED ON THE DRAFTS SCOPING REPORT

STEENEKAMP
BROEKMAN INC.

LEXNUMERIGEBOU / BUILDING
KERKSTRAAT 46 CHURCH STREET
POSBUS / P O BOX 237
LYDENBURG 1120
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sb@lexlaw.co.za

U Verw. / Your Ref. Mr R Visagie
Ons Verw. / Our Ref. Mr JJ Steenekamp/ks/SK0098

25 March 2022

Eco8 Environmental Planners
P O Box 12898
NELSPRUIT
1200

BY E-MAIL : eco8@vodamail.co.za

**OUR CLIENT : KASPERSNEK VYEHOK IRRIGATION BOARD
OBJECTION TO PROPOSED GROUNDWATER USE ON THE REMAINDER OF THE FARM
KASPERSNEK 481 K.T.**

We refer to your email dated the 18th of March 2022, and we noted the contents.

We attach a copy of a report containing the comments of the geohydrologist, Messrs. WSMLESHIKA, together with government Gazette Number 41887, which gazettes a reserve determination of water resources for the Olifants and Letaba catchments and which is applicable to the applications of Nendicure (Pty) Ltd for water use license for groundwater use on the Remainder of the farm Kaspersnek 481 K.T. and the Remainder of the farm Doornhoek 451 K.T.

PROKUREURS / ATTORNEYS
Reg Nr. 2006/005213/21

J J Steenekamp BLC. L.L.B. *
J J Broekman B. Proc. *
W F Watson B. Com. L.L.B. *
* Direkteure / Directors
* Professionele / Professional Assistant
Indiening / Lodgment nr/no : 1447

WARNING : Cyber criminals are often intercepting e-mails changing banking details on invoices, letters or other documents sent to the client for payment. **Never** effect payment of any invoice or other amount referred to in a letter or document with such content without contacting this office and confirming our banking details, notwithstanding how authentic the invoice or e-mail may appear.

We hold the following instructions:

1. Our client received notice of the current application of the applicant on 11 February 2022, leaving him with less than a month to respond to the application.
2. Our client immediately procured the services of a geo – hydrologist Messrs WSMLESHIKA. After an initial consultation with the expert, our client realised that the applicant's geohydrological report is fundamentally flawed.
3. The objections to the applicant's current report are set out in the comments of WSMLESHIKA. These comments clearly show that a license cannot be granted based on existing information.
4. Our client realised that a proper hydrological and geohydrological study is needed to establish the area's long-term irrigation and water use capacity within its jurisdiction. To that end, our client is in the process of instructing Messrs WSMLESHIKA to undertake such a study and compile a report.
5. Once the report is available, our client will immediately provide you with a copy thereof.
6. We confirm that you are duty-bound to submit our objection, both as formulated in our objection document of the 15th of March 2022 and the expert report of WSMLESHIKA, to the Department.

We confirm that it has been impossible to commission such a comprehensive study within the time available. However, our client will, once the study is available, furnish you with a copy thereof, which you will then, no doubt, furnish to the Department.

Yours faithfully

STEENEKAMP BROEKMAN INC

A handwritten signature in black ink, appearing to be a stylized name or initials, located below the company name.

KASPERSNEK VYEHOEK IRRIGATION BOARD

Attention: Mr Christiaan Blignaut

RE: COMMENTS ON WATER USE LICENSE APPLICATION GEOHYDROLOGICAL ASSESSMENT: HYDROGEOLOGICAL INVESTIGATION ON THE REMAINDER OF THE FARM KASPERSNEK 481 KT – IN-SITU CONSULTING REPORT No 18-AM-739 DATED 13 NOVEMBER 2018, PREPARED FOR KASPERSNEK FRUITS (Pty) Ltd.

Dear Sir,

Please find below our comments and queries concerning the Hydrogeological report submitted in support of the Water Use License Application for Kaspersnek Fruits (Pty) Ltd.

1. Background

The Kaspersnek Vyehoek Irrigation Board has a total water allocation of 657ha at 7 500m³/ha/annum or 4 927 500m³/annum. Its members are located in the eastern portion of the B60G quaternary catchment along the Kgwete, Vyehoek and Kaspersnek rivers. The property of Nendicure (Pty) Ltd (Kaspersnek Fruits) is located in the upper catchment area of the Kgwete river where a significant portion of the runoff and baseflow is generated for use by the Kaspersnek Vyehoek Irrigation board. Each of the property owners belonging to the Kaspersnek Vyehoek Irrigation board including Nendicure (Pty) Ltd have a legal allocation which is managed by the board. During dry periods the board has allowed groundwater abstraction to supplement the surface water shortage. The total water usage (groundwater and surface water) is not allowed to exceed the allocations. This shows that the existing allocations are under stress during low flow periods.

Nendicure (Pty) Ltd intend expanding their operation to between 120 and 140 ha. This will require an additional 380 250m³/annum (120ha at 4 500m³/ha/annum = 540 000m³/annum, less the existing rights, 21,3ha at 7 500m³/ha/annum = 159 750m³/annum).

They intend to source the additional water from groundwater resources. They have recently received a Water Use License (License No: 06/B60G/A/10858) for the abstraction of groundwater (227 634,44m³/annum) on the remaining extent of the farm Kaspersnek 481 KT and are in the process of applying for 2 additional Water Use Licences for the balance of their water requirement on the recently purchased property, the remainder of Doornhoek 451 KT, and again on the remaining extent of the farm Kaspersnek 481 KT.



Directors: MD Leshika (CEO), C Haupt, P Mouton, T Mathabatha

Associates: K Sami, P Wilken

REG NO: 2003/020744/07

www.wsmlshika.co.za

2. Hydrogeological Assessment by IN-SITU Consulting

Impacts of abstraction on baseflow in the river cannot be determined from short duration test pumping and stream flow measurements as initially water is removed from aquifer storage. The time of response is greatly affected by distance from the river and aquifer parameters and stream bed conductance. Groundwater abstraction can deplete both groundwater storage and groundwater baseflow in a non-linear fashion depending on the transmissivity and storativity of the aquifer, the distance from the stream channel and the time since pumping started and the volume of recharge in that month.

The depletion of baseflow is critical to determine as this will impact on existing allocations downstream.

The test pump results indicate leaky conditions from the flattening of the CRD curve. This leakage is probably from the river further indicating impact on stream flow.

The calculations show that the bulk of recharge is discharged to the river. Surely then abstraction will largely result in streamflow depletion, otherwise what is the fate of this water?

No piezometric map of the compartment is available to determine the flow towards the Kgwete River.

The water balance done for the Kaspersnek Compartment shows a significant amount of allocatable groundwater available. This is misleading as most of this is available in the B60D and B60B catchments.

In fact, there is no allocatable groundwater available in the B60G catchment according to the Gazetted Reserve Determination for the Olifants and Letaba catchments, see Government Gazette No 41887 of 7 September 2018, Reserve Determination of water resources for the catchments of the Olifants and Letaba in terms of section 16(1) and (2) of the National Water Act, 1998 (Act 36 of 1998), Table 6.1.

The Gazette further indicates (Table 6.1) that the groundwater stress factor is high (0.82) and that when the reserve is considered no additional groundwater should be allocated. This is a legal requirement that should have been considered when evaluating the license application for Nendicure (Pty) Ltd.

3. Conclusions

The area under jurisdiction of the Kaspersnek Vyehoek Irrigation Board is already under stress to supply sufficient water to meet the legal allocations of its members. Any additional allocation will place further stress on the water resources threatening the investments made in the area.

Significant quantities of groundwater discharge to the surface water resources supplying the baseflow of the rivers. Any abstraction of groundwater will thus impact on the surface water resources affecting existing allocations.

The Gazetted allocatable groundwater for the B60G catchment is zero, therefore no additional groundwater use should be approved.

E1.10 RESPONSE ON THE COMMENTS RECEIVED OF THE DRAFT SCOPING REPORT (E1.7.1, E1.7.2 & E1.9)



Tel nr: (013) 741 5158
Fax nr: (013) 741 4043
E-mail: info@insituconsulting.co.za
P.O. Box 26280
Nelspruit, 1200

DATE: 31 March 2022

ECO-8 Environmental Planners

P.O. Box 12898

Nelspruit

1200

Attention: Mr Riaan Visagie

PUBLIC PARTICIPATION PROCESS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT 1998 (NEMA) AND THE NATIONAL WATER ACT 1998 (NWA): NOTIFICATION OF REVIEW OF THE DRAFT SCOPING REPORT AND HYDRO-GEOLOGICAL REPORT FOR THE PROPOSED LAND USE AND GROUNDWATER USE ON THE REMAINDER OF THE FARM DOORNHOEK 541 KT – COMMENTS ON OBJECTIONS:

Sir,

Herewith our response to comments and objections raised by Kaspersnek Vyehoek River Irrigation Board (Mr Christiaan Blignaut) representative Steenkamp Brookman Ing., Namoneng Citrus (Pty) Ltd (Mr Christiaan Blignaut).

Kaspernek-Vyehoek Irrigation Board/ Steenkamp Brookman Ing:

As per **Annexure "B"**:

- 1) The interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports. The statement in point 1 "The entire catchment area within which the area of jurisdiction of the water board is situated, is of such a nature that there is a very high direct integration between surface water and underground water" is not correct as dolomitic aquifers is not restricted to catchments, it is defined by compartments and must be evaluated in its entirety, not just the area of jurisdiction of the water board.

The provided summary report from WSM Leshika addressed to Mr. Christiaan Blignaut stated "During dry periods the board has allowed groundwater abstraction to supplement the surface water shortage". Our question to the Water Board is, if there is such a "very high direct integration between surface water and underground water", why do they allow the downstream users to supplement their "surface water" allocations with groundwater abstraction from boreholes without the necessary permits or licences?

Surface and groundwater are deemed as two different resources and a surface water entitlement does not constitute the right to use groundwater for irrigation purposes. Section 21(a) of the National Water Act requires that, where water is taken from a water resource for irrigation purposes, that use has to be registered as a general authorisation if abstraction

www.insituconsulting.co.za

volumes are less than the relevant gazetted water volumes, or licensed if the abstraction volumes are more than the relevant gazetted water volumes. The majority of downstream water users falls within drainage region B60G, and no groundwater may be abstracted without a licence in terms of the relevant gazetted water volumes.

- 2) As stipulated above, the interaction between the surface water (streamflow), alluvial aquifer and the dolomitic aquifer were addressed in Sections 4, 5 and 7 of our reports; stating that the groundwater sources were not considerate in isolation from the surface water. As indicated in our reports, with dedicated monitoring this interaction could be quantified.
- 3) Statement is not true, as indicated above.
 - a) DWAF's (April 1997) "Minimum Standards and Guidelines for Groundwater Resource Development for the Community Water Supply and Sanitation Programme" were adhered to in terms of the aquifer testing perform as well as SANS 0299-4:1998 - Code of Practice; Development, Maintenance and Management of Groundwater Resources – Part 4: Test-pumping of water boreholes, to meet the requirements of the National Water Act – Act No. 36 of 1998.
For agricultural purposes the minimum requirements are 48 hours. Tests on production boreholes were conducted for 72 hours. And with dedicated long-term monitoring the interaction would be quantified.
 - b) This statement is not true. As per above, the minimum standards were adhered to, and discharge hose of a 100m in length was used on production holes pump tested.
 - c) Please refer to above and to Section 4.2.2 in our reports addressing this matter.
- 4) This statement is not true.
- 5) This appeal is based on the assumption that the Water Board was not consulted during the previous public participation process; to the best of our knowledge the Water Board was consulted during this process.
- 6) The Water Board or the planned "Water Use Association" must comply with the rules and regulations of the National Water Act: Act 36 of 1998 (NWA) and it seems as if the current board is missing this point; as they grant the use of groundwater by their members to supplement the shortage of surface water (as stated in point 1 no groundwater maybe abstracted in drainage region B60G, without a WUL). Their obligation is to manage the surface and groundwater use in a sustainable manner and to protect the ecology of the Kwete, Vyehoek and Kaspersnek Rivers for the benefit to all its members and water users, not just for the benefit of a few.

During the studies conducted in 2018 and 2020 the Kwete river was dry from below the split weir due to over abstraction. In our previous public participation response dated 2019/01/30 we gave the following opinion; "In our opinion Kaspersnek Vyehoek River Irrigation Board need to implement stricter monitoring to regulate existing surface water usage (flow meters installed by all water users to document their usage on a monthly base) and the Board should install measuring points to determine the actual river flow along the Kgwete, Vyehoek and Kaspersnek rivers. During droughts when the river flow diminishes all water users must reduce

their usage. With closer monitoring the correlation between the rainfall and associated flows and discharges could be quantified.”

We also recommended that all the water users with in the jurisdiction of the Kaspersnek Vyehhoek River Irrigation Board, should register their boreholes and where applicable Water Use Lisens be obtained. All irrigation usage, surface and groundwater, must be metered and recorded on a monthly basis.

The remainder of the points to be addressed by legal representatives as it seems bias.

- 7) As stated above, the Water Board must adhere to the NWA and the Department, not the other way around.

In-Situ Consulting would like to request a copy of the report as mentioned in point 6.d, when it becomes available.

Namoneng Citrus (Pty) Ltd (Mr Christiaan Blignaut)

The water use is for groundwater and in accordance with the National Water Act – Act No. 36 of 1998 (NWA), the water user can apply for a groundwater use license with or without surface water rights. The “legal water entitlements” as Mr. Blignaut stipulate is for surface water use and not for groundwater use and in terms of the NWA, two different resources.

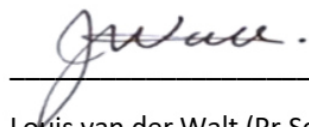
To the best of our knowledge Namaoneg Citrus only have surface water rights, and the twenty-four boreholes reported by Namoneng during the 2018 and 2020 hydro-census, with a combined yield of 1558.365m³/day, does not constituted as surface water. As indicated above in point 1, addressed to the Irrigation Board, no groundwater maybe abstracted from drainage region B60G without a WUL.

The “eye” of the river as Mr. Blignaut state is not on Kaspersnek or Doornhoek alone. Granted, there are two fountains on Kaspersnek with an averaged measured yields of 1.53l/s (fountain 1, measured in 2020) and 0.2l/s (fountain 2) that accumulate to 1.73l/s discharging to the alluvium and Kwete Stream. Stream measurement Point 1 indicated an average flow rate of 10.76l/s in 30/11/2020, suggesting natural discharge further upstream form Kaspersnek’s boundary. The difference between Stream Measure Points 1 and 2 is also largely attributed to natural discharge from the dolomitic compartment, hence the geohydrological study to prevent over abstraction and exploitation of surface and groundwater sources and to give guidelines to the correct management of these resources, and as stated in our reports, with dedicated monitoring the interaction could be quantified. All these concerns are address in Sections 4, 5, and 7 of our reports.

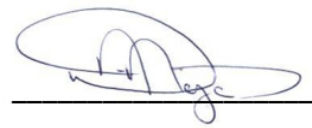
As stipulated by Mr. Blignaut “**The system (River & Borehole) downstream showed the last few years with the drought and over extracting of water from these sources**” is of concern to us as well. The over abstraction of groundwater below the the northern boundary dyke is clearly visible in the step of -9.27m that was recorded (2018) in the water table across the dyke between borehole MH5 located upgradient of the dyke and MH4 located downgradient of the dyke in the adjacent compartment. This is an indication of over exploitation of groundwater in the downstream compartment. No signs of over abstraction were evident upstream from the dyke, water levels remained the same between 2018 and 2020. Borehole density down the Kgwete River valley below the Kaspersnek compartment appears high with unbridled overexploitations, apart from affecting downstream baseflow and will also influence the Kaspersnek compartment in the long run.

The 2018 study indicated that total of 37l/s were abstracted at the split weir (on a 24-hour base) at the boundary of Kaspersnek Fruits and Namoneng (supplying Namoneng Citrus and Mahela Boerdery), leaving the Kwete river completely dry below the weir. The 2020 indicated that an average of 33l/s were abstracted at the split weir, also leaving the river below the weir completely dry. No water remains for ecological reserve. This implying that the Kwete river is in a healthy state above the split weir and the “dewatering” of the Kwete, Vyehoek and Kaspersnek rivers can be contributed to the unbridled over exploitation by the downstream users.

Kind Regards,



Louis van der Walt (Pr.Sci.Nat)
Senior Geohydrologist



Aubrey Meyer (Pr.Sci.Nat)
Senior Geohydrologist

E2. DRAFT ENVIRONMENTAL IMPACT REPORT REVIEW PERIOD (28/06/2022 – 28/07/2022)

E2.1 NOTICE TO REGISTERED INTERSTED AND AFFECTED PARTIES : REVIW OF DRAFT EIR

From: Eco8 <eco8@vodamail.co.za>
Sent: Tuesday, 28 June 2022 00:10
To: 'Christiaan Blignaut'; 'sb@lexlaw.co.za'
Cc: 'hennie@kaspersnekfruits.co.za'; 'cobus@rederberg.co.za'
Subject: NOTICE 2 DRAFT EIA REPORT REVIEW : EIA APPLICATION FOR CULTIVATION : REMAINDER OF THE FARM DOORNHOEK 451-KT

To Registered Parties

NOTICE 2 IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (1998) : DRAFT EIA REPORT REVIEW : ACTIVITIES ASSOCIATED WITH THE PROPOSED CULTIVATION ON THE REMAINDER OF THE FARM DOORNHOEK 451-KT, FETAKGOMO TUBATSE LOCAL MUNICIPALITY

Refer to my previous notice and your registration as interested and affected party.

Your comments on our initial notification was investigated by our Hydro-geological specialists and their response on your letter is included in a Draft Environmental Impact Report (See Specifically Appendix D and E).

The Draft Environmental Impact Report is available for review at the following on-line internet link (please note that you do not need to register on this website in order to access the documents and if you experience any difficulty in accessing these documents please inform Eco-8 within 24 hours after receiving this e-mail notice).

<https://www.dropbox.com/sh/4edioqlzlyc5ux/AAAxgD9s6RsM5NGxv5X0xUuHa?dl=0>

Written comments on the report must be directed to Eco-8 Environmental Planners within 30 days from date of this notice, by way of return e-mail.

Yours sincerely

Riaan Visagie
Reg.EAP : EAPASA

P. O. Box 12898
NELSPRUIT, 1200
Tel: 013- 744 9468
Cell: 082 5200 461
eco8@vodamail.co.za

From: Eco8 <eco8@vodamail.co.za>
Sent: Tuesday, 28 June 2022 00:21
To: 'tjatjjet@sekhukhune.gov.za'; 'mmatlir@sekhukhune.gov.za';
'psmashilangoako@tubatsa.gov.za'; 'kfshongwe@tubatse.gov.za';
'TshifhiwaMath@daff.gov.za'; 'MbulaheniL@dws.gov.za';
'NgoashengTR@ledet.gov.za'; 'MaceveleS@dws.gov.za';
'mm@thabachweumun.gov.za'; 'Nthabisengmo@daff.gov.za';
'dmmashoeu@tubatse.gov.za'; 'nyathikazibw@mpg.gov.za';
'gakimohlala@gmail.com'
Subject:NOTICE 2 DRAFT EIA REPORT REVIEW : EIA APPLICATION FOR
CULTIVATION : REMAINDER OF THE FARM DOORNHOEK 451-KT

Dear Sir/Madam

NOTICE 2 IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (1998) : DRAFT
EIA REPORT REVIEW : ACTIVITIES ASSOCIATED WITH THE PROPOSED CULTIVATION ON
THE REMAINDER OF THE FARM DOORNHOEK 451-KT, FETAKGOMO TUBATSE LOCAL
MUNICIPALITY

Refer to my previous notice dated 11 February 2022 concerning this matter.

As potentially interested State Department and/or Municipality you are notified of a Draft Environmental Impact Report that is available for review at the following on-line internet link (please note that you do not need to register on this website in order to access the documents and if you experience any difficulty in accessing these documents please inform Eco-8 within 24 hours after receiving this e-mail notice).

<https://www.dropbox.com/sh/4edioqlz1qyc5ux/AAxgD9s6RsM5NGxv5X0xUuHa?dl=0>

Written comments on the report must be directed to Eco-8 Environmental Planners within 30 days from date of this notice, by way of return e-mail.

Yours sincerely

Riaan Visagie
Reg.EAP : EAPASA

P. O. Box 12898
NELSPRUIT, 1200
Tel: 013- 744 9468
Cell: 082 5200 461
eco8@vodamail.co.za

E.2.3 LEDET : COMMENTS RECEIVED ON THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM



Enquiries: Ms Kubaye TA
NEAS: LIM/EIA/0001501/2022

Tel: 015 293 8830

Email: KubayeTA@ledet.gov.za

Ref: 12/1/9/2-GS73

ECO 8 Environmental Planners
3 Vuurvliegie Street
NELSPRUIT
1200

Attention: Mr Riaan Visagie

Cell: 082 520 0461

Email: eco8vodamail.co.za

RE: SCOPING REPORT FOR THE PROPOSED CULTIVATION WITH ASSOCIATED STRUCTURES AND INFRASTRUCTURE ON THE REMAINDER OF THE FARM DOORNHOEK 451 KT WITHIN FETAKGOMO-TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT

The above matter refers.

1. The Environmental Impact Assessment Report (EIAR) received by the Department on 30 June 2022 is hereby acknowledged.
2. The EIAR is under review, the Department will inform on the progress of the project within 107 days from the date of the receipt of the EIAR as required by the Environmental Impact Assessment Regulations of 2014, promulgated in terms of the National Environmental Management Act (Act 107 of 1998) as amended.
3. Kindly bring to the attention of the applicant the fact that this development must not commence prior to the Department deciding on the application.
- 4.

Please do not hesitate to contact the Department should you have any queries in this respect.

Yours faithfully

DEPUTY DIRECTOR
ENVIRONMENTAL IMPACT MANAGEMENT

DATE: 7/7/2022

Cc: Kaspersnek Fruits (Pty) Ltd

Att: Mr Cobus Redelinghuys

Email: cobus@rederberg.co.za

STEENEKAMP
BROEKMAN INC.

LEFNUMERIGEBOU / BUILDING
KERKSTRAAT 46 CHURCH STREET
POSBUS / P O BOX 237
LYDENBURG 1120
DOCEX 1 LYDENBURG

TEL (013) 235 2175/6/7
FAX (013) 235 2419 / 086 613 4157
sb@lexlaw.co.za

U Verw. / Your Ref. Mr R Visagie
Ons Verw. / Our Ref. Mr JJ Steenekamp/ks/SK0098

27 July 2022

Eco8 Environmental Planners
P O Box 12898
NELSPRUIT
1200

BY E-MAIL : eco8@vodamail.co.za

**OUR CLIENT : KASPERSNEK VYEHOEK IRRIGATION BOARD
COMMENTS I.R.O. NOTICE 2 IN TERMS OF THE NATIONAL ENVIRONMENTAL
MANAGEMENT ACT (1998) : DRAFT EIA REPORT REVIEW : ACTIVITIES ASSOCIATED
WITH THE PROPOSED CULTIVATION ON THE REMAINDER OF THE FARM DOORNHOEK
451-KT, FETAKGOMO TUBATSE LOCAL MUNICIPALITY**

Our letter of 27 July 2022, with attached report of WSM Leshika Consulting (Pty) Ltd refers.

Kindly note that the attached report clearly serves as an objection to the approval of any licenses or rights applied for, which is opposed.

Yours faithfully

STEENEKAMP BROEKMAN INC



PROKUREURS / ATTORNEYS
Reg Nr. 2006/005213/21

J J Steenekamp BLC. L.L.B. *
J J Broekman B. Proc. *
W F Watson B. Com. L.L.B. *
* Direkteure / Directors
* Professionele / Professional Assistant
Indiening / Lodgment nr/no : 1447

WARNING : Cyber criminals are often intercepting e-mails changing banking details on invoices, letters or other documents sent to the client for payment. **Never** effect payment of any invoice or other amount referred to in a letter or document with such content without contacting this office and confirming our banking details, notwithstanding how authentic the invoice or e-mail may appear.

STEENEKAMP BROEKMAN INC.

LEKNUMERIGEBOU / BUILDING
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TEL (013) 235 2175/6/7
FAX (013) 235 2419 / 086 613 4157
jb@steekamp.co.za

U Verw. / Your Ref. Mr R Visagie
Ons Verw. / Our Ref. Mr JJ Steenekamp/ks/SK0098

27 July 2022

Eco8 Environmental Planners
P O Box 12898
NELSPRUIT
1200

BY E-MAIL : eco8@vodamail.co.za

**OUR CLIENT : KASPERSNEK VYEHOEK IRRIGATION BOARD
COMMENTS I.R.O. NOTICE 2 IN TERMS OF THE NATIONAL ENVIRONMENTAL
MANAGEMENT ACT (1998) : DRAFT EIA REPORT REVIEW : ACTIVITIES ASSOCIATED
WITH THE PROPOSED CULTIVATION ON THE REMAINDER OF THE FARM DOORNHOEK
451-KT, FETAKGOMO TUBATSE LOCAL MUNICIPALITY**

With reference to the above, see attached comments in respect of the draft EIA report on behalf of our client.

Yours faithfully

STEENEKAMP BROEKMAN INC



PROKUREURS / ATTORNEYS
Reg Nr. 2006/005213/21

J J Steenekamp BLC, LL.B. *
J J Broekman B. Proc. *
W F Watson B. Com. LL.B. *
* Direkteure / Directors
* Professionele / Professional Assistant
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WARNING : Cyber criminals are often intercepting e-mails changing banking details on invoices, letters or other documents sent to the client for payment. **Never** effect payment of any invoice or other amount referred to in a letter or document with such content without contacting this office and confirming our banking details, notwithstanding how authentic the invoice or e-mail may appear.

KASPERSNEK VYEHOEK IRRIGATION BOARD

Attention: Mr Christiaan Blignaut

RE: COMMENTS ON WATER USE LICENSE APPLICATION GEOHYDROLOGICAL ASSESSMENT: HYDROGEOLOGICAL INVESTIGATION ON THE REMAINDER OF THE FARM DOORNHOEK 451 KT – IN-SITU CONSULTING REPORT No 20-AM-939, DATED 25 OCTOBER 2021, PREPARED FOR KASPERSNEK FRUITS (Pty) Ltd.

Dear Sir,

Please find below our comments and queries concerning the Hydrogeological report submitted in support of the Water Use License Application for Kaspersnek Fruits (Pty) Ltd on the remainder of the farm Doornhoek 451 KT.

1. Background

The Kaspersnek Vyehoek Irrigation Board has a total water allocation of 657ha at 7 500m³/ha/annum or 4 927 500m³/annum. Its members are located in the eastern portion of the B60G quaternary catchment along the Kgwete, Vyehoek and Kaspersnek rivers. The property of Nendicure (Pty) Ltd (Kaspersnek Fruits) is located in the upper catchment area of the Kgwete river where a significant portion of the runoff and baseflow is generated for use by the Kaspersnek Vyehoek Irrigation board. Each of the property owners belonging to the Kaspersnek Vyehoek Irrigation board including Nendicure (Pty) Ltd have a legal allocation which is managed by the board. During dry periods the board has allowed groundwater abstraction to supplement the surface water shortage. The total water usage (groundwater and surface water) is not allowed to exceed the allocations. This shows that the existing allocations are under stress during low flow periods.

Nendicure (Pty) Ltd (Kaspernek Fruits) intend expanding their operation to between 120 and 140 ha. This will require an additional 380 250m³/annum (120ha at 4 500m³/ha/annum = 540 000m³/annum, less the existing rights, 21,3ha at 7 500m³/ha/annum = 159 750m³/annum).

They intend to source the additional water from groundwater resources. They have recently received a Water Use License (License No: 06/B60G/A/10858) for the abstraction of groundwater (227 634,44m³/annum) on the remaining extent of the farm Kaspersnek 481 KT and are now in the process of applying for 2 additional Water Use Licences for the balance of their water requirement on the recently purchased property, the remainder of Doornhoek 451 KT, and again on the remaining extent of the farm Kaspersnek 481 KT.

2. Hydrogeological Assessment by IN-SITU Consulting

Impacts of abstraction on baseflow in the river cannot be determined from short duration test pumping and stream flow measurements as initially water is removed from aquifer storage. The time of response is greatly affected by distance from the river and aquifer parameters and stream bed conductance. Groundwater abstraction can deplete both groundwater storage and groundwater baseflow in a non-linear fashion depending on the transmissivity and storativity of the aquifer, the distance from the stream channel and the time since pumping started and the volume of recharge in that month.

The depletion of baseflow is critical to determine as this will impact on existing allocations downstream.

The test pump results indicate leaky conditions from the flattening of the CRD curve. This leakage is probably from the river further indicating impact on stream flow.

The calculations show that the bulk of recharge is discharged to the river. Surely then abstraction will largely result in streamflow depletion, otherwise what is the fate of this water?

No piezometric map of the compartment is available to determine the flow towards the Kgwete River (B60G catchment).

The water balance done for the Kaspersnek Compartment shows a significant amount of allocatable groundwater available. This is misleading as most of this is available in the B60D and B60B catchments, which are outside the area of the proposed abstraction which is in the B60G catchment.

In fact, there is no allocatable groundwater available in the B60G catchment according to the Gazetted Reserve Determination for the Olifants and Letaba catchments, see Government Gazette No 41887 of 7 September 2018, Reserve Determination of water resources for the catchments of the Olifants and Letaba in terms of section 16(1) and (2) of the National Water Act, 1998 (Act 36 of 1998), Table 6.1.

The Gazette further indicates (Table 6.1) that the groundwater stress factor is high (0.82) and that when the reserve is considered no additional groundwater should be allocated. This is a legal requirement that should be considered when evaluating the license application for Medicure (Pty) Ltd (Kaspernek Fruits).

3. Conclusions

The area under jurisdiction of the Kaspersnek Vyehoek Irrigation Board is already under stress to supply sufficient water to meet the legal allocations of its members. Any additional allocation will place further stress on the water resources threatening the investments made in the area.

Significant quantities of groundwater discharge to the surface water resources supplying the baseflow of the rivers. Any abstraction of groundwater will thus impact on the surface water resources affecting existing allocations.

The Gazetted allocatable groundwater for the B60G catchment is zero, therefore no additional groundwater use should be approved.

The comments made here were also made previously in the appeal of the Water Use License (License No: 06/B60G/A/10858) for the abstraction of groundwater (227 634,44m³/annum) on the remaining extent of the farm Kaspersnek 481 KT. This additional license will further aggravate the situation in the Kaspersnek Vyehoek area.



Carel Haupt BSc (Hons) Pr.Sci.Nat
Principal Hydrogeologist

DATE: 27 July 2022

E.2.5 RESPONSE TO KASPERSNEK VYEHOEK RIVERS IRRIGATION BOARD

From: Eco8 <eco8@vodamail.co.za>
Sent: Tuesday, 09 August 2022 13:24
To: 'Steenekamp Broekman Ing'
Subject: Response Draft EIA Report Remainder Doornhoek 451
Attachments: Response Eco-8 - KVRIB Re Doornhoek 451KT.pdf; RESPONSE 31-03-2022-46223 Doornhoek.pdf

Attn: Mr. Steenkamp (KASPERSNEK VYEHOEK RIVERS IRRIGATION BOARD)

Refer to your letter dates 27 July 2022 (Your ref Mr. JJ Steenekamp/ks/SK0098).

We herewith acknowledge receipt of your comments on the Draft Environmental Impact Report of the proposed cultivation project on the Remainder of the farm Doornhoek 451-KT.

Your comments which was supported by a specialist input from WSM Leshika Consulting (Pty) Ltd was considered and was send to our Hydro-geological specialist Insitu Consulting for review. The comments are similar to those previously submitted by you and the response by Insitu-Consulting on those comments were included in the Draft EIR and is again attached to this letter.

It is important to note that the report by WSM Leshika seems to be based on assumptions and as no scientific proof could be provided in support of the Kaspersnek Vyehoek River Irrigation Board's concerns, the comments cannot be considered as valid or accurate.

On the other hand the Applicant – Kaspersnek Fruits – commissioned a scientifically based hydro-geological study in support of groundwater use for the proposed cultivation project.

Your comments will be included in a Final Environmental Impact Report that will be submitted to the Department of Economic Development, Environment and Tourism for review and decision on the application for environmental authorisation.

As registered party you will be informed of the outcome of the department's decision.

Yours sincerely

Riaan Visagie
Reg.EAP : EAPASA



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

MPUMALANGA

Private Bag x11259, MBOMBELA, 1200, Prorom Building, Cnr Brown and Paul Kruger, MBOMBELA, 1200, Tel : 013 759 7300.

Enquiries: Mr L Mbulaheni

Telephone: 013 932 2907

Reference: 12/1/9/2-GS73

Kaspernek Fruits (Pty) Ltd
P.O. Box 398
Hoedspruit
1380

Attention: Sir/Madam

DEPARTMENT OF WATER AND SANITATION COMMENTS FOR THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED CULTIVATION ON THE REMAINDER OF THE FARM DOORNHOEK 451-KTGREATERTUBATSE FETAKGOMO LOCAL MUNICIPALITY.

Reference is made to the above-mentioned report, dated 27 June 2022 and site inspection conducted on the 14th of July 2022. The Department has the following comments with regards to the proposed development.

1. Water Uses and Water Use Authorisations

- 1.1 The applicant should note that the following activities will trigger section 21 water uses in terms of the National Water Act, Act 36 of 1998 (NWA) and should be authorised by the Department of Water and Sanitation.
 - (a) Section 21(a) for ground water abstraction.
 - (b) Section 21(b) for storage of water.
 - (c) Section 21(c)&(i) for the position of the existing spilt weir and construction of a new gauging weir for stream flow metering in Kgwete River.
 - (d) Section 21(c)&(i) for the position road and pipeline crossings over water courses (Kgwete River and ephemeral drainage lines).
- 1.2 Your attention is drawn to Government Notice No. 509 dated 26 August 2016 in Government Gazette No. 40229 which states that a General Authorisation (GA) is not applicable to the following:
 - (a) *To the use of water in terms of section 21(c) or (i) of the Act for the rehabilitation of a wetland/watercourse as contemplated in General Authorisation 1198 published in Government Gazette 32805 dated 18 December 2009,*
 - (b) *To the use of water in terms of section 21(c) or (i) of the Act within the regulated*



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area of a watercourse where the Risk Class is Medium or High as determined by the Risk Matrix. This Risk Matrix must be completed by a suitably qualified SACNASP professional member;

- (c) In instances where an application must be made for a water use license for the authorisation of any other water use as defined in section 21 of the Act that may be associated with a new activity;**
- (d) Where storage of water results from the impeding or diverting of flow or altering the bed, banks, course or characteristics of a watercourse; and**
- (e) To any water use in terms of section 21(c) or (i) of the Act associated with construction, installation or maintenance of any sewerage pipelines, pipelines carrying hazardous materials and to raw water and wastewater treatment works.**

1.3 The Applicant will require authorisation from the Department for any activity within the riparian habitat or the 1:100-year floodline, whichever is the greatest distance. Furthermore, the Applicant must note that any activity within a 500m radius from the boundary of a wetland requires a water use authorisation in terms of Section 21(c) and (i) of the NWA.

1.4 The river, stream and associated buffers must be treated as sensitive environment areas: caution must be exercised near the watercourses.

1.5 Please note that no person may use water unless permitted under the NWA. Should the applicant engage in any water use activity without the necessary water use authorisation, it will be regarded as an unlawful water use. The Applicant will thus be guilty of an offence and liable for a fine or imprisonment as stipulated in Section 151 of the NWA. A Pre-Water Use Authorisation Application meeting is recommended.

2 Solid Waste Management

2.1 The requirements of this Department with respect to solid waste must be strictly enforced and complied with. The waste management hierarchy must be implemented for all solid waste generated.

2.2 The Applicant should note that contaminated soil or other hazardous material must be disposed of at a permitted hazardous landfill site that is authorized to accept the said material and proof of this must be made available to this Department when required.

2.3 Should private contractors be used, all solid waste must be disposed of at a permitted landfill site and proof of this must be made available to this Department when required.

2.4 The recycling of suitable material is encouraged by this Department, provided it is properly managed.

3 Sewage and Wastewater Management

3.1 Washing, refuelling, maintaining of vehicles or the transfer of hazardous substances must be conducted within a bunded area. All drainage arising from the bunded area must be treated as a water containing waste and disposed of safely.

3.2 The following is applicable should small volumes of wastewater be generated during the construction phase:

- (a) Water containing waste must not be discharged into the natural environment, and;
- (b) Measures to contain the water containing waste and safely dispose thereof must be implemented.

4 Storm-water Management

- 4.1 It is imperative that there is proper management of storm water at the project site. This Department requests a storm-water Management Plan.
- 4.2 The storm water management plan should indicate the separation of clean and dirty water and illustrate treatment and disposal location of dirty water.
- 4.3 The Engineer or Contractor must ensure that only clean storm-water runoff enters the environment, ensure that all drainage locations are well monitored to prevent clogging and blockage of drainage lines.
- 4.4 Drainage must be controlled to ensure that runoff from the project area does not culminate in off-site pollution, flooding or result in any damage to properties downstream of any storm-water discharge point(s).

5 Erosion Control

- 5.1 Soil erosion onsite must be prevented at all times, i.e. pre-, during- and post-construction activities. Erosion control measures must be implemented in areas prone to erosion such as near water supply points, edges of slopes, etc. These measures could include the use of sand bags, hessian sheets, bidim, retention and replacement of vegetation.
- 5.2 Where the land has been disturbed during construction/excavation it must be rehabilitated and re-vegetated back to an acceptable state after construction/excavation.
- 5.3 Stockpiling of soil or any other materials used during the construction phase must not be allowed on or near steep slopes, near a watercourse or water body. This is to prevent pollution or the impediment of surface run-off. The Applicant must control and establish suitable mitigation measures to prevent the erosion of stockpiles.

6 Spillages Management

- 6.1 Storage of material, chemicals, fuels etc. must not pose a risk to the surrounding environment, and this includes surface and groundwater. Temporary bunds must also be constructed around chemical or fuel storage areas to contain possible spillages.
- 6.2 It is important that any significant spillage of chemicals, fuels, etc. during the construction phase and/or operational phase is reported to this Office and other relevant authorities. In the event of a spill, the following steps can be taken:
 - (a) Stop the source of the spill;
 - (b) Contain the spill; All significant spills must be reported to this Department and other relevant authorities;
 - (c) Remove the spilled product for treatment and authorised disposal;
 - (d) Determine if there is any soil, groundwater or other environmental impact;
 - (e) If necessary, remedial action must be taken in consultation with this Department; and
 - (f) Incident must be documented.

7 General

- 7.1 No form of secondary pollution should arise from the disposal of sewage and refuse. The contractor must be clearly briefed on the method of disposal of such waste and compliance must be ensured/monitored. Any pollution problems arising from the above project is to be addressed immediately by the Applicant.

DEPARTMENT OF WATER AND SANITATION COMMENTS FOR THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED CULTIVATION ON THE REMAINDER OF THE FARM DOORNHOEK 451-KTG GREATER TUBATSE FETAKGOMO LOCAL MUNICIPALITY.

- 7.2 This Office reserves the right to inspect the site without prior notice in order to ensure that its requirements, as mentioned above, are adhered to. Should any problems be noted, measures must be undertaken immediately to rectify the situation.
- 7.3 This Department reserves the right to revise/withdraw these comments and request further information from the applicant should any other information that contradicts the above comes to light.
- 7.4 Notwithstanding the above, the responsibility rests with the Applicant to identify all sources or potential sources of pollution from his undertaking and to take appropriate measures to prevent any pollution of the environment.

The applicant is advised to apply for all water uses relevant to the proposed activity in terms of section 21 of the National Water Act, 1998 (Act No 36 of 1998) on the DWS online system referred to as electronic Water Use Licence Application Administration System (eWULAAS), which is accessible on the Departmental website: www.dws.gov.za.

Should you have any queries, please do not hesitate to contact Mr L Mbulaheni on email address: Mbulaheni@dws.gov.za.

Yours faithfully:



PROVINCIAL HEAD: MPUMALANGA

DATE: 15/8/22

E.2.7 RESPONSE TO DEPARTMENT OF WATER AFFAIRS

From: Eco8 <eco8@vodamail.co.za>
Sent: Tuesday, 09 August 2022 13:46
To: 'Mbulaheni Lindelani (MBA)'
Subject: RE: COMMENTS DRAFT EIA REPORT REVIEW : EIA APPLICATION FOR CULTIVATION : REMAINDER OF THE FARM DOORNHOEK 451-KT

Good day Lindelani

RESPONSE: COMMENTS DRAFT EIA REPORT REVIEW : EIA APPLICATION FOR CULTIVATION : REMAINDER OF THE FARM DOORNHOEK 451-KT

Thank you for your comments. Your comments were considered and were included in a Final Environmental Impact Report that will be submitted to LEDET for decision on the application. Below is my response to your comments, using the same paragraph numbers:

1. Water Uses and Water Use Authorisations

1.1 The water use licensing requirements are noted and are included in Section E of the final EIR.

1.2 None requirements are applicable therefore a General Authorisation would not be appropriate. The Applicant will continue with a Water Use License for the individually listed activities under Section 21 of the NWA.

(a) Section 21(c) and (i) activities in this case includes the rehabilitation of a watercourse an existing dam spillway and therefore a GA will not be applicable and these activities will be included in an application for a Water Use License.

(b) The Risk Class if the watercourse (Kgwete River) is expected to be Medium and therefore a GA will not be applicable and these activities will be included in an application for a Water Use License.

(c) An application for a Section 21 (a) activity – ground water extraction is applicable and therefore a GA will not be applicable and these activities will be included in an application for a Water Use License.

(d) In this case an off-stream water storage dam is proposed so no watercourse will be impeded or diverted.

(e) The farming activity does not include the installation of sewerage pipelines, pipelines carrying hazardous materials and to raw water and wastewater treatment works.

1.3 Section 144 of the NWA refers to the determining and indication of a 1:100 year flood line on a township layout plan. The Act does not require the 1:100 year flood line to be calculated and indicated on an agricultural cultivation plan. Therefore, this assessment identified and delineated the riparian habitat along the banks of the Kgwete River as identified by an Aquatic Ecologist and clearly indicated in Appendix G3.3 Aquatic Biodiversity Compliance Report. No wetlands were identified on or near the proposed cultivation sites. Apart from road crossings, no vegetation clearance associated with orchard establishment shall occur within the riparian zone of the Kgwete River and for that purpose an appropriate buffer zone was determined and indicated on the site plan (Appendix A).

1.4 Noted. Apart from road crossings, no vegetation clearance associated with orchard establishment shall occur within the riparian zone of the Kgwete River and for that purpose an appropriate buffer zone was determined and indicated on the site plan (Appendix A).

1.5 Noted. The applicant will commence with the necessary applications for water use licenses as indicated in Section E of this report and as included in the regulatory compliance outcomes in Section L4.2 of this report.

2. Solid Waste Management

2.1 Noted. The principles of the waste hierarchy is included in the DWS requirements for small non-commercial farm waste disposal sites.

2.2 Noted and sufficiently addressed in Sections K4.5 and K4.6.

2.3 Noted. Very little solid waste is expected to be generated by the farming activity and such waste will be handled as indicated in Section K4.5 of this report.

2.4 The only recyclable waste of the agricultural activity is organic matter from pruning of trees and mowing of grass. This can be re-used as compost or mulch within the orchard and will be managed in terms of the NEMWA norms and standards for organic waste composting.

3. Sewage and Wastewater Management

3.1 The safe handling of potentially hazardous liquid waste or wastewater is described in Section 4.6 of this report.

3.2 The safe handling of potentially hazardous liquid waste or wastewater is described in Section 4.6 of this report.

4. Storm-water Management

4.1 A run-off / storm water management plan is included in Appendix C of this report (see attached).

4.2 Run-off from the cultivation lands contains inorganic matter (soil particles) and organic matter (vegetation matter) that collects naturally in the run-off water from the orchards. The only means to separate dirty water that contains soil/silt and organic matter end produce clean water is to discharge run-off from the orchard to grass swales and vegetated buffer strips along watercourses. This is described in detail in Section K2.2 of the report.

4.3 The Land user shall maintain soil conservation works, constructed waterways and vegetated buffer zones or filter strips in optimal condition as indicated in Section 2.4 of this report.

4.4 The Land User shall maintain the watercourses and in-stream dam on the property to optimally perform their functions as indicated in Sections K2.6 and K2.7 of this report.

5. Erosion Control

5.1/ 5.2 / 5.3 Soil conservation measures during the orchard establishment period as well as the operational period is described in detail in Sections K1.2, K1.3 and K1.4 of this report.

6. Spillages Management

6.1 / 6.2 The safe storage and handing of potentially hazardous substances, spillages and liquid waste is dealt with in detail in Sections 4.6 and 4.7 of this report.

7. General

7.1 Noted and addressed adequately in Sections K4.5, K4.6 and K4.7

7.2 Noted

7.3 Noted.

7.4 All potential sources of pollution were identified in Section F16 of this report.

Noted. It is the intention of the Applicant to commence with the Water use License applications directly after Environmental Authorisation has been obtained as the eWULAAS process required copies of the EIR, EMPR and Environmental Authorisation.

Regards

Riaan Visagie
Reg.EAP : EAPAS

**FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME
and
MAINTENANCE MANAGEMENT PLAN
FOR CULTIVATION AND ASSOCIATED
ACTIVITIES INCLUDING
VEGETATION CLEARING,
SOIL CONSERVATION
AND WATERCOURSE MAINTENANCE
ON THE REMAINDER OF THE FARM DOORNHOEK 451-KT**

PERSONAL DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

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FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT

The Environmental Management Programme (EMP) is recognised as the tool that can provide the assurance that the project developer has made suitable provision for mitigation of predicted impacts as specified within the basic environmental impact assessment report and it provides a link to the implementation of such mitigation measures.

DUTY OF CARE

Section 28 of the National Environmental Management Act 1998, requires provision for duty of care and remediation of environmental damage during orchard establishment of development projects. The Environmental Management Programme is a tool to accomplish such care and remediation duties.

The Environmental Management Programme provides a framework for environmental project management during the following project phases:

Planning phase of the project

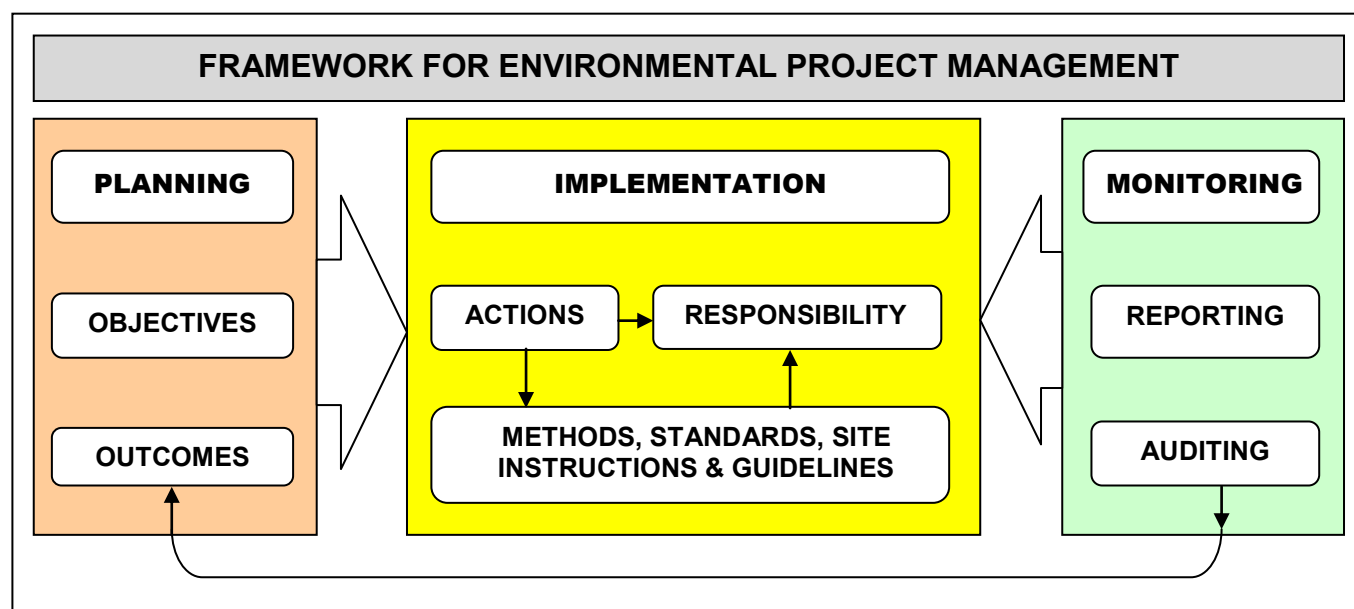
The EMPR identifies planning objectives and outcomes which the project developer needs to achieve in order to reduce or eliminate negative impacts.

Implementation phase of the project

The EMPR provides for actions and practical measures of achieving management outcomes during the orchard establishment and operational phases of the project and allocates responsibilities to the parties involved with implementing the project. Actions are also supplemented by methods, standards and guidelines. The EMPR document remains relevant throughout the project lifecycle and can be updated to be aligned with the progress of the project from orchard establishment to operation and with regulatory amendments.

Monitoring of the project during the above phases

The EMPR provides for compliance monitoring and reporting on the implementation of mitigation actions during the planning and orchard establishment phases and for post-orchard establishment auditing on the achievement of the desired impact mitigation outcomes.



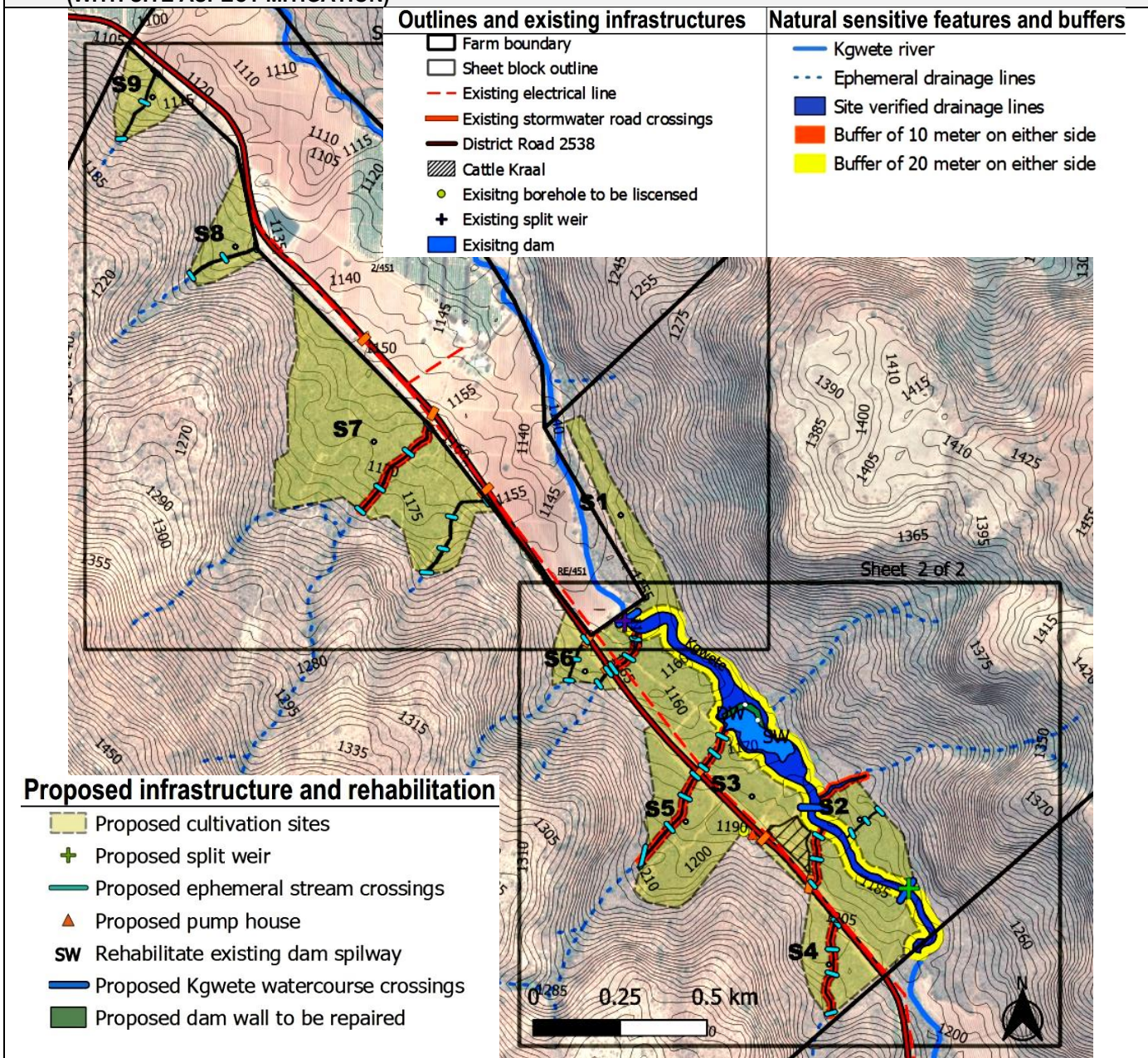
PROJECT DESCRIPTION

2.1 A DESCRIPTION OF THE ASPECTS/ ACTIVITIES COVERED BY THE EMPR.

The proposed expansion will bring about the following orchard establishment and maintenance activities:

- *Clearing of vegetation on the selected sites of ±68 ha.*
- *Orchard establishment including soil conservation in the form of planting ridges and waterways along the edges of the orchards including road run-off channels.*
- *Upgrading of existing watercourse crossings and construction of new road crossings within the site and along the perimeter of the site by way of appropriate methods as indicated in the EMPR.*
- *Installation of a main irrigation water pipeline towards the cultivation sites.*
- *Rehabilitation of an existing dam side wall and dam spillway.*
- *Construction of a gauging weir in the Kgwete River for river flow monitoring purposes.*
- *Establishing and maintaining a 10m wide riparian buffer along the ephemeral drainage lines of the orchards.*
- *Establishing and maintaining a 20m wide riparian buffer along the Kgwete River next to the orchards.*
- *Repairing existing soil erosion within the watercourses by applying the most appropriate method as indicated in the EMPR.*
- *Seasonal maintenance of indigenous and control of alien infestation and bush encroachment within all the sites.*

2.2. PROJECT MAP : THE PROPOSED SITES WITH ACTIVITIES ASSOCIATED WITH THE PROPOSED CULTIVATION (WITH SITE ASPECT MITIGATION)



IMPACT MANAGEMENT OUTCOMES

This Section of the EMPR provides a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including—

- (i) planning and design;
- (ii) pre-orchard establishment / pre-orchard establishment activities;
- (iii) orchard establishment / orchard establishment activities;
- (iv) rehabilitation of the environment after orchard establishment / orchard establishment have been completed; and
- (v) where relevant, operational / maintenance activities of the orchard throughout its lifetime.

3.1 IMPACT MANAGEMENT STATEMENT : PLANNING AND DESIGN PHASE		
<i>The orchard plan shall include soil conservation, water quality and biodiversity management measures.</i>		
	OUTCOMES	PERFORMANCE MEASURE
3.1.1	<p><i>All of the planned project components shall be indicated on a final orchard site plan.</i></p> <p><i>All watercourse buffers shall be indicated on plan.</i></p> <p><i>A final orchard site plan will indicate the tree row and ridges orientation, irrigation infrastructure, access and service roads, gates and perimeter fencing and fire breaks.</i></p> <p><i>The water supply plan for irrigation must include watering points for wildlife outside the fenced orchards sites.</i></p> <p><i>The position of all soil conservation measures shall be determined accordingly and shall be indicated on plan including the buffer zones.</i></p>	<p><i>Verify and confirm that all components of the orchard including proposed soil conservation works and the riparian buffer zones are indicated on the site plan according to the mitigation recommendations indicated in Section J of this report and where relevant according to the relevant soil conservation guidelines and standards.</i></p>
3.1.2	<p><i>The site plan and all of its components shall be laid out and marked precisely on site. The waterways and road drains shall be marked on the ground and the run-off outlet of each into the vegetative buffer zone shall be indicated. All temporary components of the construction work such as temporary lay down areas, batching areas etc. shall also be indicated on plan.</i></p>	<p><i>Verify the plan on site after it has been laid out. Check each run-off outlet point which shall be evaluated on-site in terms of slope, soil condition and vegetation cover as indicated in Section K4.2. Where the characteristics of the outlet point is found to be unsuitable it shall be relocated or otherwise improved by selecting the most applicable erosion protection and re-vegetation methods.</i></p>
3.1.3	<p><i>After laying out the entire plan variations shall be indicated on a final plan according to the actual character of each individual cultivation site.</i></p>	<p><i>The final orchard site plan shall be verified for completeness before commencement of orchard establishment activities.</i></p>
3.2 IMPACT MANAGEMENT STATEMENT : PRE-ORCHARD ESTABLISHMENT PHASE		
<i>The pre-orchard establishment shall comply with regulatory requirements.</i>		
	OUTCOMES	PERFORMANCE MEASURE
3.2.1	<p><i>The applicant shall obtain permits and commence with registering in terms of other laws applicable to the proposed cultivation and associated activities.</i></p>	<ul style="list-style-type: none"> ▪ <i>Obtain a cultivation permit from DALRRD.</i> ▪ <i>Obtain permits for removal and relocation of protected plants (if applicable).</i> ▪ <i>Commence with obtaining all relevant water use licenses.</i> ▪ <i>Commence with registering as a member of LEFPA.</i>
3.2.2	<p><i>Permanent and temporary employees and contractors shall be made aware of the relevant provisions of the Environmental Authorisation and EMPR, sensitive environmental features and security arrangements.</i></p>	<p><i>Obtain written confirmation of obligations and compliance to the EMPR by contractors with hand-over of the site or at the first project meeting.</i></p>

3.2.3	A notice of the intention to commence with construction shall be to relevant organs of state and potentially affected interested parties and stakeholders and a complaints register shall be maintained for the duration of the construction/establishment period.	All complaints are to be acknowledged within five (5) working days and are to be responded to within 10 working days of receipt, unless additional information and / or clarification are required.
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3.3 IMPACT MANAGEMENT STATEMENT: PRE-ORCHARD ESTABLISHMENT PHASE		
<i>The orchard establishment site shall be prepared to prevent environmental impacts before commencement of orchard establishment.</i>		
	OUTCOMES	PERFORMANCE MEASURE
3.3.1	<i>All components of the cultivation sites that require protection including watercourses and buffer zones shall be delineated.</i>	<i>Visual marking by using markers or tape shall be verified on site, indicating all areas excluded from vegetation clearing and all roads and road crossings.</i>
3.3.2	<i>Natural resources within the cultivation footprint area shall be rescued before clearing of vegetation.</i>	<i>A thorough search for resident fauna and protected flora shall be executed and where appropriate shall remove such species to a safe area on the remainder of the property.</i>
3.3.3	<i>Natural resources (logs and rocks) within the cultivation footprint area can be used after completion of the orchard establishment for erosion protection purposes. .</i>	<i>All trees with a stem diameter of more than 100mm shall be identified for re-use and marked for cutting into logs once mass clearing of vegetation commence.</i>
3.3.4	<i>Existing land cover degradation within the orchard buffer zone shall be identified for restoration to ensure its optimal ecological functioning simultaneous with orchard establishment activities.</i>	<i>Identify and map alien plant species and existing soil erosion within the riparian zone and watercourse buffer zones and plan for their systematic eradication and repair.</i>
3.3.4	<i>The construction site shall be prepared to prevent potential occurrence of damaging activities before commencement of construction.</i>	<i>The development footprint, sensitive areas, lay-down areas and batching areas shall be marked on the ground. The site plan shall be used to verify the correct demarcation.</i>

3.4 IMPACT MANAGEMENT STATEMENT: ORCHARD ESTABLISHMENT PHASE : ECOLOGICAL SUSTAINABILITY ASPECTS		
<i>The orchard established shall include all works related to ecological objectives in terms of soil conservation, water course and water quality protection as well as biodiversity protection.</i>		
	OUTCOMES	PERFORMANCE MEASURE
3.4.1	<i>The soil conservation works shall be constructed within the orchard and along the edges of the orchard and topsoil shall be re-used in the orchard.</i>	<i>Verify and confirm that all soil conservation structures have been constructed as indicated on the site plan.</i>
3.4.2	<i>Erosion protection structures shall be constructed on the edge of the riparian buffer zone and previous erosion shall be repaired as to prevent erosion optimally.</i>	<i>Verify and confirm that all erosion protection structures have been constructed as indicated on the site plan.</i>
3.4.3	<i>Vegetated filter strips shall be established down the outflow from constructed waterways and re-vegetation (where necessary) shall be done within the drainage lines as to optimally perform their sediment deposition and chemical filtering functions.</i>	<i>Verify and confirm that adequate vegetation and /or rock-pitching are evident at outflow channels as indicated on the site plan.</i>
3.4.4	<i>Alien invasive vegetation control shall be applied in the drainage lines to ensure restoration of biodiversity and optimal functioning of the riparian zone.</i>	<i>Verify and confirm that all alien invasive vegetation have been eradicated as indicated on the site plan.</i>
3.4.5	<i>Re-habilitate bare soil susceptible to erosion within and along the edges of the orchard by any one of the erosion prevention and re-vegetation methods /guidelines.</i>	<i>Verify and confirm that all barren soil and degraded vegetation have been stabilised and re-vegetated or have been prepared for natural re-vegetation.</i>
3.4.6	<i>A fire break shall not to disturb the soil surface and vegetation cover in such a manner that will increase run-off and induce soil erosion.</i>	<i>Verify and confirm that the implementation of a fire break has not disturbed soil and has not removed all vegetation that may result in erosion.</i>
3.4.7	<i>An unfenced ecological corridor shall be maintained along the length of the Kgwete River.</i>	

3.5	IMPACT MANAGEMENT STATEMENT : ORCHARD ESTABLISHMENT PHASE : POLLUTION PREVENTION ASPECTS	
	<i>Pollution including noise, dust, solid waste and liquid waste shall be prevented or reduced during the orchard establishment period and operational phases.</i>	
	OUTCOMES	PERFORMANCE MEASURE
3.5.1	<i>Solid waste emanating from construction activities shall be managed to prevent contamination of natural veld and watercourses.</i>	<i>Monitor and report the occurrence of litter and verify the manner of storage and disposal of solid waste during the construction period.</i>
3.5.2	<i>Liquid waste emanating from construction activities shall be managed to prevent contamination of soil and water resources.</i>	<i>Monitor and report evidence of liquid contamination and verify the manner of storage and disposal of liquid waste during the construction period.</i>

3.6	IMPACT MANAGEMENT STATEMENT : ORCHARD ESTABLISHMENT PHASE : HAZARD MANAGEMENT ASPECTS	
	<i>Potential orchard establishment site hazards shall be prevented or reduced during the orchard establishment period.</i>	
	OUTCOMES	PERFORMANCE MEASURE
3.6.1	<i>Site hazards shall be clearly marked and shall be communicated with staff.</i>	<i>Verify markings on site.</i>
3.6.2	<i>Fire shall not be used on the site without authorisation and precaution.</i>	<i>Verify correct procedures followed with Fire Protection Agency, before using fire on site.</i>

3.7	IMPACT MANAGEMENT STATEMENT : OPERATIONAL PHASE : MAINTAIN GOOD AGRICULTURAL PRACTICES	
	<i>Soil condition, water resources and water quality and remaining biodiversity shall be maintained and where possible be enhanced and agricultural chemical contamination shall be prevented during the operational lifetime of the orchard.</i>	
	OUTCOMES	PERFORMANCE MEASURE
3.7.1	<i>In-orchard soil conservation measures must be maintained in good order to perform their functions and must be upgraded/enhanced where necessary.</i>	<i>Verify the state and functionality of soil conservation measures seasonally before the start of the rainy season and repair and improve where necessary.</i>
3.7.2	<i>In-orchard soil conservation measures must be maintained in good order to perform their functions and must be upgraded/enhanced where necessary.</i>	<i>Verify the state and functionality of soil conservation measures seasonally before the start of the rainy season and repair and improve where necessary.</i>
3.7.3	<i>In-orchard soil conservation measures must be maintained in good order to perform their functions and must be upgraded/enhanced where necessary.</i>	<i>Verify the state and functionality of soil conservation measures seasonally before the start of the rainy season and repair and improve where necessary.</i>
3.7.4	<i>In-orchard soil conservation measures must be maintained in good order to perform their functions and must be upgraded/enhanced where necessary.</i>	<i>Verify the state and functionality of soil conservation measures seasonally before the start of the rainy season and repair and improve where necessary.</i>

3.8	IMPACT MANAGEMENT STATEMENT : OPERATIONAL PHASE : DAM MAINTENANCE OBJECTIVES	
	<i>The dam wall, dam basin and dam spillway shall be maintained during the operational lifetime of the dam to prevent a hazard and water quality deterioration.</i>	
	OUTCOMES	PERFORMANCE MEASURE
3.8.1	<i>The dam wall must be maintained in good order against erosion and failure.</i>	<i>Verify the state and functionality of the dam wall seasonally before the start of the rainy season, and repair and improve where necessary.</i>
3.8.2	<i>The spillway from the dam towards the watercourse must be maintained in good order to prevent gully erosion and scouring of the banks of the watercourse.</i>	<i>Verify the state and functionality of spillway seasonally, and repair erosion damage where necessary.</i>
3.8.3	<i>Natural grass cover along the dam walls must be maintained. Tree growth and alien plant species on and along the dam wall must be prevented.</i>	<i>Maintain a short grass cover by way of seasonal slashing. Remove tree growth and alien infestation seasonally from the dam wall.</i>

3.9	IMPACT MANAGEMENT STATEMENT : OPERATIONAL PHASE : SUSTAINABLE WATER USE	
	<i>Groundwater shall be used sustainably within the limits and abstraction rates that were scientifically determined by way of hydro-geological investigation.</i>	
	OUTCOMES	PERFORMANCE MEASURE
3.9.1	<i>Manage irrigation of orchards according to an irrigation Management Plan to ensure sustainable water use and maintaining the ecological reserve of the Kgwete River.</i>	<p><i>Verify, keep record and report on the implementation of water saving irrigation systems, including monitoring of:</i></p> <ul style="list-style-type: none"> ▪ <i>Groundwater extraction rates,</i> ▪ <i>Groundwater levels,</i> ▪ <i>Surface water levels of the Kgwete River where the river enters and exists the property, and</i> ▪ <i>Rainfall.</i> <p><i>Verify the use of groundwater within the safe sustainable abstraction rates and benchmarks indicated in the initial Hydro-Geological Report.</i></p>
3.9.2	<i>Verify the sustainable use of groundwater and whether surface flow in the Kgwete River is influenced by groundwater use.</i>	<p><i>Monthly verification by way of comparing routine monthly monitoring records with the initial benchmark data of the Hydro-geological study.</i></p> <p><i>Make monitoring data available to DWS when required.</i></p> <p><i>Make amendments to groundwater extraction rates where groundwater levels (or surface water levels) are negatively affected by groundwater extraction.</i></p>

IMPACT MANAGEMENT ACTIONS : ORCHARD PLANNING PHASE

This Section of the EMPR provides a description of proposed impact management actions for the planning phase of the project, identifying the manner in which the impact management outcomes contemplated in Section 3 will be achieved, and include where applicable, actions to —

(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; and

(ii) comply with any prescribed environmental management standards, methods and guidelines.

RESPONSIBILITY ASSIGNMENT	LO = Landowner	AC = Agricultural/Irrigation Specialist	CO = Contractor/s and sub-contractors
	ECO = Environmental Control Officer	EC = Ecological Specialist	

4.1	IMPACT MANAGEMENT STATEMENT
	THE ORCHARD PLAN SHALL INCLUDE SOIL CONSERVATION, WATER QUALITY AND BIODIVERSITY MANAGEMENT MEASURES.

4.1.1	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
	ALL OF THE PLANNED PROJECT COMPONENTS SHALL BE INDICATED ON A FINAL ORCHARD SITE PLAN	
a.	<i>Compile a final orchard layout / irrigation plan that shall indicate the planting ridges, ridge orientation, irrigation infrastructure, service roads and fire breaks. The position of all soil conservation measures shall be determined by making use of the relevant guidelines and shall be indicated on plan including the buffer zones.</i>	LO / AC
b.	<i>All temporary components of the orchard establishment work such as temporary lay down areas, batching areas etc. shall also be indicated on plan.</i>	LO / ECO
c.	<i>Suitable soil conservation works shall be planned making use of the relevant guidelines in order to divert run-off water from other land and to restrict the run-off speed of run-off water from the cultivated land.</i>	LO / AC / ECO
d.	<i>The land concerned shall be laid out in such manner that the run-off speed of run-off water is restricted. In this regard planting ridges shall be employed as soil conservation terraces, this must be planned by making use of the relevant guidelines.</i>	LO / AC / ECO
e.	<i>The direction of planting ridges should be secondary to the conservation requirements of the soil and must preferably be aligned along the natural terrain contours (at right angle to the natural slope).</i>	LO / AC
f.	<i>This method of orchard layout must assist to retain run-off for longer periods that will promote soil water absorption and prevent high velocity run-off over the site that may otherwise result in sheet erosion.</i>	LO / AC
g.		
h.	<i>Waterways (grassed swales) must be planned making use of the relevant guidelines, along the edges of the cultivation land to safely convey runoff collected from in-field areas to natural water courses.</i>	LO / AC / ECO
i.	<i>Waterways (grassed swales) must be hydraulically stable structures, protected either by vegetation or more durable materials.</i>	LO / AC

j.	<i>Waterways must be shallow and wide and the bed should preferably be lined with natural vegetation and rock. This will achieve efficient run-off energy dissipation by increasing the surface area of water flow outlets and channels, thus increasing the total cross-sectional area of flow and increasing the roughness of the channel or drainage way.</i>	LO / AC
k.	<i>Compacted surfaces of service roads along the edges of the orchard would become impervious to water. Consequently considerable run-off collects on roads so good drainage is important, not only to maintain the land around the road, but also to maintain the road itself. All roads must therefore be adequately drained, and the drains either grassed or stone pitched. The correct number of drains must be constructed by making use of the relevant guidelines, to meet the slope requirements of the road. Generally, drainage deflection humps on the services roads should not be constructed more than 20m apart considering the slopes that are encountered on the cultivation sites.</i>	LO / AC
l.		
m.	<i>A vegetation buffer of at least 10m wide along the indicated ephemeral drainage lines must be incorporated on the site plan as required under CARA regulations.</i>	LO / AC / ECO
n.	<i>The plan must incorporate effective run-off attenuation where the waterways enter the drainage line zone.</i>	LO / AC / ECO
o.	<i>Any point of overland discharge from the orchard must be located at least 10m away from the outer channel bank of a watercourse. Alternatively, the outlet must discharge directly onto the bed of the watercourse and the necessary bed and bank stabilisation measures must be implemented.</i>	LO / AC
p.	<i>The greatest reductions in flow velocities are achieved by vegetation that is uniformly dense at ground level. The introduction of additional grass filter strips, suitable stone pitching or other erosion prevention structures must be applied by making use of the relevant guidelines.</i>	LO / EC / ECO
q.	<i>The buffer zone should include indigenous trees and shrubs towards its middle core section that will make water quality amelioration at deeper soil depths more effective.</i>	LO / EC / ECO
r.	<i>If slopes along the edges of the cultivation sites are greater than 15% sufficient, run-off retention measures must be planned as part of the waterway outlets to reduce run-off speed which will increase the effectiveness of sediment trapping and pollutant removal. Erosion prevention measures as indicated by the relevant guidelines must be considered.</i>	LO / AC / ECO
s.	<i>If firebreaks are planned around the orchard, the drainage line zones should not be considered as fire breaks as their vegetation composition and ecological functioning are important to mitigate potentially significant sedimentation and contamination impacts on watercourses.</i>	LO / AC / ECO
	<i>Fencing was previously established around the orchard, therefore plan for suitable alternative ecological corridors for wildlife migration between terrestrial and riparian habitats. Maintain open corridors along all perennial watercourses.</i>	LO / AC / ECO

4.1.2	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	THE SITE PLAN AND ALL OF ITS COMPONENTS SHALL BE LAID OUT AND SHALL BE VERIFIED ON SITE.	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Verify the plan on site after it has been laid out.</i>	LO / AC /
b.	<i>Check each run-off outlet point which shall be evaluated on-site in terms of slope, soil condition and vegetation cover by making use of the relevant guidelines. Where the characteristics of the outlet point is found to be unsuitable it shall be relocated or otherwise improved by selecting the most applicable erosion protection and re-vegetation method.</i>	ECO LO / AC / ECO
c.	<i>Check practical positioning of temporary components of the orchard establishment works to ensure their position would not impact on the surrounding environment.</i>	LO / ECO
d.	<i>After laying out the entire plan variations shall be indicated on a final plan according to the changes determined on site.</i>	LO

4.1.3	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	PLAN FOR THE RESTORATION OF EXISTING LAND COVER DEGRADATION WITHIN THE DRAINAGE LINE AND BUFFER ZONE SIMULTANEOUS WITH ORCHARD ESTABLISHMENT ACTIVITIES	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Identify and map alien plant species and infestation plan for their systematic control in terms of time manpower and cost in the manner indicated by the relevant guidelines.</i>	ECO / EC
b.	<i>Identify and map existing soil erosion within the drainage line zone and plan for its repair by applying the most appropriate method as indicated by the relevant guidelines.</i>	ECO
c.	<i>Plan for re-vegetation of degraded areas of the drainage line buffer with appropriate vegetation that has a strong mass root system as indicated by the relevant guidelines. Plan to re-establish vegetation to represent a gradual transition from the aquatic to the adjacent terrestrial ecosystem. Such transitional zones encourage species diversity and effectively buffer variable nutrient and energy flows.</i>	ECO / EC

4.1.4	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	PLAN TO PREVENT THE NEGATIVE IMPACTS OF ROAD CROSSINGS ON STREAMS, WATER FLOW AND WATER QUALITY.	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Existing farm management road and crossings over watercourses shall be used and where necessary new watercourse crossings shall be constructed as indicated on the Site Plan.</i>	
b.	<i>Wherever a road crosses a natural drainage, however small, runoff water will repeatedly wash away part of the road surface, leaving gullies of varying depth and width across the roadway. Road stabilisation over natural drainage lines must therefore be in line with the relevant guidelines and incorporate a range of adequately sized pipes, culverts to allow uninterrupted and natural / dispersed flow.</i>	LO / AC LO / AC
c.	<i>Alternatively the road layering across the watercourse by way of infilling must incorporate a permeable rock base layer, rock bed or rock gabion structures that will allow uninterrupted water flow.</i>	

IMPACT MANAGEMENT ACTIONS : PRE-ORCHARD ESTABLISHMENT PHASE

This Section of the EMPR provides a description of proposed impact management actions for the pre-establishment phase of the project, identifying the manner in which the impact management outcomes contemplated in Section 3 will be achieved, and include where applicable, actions to —

- (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
- (ii) comply with any prescribed environmental management standards or practices;
- (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and
- (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable.

RESPONSIBILITY ASSIGNMENT	LO = Landowner	AC = Agricultural/Irrigation Specialist	CO = Contractor/s
	ECO = Environmental Control Officer	EC = Ecological Specialist	

5.1	IMPACT MANAGEMENT STATEMENT: THE ORCHARD ESTABLISHMENT SHALL COMPLY WITH REGULATORY REQUIREMENTS.
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5.1.1	IMPACT MANAGEMENT OUTCOME : THE LANDOWNER SHALL OBTAIN PERMITS AND COMMENCE WITH REGISTERING IN TERMS OF OTHER LAWS APPLICABLE TO THE PROPOSED CULTIVATION AND ASSOCIATED ACTIVITIES.	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Obtain a cultivation permit from DRRLD (was DAFF).</i>	LO
b.	<i>Obtain permits for removal and relocation of protected plants (if applicable).</i>	LO / ECO / EC
c.	<i>Commence with verification of water uses and/or registering water uses with DWS</i>	LO
d.	<i>Commence with registering as a member of LEFPA.</i>	LO

5.1.2	IMPACT MANAGEMENT OUTCOME : EMPLOYEE ENVIRONMENTAL AWARENESS AND SECURITY ARRANGEMENTS.	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Permanent and temporary employees and contractors shall be made aware of the relevant provisions of the Environmental Authorisation and EMPR, sensitive environmental features and security arrangements.</i>	LO
b.	<i>All staff and contracting staff must be informed of environmental issues and specifically with regard to littering, the use of toilets, the use of hazardous materials, the prevention of pollution, the prohibition of clearing and defacing of natural vegetation and the prohibition of poaching or snaring of wildlife.</i>	LO
c.	<i>All orchard establishment staff must be made aware of the boundaries of the development sites and must understand that trespassing on to adjacent properties is illegal and any incident in this regard can result in dismissal.</i>	LO
d.	<i>Routes for access and haul roads to the sites are to be identified and all drivers of must be informed to confine vehicles movement is to these roads.</i>	LO
e.	<i>Orchard establishment personnel must be sensitized to the requirements the South African Heritage Resources Act. Should any material of cultural, archaeological or palaeontological significance be encountered during orchard establishment, all activities must cease immediately, the relevant protocol must be followed (see Section 8 of protocol reference) and the South African Heritage Resources Agency (SAHRA) must be informed accordingly.</i>	LO

5.1.3	IMPACT MANAGEMENT OUTCOME : ADMINISTRATIVE REQUIREMENTS	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Provide a notice of the intention to commence with orchard establishment to relevant organs of state.</i>	LO / ECO
b.	<i>Submit the final site plan to the Environmental Compliance Monitoring Case Officer for record purposes.</i>	LO / ECO
c.	<i>Obtain written confirmation of obligations and compliance to the EMPR by contractors with hand-over of the site or at the first project meeting.</i>	LO / ECO
d.	<i>Open and maintain a complaints register for the duration of the orchard establishment/establishment period.</i>	ECO

5.2	IMPACT MANAGEMENT STATEMENT: THE ORCHARD ESTABLISHMENT SITE SHALL BE PREPARED TO PREVENT ENVIRONMENTAL IMPACTS BEFORE COMMENCEMENT OF ORCHARD ESTABLISHMENT.	
5.2.1	IMPACT MANAGEMENT OUTCOME : NATURAL RESOURCES WITHIN THE CULTIVATION FOOTPRINT AREA SHALL BE REMOVED BEFORE CLEARING OF VEGETATION.	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>A thorough search for resident fauna shall be executed and where appropriate shall remove such species to a safe area on the remainder of the property. No wild animals may under any circumstances be handled, removed, injured or killed during the orchard establishment period.</i>	LO / ECO / IEC
b.	<i>Perform a thorough survey of the sites in advance of clearing activities to identify potentially occurring protected plant species and obtain a permit in advance for the removal/re-location of such species.</i>	LO / ECO / EC

5.2.2	IMPACT MANAGEMENT OUTCOME : THE ORCHARD ESTABLISHMENT SITE SHALL BE PREPARED TO PREVENT POTENTIAL OCCURRENCE OF DAMAGING ACTIVITIES BEFORE COMMENCEMENT OF ORCHARD ESTABLISHMENT.	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Prolonged periods of inactivity after clearing of vegetation that can result in uncontrolled run-off, sheet erosion and loss of topsoil must be prevented. The sites must be cleared and prepared only when the Landowner is ready to commence immediately afterwards with the establishing of the orchard.</i>	LO
b.	<i>Material lay-down areas, sites for temporary topsoil and spoil storage, heaps for logs and vegetation waste storage, solid waste storage and batching areas shall be marked on the ground.</i>	LO / CO / ECO
c.	<i>Buffer areas must be adequately marked before commencement of vegetation clearing and earth works as to prevent any disturbance to soil and vegetation within these zones. Staff and contract workers must be informed of these restrictions beforehand.</i>	LO / CO / ECO
d.	<i>New roads that could lead to additional loss of vegetation shall not be constructed as the selected site can be accessed from the existing tracks and dirt roads. Drivers must be informed to strictly remain on these roads.</i>	LO / CO / IECO

5.2.3	IMPACT MANAGEMENT OUTCOME : NATURAL RESOURCES WITHIN THE CULTIVATION FOOTPRINT AREA SHALL BE RE-USED (WHERE APPLICABLE)	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>All trees with a stem diameter of more than 200mm shall be identified and marked for cutting into logs before mass clearing of vegetation commence.</i>	CO
b.	<i>Trees that will be felled as a result of clearing must be cut into suitably sizes logs for use in site rehabilitation and erosion control actions by making use of the relevant guideline. Excess vegetation waste should be made available for firewood or any other use.</i>	CO

c.	<i>Large trees must be felled and logged by hand equipment in advance of heavy machinery during vegetation clearing. Logs must be removed and stacked on the edge of the cultivation area for later rehabilitation use according to the methods indicated in the relevant guidelines. This will minimize large volumes of vegetation waste that need to be moved by machinery to the edge of the land which normally includes a substantial volume of topsoil.</i>	CO
d.	<i>Vegetation or other litter emanating from the vegetation clearing may not be disposed of within the drainage lines and drainage line buffer zones.</i>	CO
e.	<i>The mechanical chipping of vegetation waste on-site directly after clearing must be considered instead of burning. The use of vegetation chips as a mulch around the root/irrigation zone of newly planted seedlings is an accepted method to enhance the organic texture of the soil as to increase water absorption, minimize erosion and to prevent soil moisture loss around the tree root zone.</i>	LO / CO
f.	<i>Where practically possible small rests of vegetation waste not to be used as mulch around the tree root zones, should be spread out evenly on the topsoil for natural decomposition for achieving a similar aim as indicated above.</i>	CO
g.	<i>The Landowner must inform the local Fire Protection Agency (FPA) and follow the necessary procedures, preparations and preventative measures in terms of the relevant regulations if fire is to be used on the sites during the site clearing activity.</i>	LO
h.	<i>Collection of firewood or any other plant resources in areas other than those to be cleared for purposes of cultivation must be prohibited during the establishment and operational life of the farm.</i>	CO

IMPACT MANAGEMENT ACTIONS : ORCHARD ESTABLISHMENT PHASE

This Section of the EMPR provides a description of proposed impact management actions for the orchard establishment / establishment phase of the project, identifying the manner in which the impact management outcomes contemplated in Section 3 will be achieved, and include where applicable, actions to —

(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; and

(ii) comply with any prescribed environmental management standards or practices.

RESPONSIBILITY ASSIGNMENT	LO = Landowner	AC = Agricultural/Irrigation Specialist	CO = Contractor/s
	ECO = Environmental Control Officer	EC = Ecological Specialist	

6.1	IMPACT MANAGEMENT STATEMENT: THE ORCHARD ESTABLISHED SHALL INCLUDE ALL WORKS RELATED TO ECOLOGICAL OBJECTIVES IN TERMS OF SOIL CONSERVATION, WATER QUALITY AND BIODIVERSITY ENHANCEMENT.
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6.1.1	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
	AFTER CLEARING OF VEGETATION AND DURING PREPARATION OF THE LANDS, THE LOSS OF TOPSOIL MUST BE MINIMISED	
a.	<i>After clearing of vegetation, only apply light shaving and shallow soil shaping of topsoil within the cultivation site in such way that topsoil remains on the cultivation site and avoid pushing or moving topsoil on heaps along the sides of the cultivation site.</i>	CO
b.	<i>If practically possible all existing grass cover should not be cleared before shaping of ridges. This will retain some measure of soil cohesion that will minimise the potential loss of topsoil due to sheet erosion before completion of planting ridges and other soil conservation measures.</i>	CO
c.	<i>When topsoil is shaved off for shaping of planting ridges, vegetative matter in the topsoil should not be removed. This will accelerate the re-establishment of grass cover on and between the planting ridges.</i>	CO
d.	<i>Topsoil or spoil material from the mechanical shaping of the orchards may not be disposed of along the edge or within the drainage line zone as heavy rains may wash such material into drainage line zones and watercourses. Such material must be temporarily stored/heaped separately to other material near to the middle of the eastern boundary of each site that is not located near to sensitive ecosystems.</i>	CO
e.	<i>Topsoil stockpiles must not be contaminated with waste or any other foreign matter, which may inhibit the later re-use and re-growth of vegetation and micro-organisms in the soil. Stockpiled topsoil should also not be compacted and should be replaced on the cultivation lands as the final soil layer.</i>	CO
f.	<i>If soil ripping is required to loosen the soil structure for effective root development, only rip preferably along the proposed tree planting lines and maintain the natural grass cover in between the tree planting lines where possible (if the area between tree rows will not be used for other crops).</i>	CO
g.	<i>Where unwanted surface rock is encountered that needs to be removed from the cultivation site, such rock must be stacked on the edge of the site for later re-use as stabilisation bedding of soil conservation works by employing relevant methods as indicated in the relevant guidelines.</i>	CO
h.	<i>Where shaping and ridging of the land resulted in bare areas denuded of natural grass cover, such areas must be re-vegetated (seeding) with natural grass directly after completion of surface shaping by employing relevant methods as indicated in the relevant guidelines.</i>	CO
i.	<i>Spoil material from irrigation pipeline trench excavations must be stockpiled along the trench ready for immediate backfilling after installation of pipelines.</i>	CO

6.1.2	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	EROSION PROTECTION STRUCTURES SHALL BE CONSTRUCTED WITHIN AND ALONG THE EDGES ON THE LANDS TO PREVENT SHEET AND GULLY EROSION.	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>After completion of shaping and ridging of the land, waterways must be constructed towards drainage line zones and where necessary rehabilitation methods such as stone pitching, use of logs and re-vegetation must be applied by employing relevant methods as indicated in the relevant guidelines.</i>	CO
b.	<i>Suitable soil conservation works shall be implemented in order to divert run-off water from the lands and to restrict the run-off speed of run-off water from the cultivated land by employing relevant methods as indicated in the relevant guidelines.</i>	CO

6.1.3	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	BUFFERS AND VEGETATED FILTER STRIPS SHALL BE ESTABLISHED ADJACENT TO THE ORCHARD FOR SEDIMENT DEPOSITION AND CHEMICAL FILTERING IN ORDER TO MAINTAIN GOOD WATER QUALITY.	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Where waterways (grassed swales) and road drainage structures are to be constructed adequate vegetation cover, stone pitching or other erosion control measures must be put in place by employing relevant methods as indicated in the relevant guidelines, to improve infiltration of surface run-off and the rapid uptake and transformation of soluble contaminants.</i>	CO
b.	<i>It is important to ensure dense vegetation or to re-vegetate the filter strips on the outer core zone of the buffer areas with naturally occurring grass species and indigenous trees and shrubs towards the middle core section by employing relevant methods as indicated in the relevant guidelines.</i>	CO / ECO / EC
c.	<i>If necessary, plant re-establishment should be accompanied by some form of micro-habitat treatment to be effective. Conditions otherwise may simply be too environmentally harsh (high temperatures, exposure, arid) for successful seedling establishment. Such forms of microhabitat treatment includes the creating moisture capturing hollows, mulching bare surfaces with plant material, surface covering with jute geo-textile and over-mulching as more clearly described in the relevant guidelines.</i>	CO ECO / EC

6.1.4	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	ALIEN INVASIVE VEGETATION SHALL BE CONTROLLED IN THE DRAINAGE LINE ZONES TO ENSURE RESTORATION OF BIODIVERSITY AND OPTIMAL FUNCTIONING	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>No clearing of indigenous vegetation may occur within the drainage line buffer zone with exception of listed indigenous and alien invasive species which must be removed. The method of removal alien and invasive species must be done according to the CARA and other relevant guidelines.</i>	LO / CO
b.	<i>Prolonged periods of inactivity after vegetation clearing may result in uncontrolled run-off, establishment of pioneer and invader plant species and potential later repetition of the clearing activity. Planning is therefore important to ensure that orchard establishment commence directly after vegetation clearing.</i>	LO / CO

6.1.5	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	RE-HABILITATE BARE SOIL SUSCEPTIBLE TO EROSION WITHIN AND ALONG THE EDGES OF THE ORCHARD	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>With regard to rehabilitation after completion of orchard establishment it is important that re-introduction of indigenous vegetation around the edges of the cultivation sites conforms to the species composition that currently occur within the area.</i>	LO / CO / ECO / EC
b.	<i>A similar number and species of protected trees that will be lost due to site preparation (if any) must be replaced on other areas of the farm not affected by the cultivation activities.</i>	LO / ECO / EC
c.	<i>After earthmoving, erosion protection measures must be implemented and the sites must be rehabilitated by using the appropriate soil conservation measures, run-off control measures and re-vegetation methods as indicated by the relevant guidelines.</i>	LO / CO

6.1.6	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	A FIRE BREAK SHALL NOT DISTURB THE SOIL SURFACE AND VEGETATION COVER IN SUCH A MANNER THAT WILL INCREASE RUN-OFF AND SOIL EROSION.	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>The legal requirement that firebreaks should not cause erosion limits the means that owners may use to prepare the breaks. The disturbance of soil by earth works in preparation of a fire break is therefore not allowable.</i>	LO / CO
b.	<i>Landowners are also bound by legal requirement to protect biodiversity as far as possible when preparing firebreaks. Minimum clearing of vegetation must therefore be applied for the purpose of creating a firebreak, such as selective pruning/ trimming and slashing.</i>	LO / CO / ECO
c.	<i>The landowner is obliged to take certain mitigation measures to transplant protected plants if possible, and to avoid damage to protected plants by placing the firebreak on a different alignment (if at all possible).</i>	ECO LO / CO

6.1.7	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	SERVICE ROADS, PIPELINES, ELECTRICITY CABLES AND FENCING AND GAUGING WEIR THAT CROSS OVER A WATERCOURSE AS WELL AS REPAIR OF THE DAM WALL AND DAM SPILLWAY SHALL NOT RESULT IN FLOW IMPEDIMENT AND IN EROSION OF THE BED AND BANKS OF SUCH WATERCOURSE.	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Service roads, irrigation pipelines, underground electricity cables and fencing shall only follow existing farm management roads, existing fence lines and existing electricity servitude lines and no other vegetation will need to be cleared for orchard establishment/installation of such services.</i>	LO / CO
b.	<i>Only commence with site preparation work within or over watercourses when rehabilitation works can immediately follow it.</i>	LO / CO
c.	<i>All sites within watercourses where earth moving and excavation will take place must be limited to clearly demarcated and marked areas.</i>	CO
d.	<i>The flow of the watercourse must not be impeded during orchard establishment but may be temporarily diverted and channelled until such orchard establishment work has been completed (but not for a period longer than 6 weeks as per regulation).</i>	CO
e.	<i>All in-stream structures shall include adequate erosion control measures and stabilisation measures as indicated by the relevant guidelines.</i>	LO / CO

6.1.8	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	POST ORCHARD ESTABLISHMENT SITE CLEAN-UP AND REHABILITATION	
IMPACT MANAGEMENT ACTIONS		
a.	<i>Upon completion of any part of the project, ensure that all temporary structures, materials, waste and facilities used for orchard establishment activities are removed from the sites. It is unacceptable to leave foreign material behind with the knowledge that it will become hidden amongst the rejuvenating vegetation with time.</i>	CO
b.	<i>Soils that become compacted through the activities of the development must be loosened to an appropriate depth to allow seed germination.</i>	CO
c.	<i>All cut and fill surfaces need to be stabilized with appropriate material or measures when major civil works are complete by making use of the methods indicated by the relevant guidelines.</i>	LO / CO
d.	<i>Slopes must be designed according to predefined specifications as indicated in the relevant guidelines, aimed at the prevention of soil erosion, of efficient storm water control, of the eventual re-establishment of vegetation and of ultimately achieving aesthetically acceptable landscapes.</i>	CO
e.	<i>Near vertical slopes (1:2) must be stabilised using hard structures following specifications as indicated in the relevant guidelines. Sites with a 1:3 – 1:6 slope must be logged or stepped. Secured logs must be placed in continuous lines following the contours and spaced appropriately depending on the steepness of the slope as indicated in more detail in the relevant guidelines.</i>	LO / CO
f.	<i>Apply erosion control measures on bare soil areas and prepare the areas for re-vegetation where necessary by making use of the appropriate methods as indicated in the relevant guidelines.</i>	LO / CO

6.2	ENVIRONMENTAL IMPACT STATEMENT: POLLUTION BY SOLID WASTE AND LIQUID WASTE SHALL BE PREVENTED OR REDUCED DURING THE ORCHARD ESTABLISHMENT PERIOD.
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6.2.3	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	SOLID WASTE EMANATING FROM ORCHARD ESTABLISHMENT ACTIVITIES SHALL BE MANAGED TO PREVENT CONTAMINATION OF NATURAL VELD AND WATERCOURSES.	
IMPACT MANAGEMENT ACTIONS		
a.	<i>No dumping of solid foreign material in the natural veld, drainage line zones and watercourses shall be allowed.</i>	LO / CO
b.	<i>Solid waste generated during the orchard establishment period must be contained on-site within suitable waste containers / sites located at least 30m away from any drainage line zone until such waste can be removed for permanent disposal.</i>	LO / CO
c.	<i>Large volumes of non-reusable inorganic orchard establishment waste (more than 1m³) shall be removed to an approved municipal waste disposal site or municipal waste transfer site.</i>	LO / CO
d.	<i>A small volume of solid orchard establishment waste less than 1m³ can be disposed of at the farm waste disposal pit.</i>	LO / CO
e.	<i>Inert waste shall be used on site or elsewhere on the farm as filling material (where applicable) but not within watercourses.</i>	LO / CO
f.	<i>Any hazardous orchard establishment waste shall be removed to an approved hazardous waste site or hazardous waste transfer site.</i>	LO / CO

6.2.4	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	LIQUID WASTE EMANATING FROM ORCHARD ESTABLISHMENT ACTIVITIES SHALL BE MANAGED TO PREVENT CONTAMINATION OF SOIL AND WATER RESOURCES.	
IMPACT MANAGEMENT ACTIONS		
a.	<i>No dumping of liquid waste in the natural veld, drainage line zones and watercourses shall be allowed.</i>	LO / CO
b.	<i>Ablution facilities (pit latrines or septic tanks) may not be located within 50m from any watercourse or drainage line zone.</i>	LO / CO
c.	<i>Any concrete batching plant must be positioned more than 20m away from a drainage line.</i>	LO / CO
d.	<i>Measures must be applied to ensure that no effluent / chemical waste enters a natural watercourse by creating a bunded area for concrete mixing with earth berms or sandbags to prevent runoff escaping from the site.</i>	LO / CO

6.3	IMPACT MANAGEMENT STATEMENT: POTENTIAL ORCHARD ESTABLISHMENT SITE HAZARDS SHALL BE PREVENTED OR REDUCED DURING THE ORCHARD ESTABLISHMENT PERIOD.
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6.3.1	IMPACT MANAGEMENT OUTCOME SITE HAZARDS ON THE ORCHARD ESTABLISHMENT SITE SHALL BE CLEARLY MARKED.	RESPONSIBILITY
IMPACT MANAGEMENT ACTIONS		
a.	<i>All potentially hazardous work areas during the orchard establishment phase must be demarcated and staff must be made aware of the potential dangers to such site/activity.</i>	CO
b.	<i>Specifically deep trench excavations must be visibly marked until such excavations have been backfilled. Allow for escape routes in trench excavations so that animals that may become trapped in a trench can exit easily.</i>	CO
c.	<i>Hazardous materials such as chemicals for alien vegetation control and fuels for earth moving and equipment that are required for orchard establishment must be stored in a secure facility and shall be handled in a manner to prevent site contamination and ignition according to the National Standard (SANS 10602).</i>	LO / CO
d.	<i>When potentially hazardous activities need to take place such as blasting, surrounding residents must be warned in advance.</i>	LO / CO
e.	<i>Special care must be taken by the landowner when conducting any work underneath any overhead ESKOM powerlines, not to accidentally damage or touch overhead powerlines and all workers must be made aware of the potential hazard when conducting work beneath the powerlines.</i>	LO / CO

6.3.2	IMPACT MANAGEMENT OUTCOME FIRE SHALL NOT BE USED ON THE ORCHARD ESTABLISHMENT SITE WITHOUT AUTHORISATION AND PRECAUTION.	RESPONSIBILITY
IMPACT MANAGEMENT ACTIONS		
a.	<i>The Landowner must take cognisance and comply with the annually published FPA rules and minimum requirements for landowners.</i>	LO / CO
b.	<i>The Landowner shall ensure that any activity related to the orchard establishment that requires the use of fire shall comply with the FPA requirements.</i>	LO / CO

IMPACT MANAGEMENT ACTIONS : ORCHARD MAINTENANCE PHASE

This Section of the EMPR provides a description of proposed impact management actions for the maintenance / operational phase of the project, identifying the manner in which the impact management outcomes contemplated in Section 3 will be achieved, and include where applicable, actions to —

- (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; and
- (ii) comply with any prescribed environmental management standards or practices.

RESPONSIBILITY ASSIGNMENT	LO = Project Manager (Landowner/Owner)	AC = Agricultural/Irrigation Specialist	C = Contractor/s
	ECO = Environmental Control Officer	EC = Ecological Specialist	

7.1	IMPACT MANAGEMENT STATEMENT: POTENTIAL SOIL, WATER QUALITY AND LAND COVER DEGRADATION SHALL BE MANAGED DURING THE OPERATIONAL LIFETIME OF THE ORCHARD.
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IMPACT MANAGEMENT OUTCOME		RESPONSIBILITY
7.1.1	IN-ORCHARD SOIL CONSERVATION MEASURES MUST BE MAINTAINED IN GOOD ORDER TO PERFORM THEIR FUNCTIONS AND MUST BE UPGRADED/ENHANCED PERIODICALLY WHERE NECESSARY.	
IMPACT MANAGEMENT ACTIONS		
a.	<i>Verify the state and functionality of in-field soil conservation measures and run-off attenuation measures along the edge of the orchard seasonally before the start of each rainy season and repair and improve such measures where necessary by implementing the relevant methods as indicated in the relevant guidelines.</i>	LO
b.	<i>Maintain the natural grass cover in-between tree rows throughout the life of the orchard.</i>	LO
c.	<i>Prevent unnecessary soil compaction within the orchard. Where such compaction occurred, the crust must be broken by very shallow ripping (200mm max) after which a mulch layer should be applied to the ripped surface.</i>	LO
d.	<i>Implement the use of mulch within the orchard seasonally to prevent crust formation and to promote soil-genesis for optimal soil health. Research showed that strong crusts do not form under mulch and retained 89% more soil and 58% more water than bare plots. Other advantages of mulching include the suppression of weeds, decreased wind erosion and improved soil fertility.</i>	LO
e.	<i>Where secondary crops are to be cultivated in-between tree rows or planting ridges, minimum tillage is recommended.</i>	LO

IMPACT MANAGEMENT OUTCOME		RESPONSIBILITY
7.1.2	THE WATERCOURSE BUFFERS MUST BE MAINTAINED IN GOOD ORDER TO PERFORM THEIR ECOLOGICAL SERVICES FUNCTIONS AND MUST BE UPGRADED/ENHANCED PERIODICALLY WHERE NECESSARY.	
IMPACT MANAGEMENT ACTIONS		
a.	<i>The maintenance of the drainage line buffer zones is important for functional stream ecology. Introduce a seasonal maintenance programme to ensure effectiveness all run-off management structures and soil conservation structures for continued sediment management.</i>	LO
b.	<i>While keeping a good vegetative cover to prevent erosion, the vegetation within the riparian buffers must be managed. It is permissible to selectivity slash vegetation and to remove debris. In this regard CARA requires that the land user shall remove vegetation in a water course to such an extent that it will not constitute an obstruction during a flood that could cause excessive soil loss as a result of erosion through the action of water. It is also important to seasonally control alien vegetation including listed indigenous invasive species within the riparian buffer.</i>	LO
c.	<i>The most appropriate method for controlling and removing such vegetation must be applied as indicated in the relevant guidelines and in compliance with CARA.</i>	LO

d.	<i>The riparian buffer and watercourse banks must be inspected for erosion after every heavy rain event and any erosion must be repaired immediately by implementing the most applicable method as indicated in the relevant guidelines.</i>	LO
e	<i>Seasonal erosion protection work should be done during the winter months and before the start of the rainy season.</i>	LO

7.1.3	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Vegetation is a fundamental controlling factor in stream corridor function. Habitat, conduit, filter/barrier, source, and sink functions are all critically tied to the vegetative biomass amount, quality, and condition. These functions must be maintained within the watercourse buffer zones by ensuring adequate vegetation type, density and composition (refer to relevant guideline).</i>	LO LO
b.	<i>Verify indigenous species composition and occurrence of alien infestation seasonally, implement alien plant control seasonally and apply veld management practices such as selective slashing and patch burning to maintain a healthy habitat (refer to relevant guideline).</i>	LO
c.	<i>A controlled patch-burning program based on good veld management practices should be implemented in consultation with neighbouring farms and with FPA to ensure long term optimal maintenance of the remaining natural land cover and sustained provision of suitable habitat for local fauna.</i>	LO
d.	<i>An alien and invasive plant control program must be implemented throughout the operational period. Adjacent drainage line zones as well as the remaining natural veld must be maintained by control of listed alien and invasive plant species as required in terms of law.</i>	LO / CO
e.	<i>Small browsing animals are known to be potentially destructive to newly planted Citrus orchards and baboons and monkeys can become problematic during the seasonal fruit maturation period. Depending on local circumstances, the need may arise to fence-of the orchards to prevent such losses. A fence line can be constructed around the orchards, including the service roads up to the edge of the riparian buffer zone.</i>	LO
f.	<i>When combining electrification on the fence line a live wire within 200mm above ground level should be excluded as it can be detrimental to reptiles such as tortoises when placed at a lower level. Place rock in areas where burrowing animals may breach the fence line.</i>	LO
g.	<i>The perennial drainage line zones and the remaining natural woodland should preferably remain unfenced with the aim to prevent fragmenting the remaining habitat of local fauna and to maintain the ecological corridors along the watercourses. In this regard several unfenced corridors for movement of wildlife between water resources and grazing/ browsing habitats on the farm must remain unfenced to sustain a healthy wildlife population on the remainder of the farm.</i>	LO

7.1.4	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Watercourses must be monitored seasonally and throughout the life of the orchard for signs of soil erosion and degradation of vegetation to ensure its long term functionality.</i>	LO
b.	<i>All in-stream erosion protection structures must be inspected seasonally and directly after heavy rain events and any damage to such structures must be repaired as a matter of priority according to the appropriate methods as indicated in the relevant guidelines.</i>	LO

7.2	IMPACT MANAGEMENT STATEMENT: POTENTIAL SOLID AND LIQUID CONTAMINATION SHALL BE MANAGED DURING THE OPERATIONAL LIFETIME OF THE ORCHARD.
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7.2.1	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>Adhere to chemical label statements regarding restrictions for managed bee pollinations and select the least harmful pesticide for honey bees and other insect pollinators.</i>	LO

b.	<i>Pay particular attention to wind speed and direction, air temperature and time of day before applying pesticides. Spray preferably late in the afternoon or at night as insect pollinators are generally only active between 7:00 am and 4:00 pm and refrain from spraying during windy conditions.</i>	LO
c.	<i>Treatments made to crops in flower or upwind of adjacent plants in flower that are likely to be visited by honey bees and other insect pollinators at the time of application, should not occur during the daytime if temperatures within an hour after the completion of spraying are expected to exceed 12C°.</i>	LO
d.	<i>It is recommended that orchard floors containing flowering plants be mown just prior to spraying to lessen the number of pollinators in the orchard before spraying.</i>	LO
e.	<i>Registered Beekeepers that are known to have hives in, or nearby, the area to be sprayed must be notified no less than 48 hours prior to the time of the planned application so that honey bees can be removed or otherwise protected prior to spraying. Beekeepers shall have the obligation to allow the Landowner to verify the registration information, locality, number and condition of beehives.</i>	LO
f.	<i>Inform contracted pesticide applicators operating on the property of the locations of beehives and make sure that these guidelines as well as regulatory requirements are being adhered to by the contractor.</i>	LO
g.	<i>It is also important note that alternative methods of pesticide application such as chemigation using a dripper system will also present a risk to insect pollinators, particularly if there are no other readily-available sources of water. Such method should be applied during the evenings when pollinator activity is low.</i>	LO

7.3.1	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	ENVIRONMENTAL CONTAMINATION SHALL BE PREVENTED WHEN DISPOSING OF SOLID WASTE IN A FARM WASTE DISPOSAL SITE	
	IMPACT MANAGEMENT ACTIONS	
a.	<i>NEMWA requires that any person that stores waste (such as a waste pit on a farm) must ensure that adequate measures are taken to prevent that waste cannot be blown away and that nuisances such as odour, visual impacts and breeding of vectors do not arise.</i>	LO
b.	<i>No person may dispose of waste at an unauthorised site, but this does not apply to waste generated as a result of normal household activities and below certain quantified thresholds and where the municipality does not render a waste collection service. This applies to farmers who does not have any alternative but to have a waste disposal site (pit) on their land. Despite this, landowners must adopt the most environmentally feasible option for the management of waste (Section 26) and littering is also prohibited in terms of Section 27 of the Act.</i>	LO
c.	<p><i>The DWS policy on the registration of small private non-commercial farm waste disposal sites imposed the following conditions for such sites:</i></p> <ul style="list-style-type: none"> ▪ <i>The site is situated outside a water resource and above the 1:50 year flood line;</i> ▪ <i>The site is adequately fenced to prevent entry of people and animals;</i> ▪ <i>The site does not overlay an area with shallow or emergent water tables;</i> ▪ <i>The burning of waste does not cause any nuisance conditions to neighbours; and</i> ▪ <i>The waste does not cause any nuisance conditions due to the breeding of flies or other vermin.</i> ▪ <i>Apply the waste minimisation hierarchy at all times to prevent, reduce, re-use or recycle waste before disposal.</i> 	LO
d.	<i>Although the disposal of household waste on site is not a listed activity in terms of NEMWA that requires authorisation, it is not allowed in terms of the relevant Regulations and Standards to burn or to dispose of hazardous substances (such as agricultural chemicals) and containers that previously contained such substances on the farm. Empty chemical containers should be returned to the supplier or else be disposed of at a suitably registered landfill site.</i>	LO
e.	<i>Under no circumstances shall any general or hazardous solid waste be disposed of on the property.</i>	LO
f.	<i>Notwithstanding the above mitigation measures, it is important to note that the disposal of waste is a regulated activity which shall comply with the relevant regulations, norms and standards as imposed in terms of the National Environmental Management Waste Act.</i>	LO
g.	<i>Apply the relevant Norms and Standards in terms of NEMWA for organic waste composting.</i>	LO

IMPACT MANAGEMENT STATEMENT: POTENTIAL CONTAMINATION BY AGRICULTURAL CHEMICALS SHALL BE PREVENTED DURING THE OPERATIONAL LIFETIME OF THE ORCHARD.		
7.4.1	IMPACT MANAGEMENT OUTCOME APPLY THE CORRECT STANDARD WHEN STORING, HANDLING, APPLYING AND DISPOSING OF AGRICULTURAL CHEMICALS DURING THE OPERATIONAL PERIOD	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
a.	<i>The storage, handling and disposal of hazardous agricultural chemicals shall comply with legal requirements and shall be verified periodically against the relevant standard (SANS10602).</i>	LO LO
b.	<i>Prevent or minimise the use of agricultural chemicals on the farm as follows:</i> <ul style="list-style-type: none"> ▪ <i>only apply chemical crop protection products when absolutely necessary;</i> ▪ <i>if possible use non-chemical pesticides instead of chemical pesticides where possible;</i> ▪ <i>adhere to chemical label statements regarding correct application;</i> ▪ <i>do not apply a generic fertilizer and agro-chemical spray programme but base it on the actual need determined by seasonal analyses of leaf and soil nutrient levels and weather conditions;</i> ▪ <i>ensure that all equipment used in nutrient management, crop protection and agro-chemical practices are annually calibrated and maintained.</i> 	
c.	<i>When pesticide waste and empty pesticide containers are being disposed of, the relevant instructions appearing on the label(s) shall be followed. To mitigate the resultant impacts of pesticide waste and disposal of pesticides on a farm, the following procedures shall be followed as stipulated in the relevant regulation:</i> <ul style="list-style-type: none"> ▪ <i>the quantity bought shall be limited to what will be needed during one season thereby preventing large quantities in the store room reaching their expiry dates;</i> ▪ <i>only the amount of pesticide that will be needed at one time for a specific application shall be prepared, and it shall be used strictly in accordance with the instructions on the label;</i> ▪ <i>when a dilution of a pesticide concentrate is being prepared, the container(s) or other vessel(s) used to measure out the required quantity of the concentrate shall be well drained and then triple-rinsed with the relevant diluent, and the rinsing's shall be added to the pesticide formulation before it is made up to the final volume for application;</i> ▪ <i>if all of the formulation prepared for a single application is not used, any formulation that remains after the application shall be stored in its original plastic container for disposed at a site registered as a hazardous waste landfill site.</i> ▪ <i>Alternatively pesticide waste and empty containers should be returned to the local supplier or sent to a registered disposal company. Where no disposal organisation operates in the district, the manufacturer shall be consulted about the disposal of surplus pesticides.</i> ▪ <i>Empty containers shall not be disposed of by way of burying on the farm or by burning or by disposal into the natural environment.</i> ▪ <i>Empty pesticide containers, other than aerosol dispensers, shall be triple-rinsed with water and then shattered (in the case of glass containers), punctured (in the case of plastics and metal containers), or so otherwise rendered unserviceable as to prevent re-use before being disposed of safely. Empty containers shall be kept in securely closed containers until they can be disposed of safely and correctly.</i> ▪ <i>After application of fertilisers and pesticides, washing of equipment must be done at a dedicated rinsing site in a manner that avoids contamination of soil and water.</i> ▪ <i>Rinsing effluent shall be returned to the spray tank, where after it must be sprayed onto the crops or kept secure until disposal is possible. Water that is used to rinse out spray tanks may not contaminate the soil or end up in ditches, rivers or storage dams. An impermeable rinsing evaporation pit should be installed for rinsing out of spray tanks and spraying equipment. Alternatively, install a tank for contaminated water that can be emptied by a professional hazardous waste disposal company.</i> 	LO LO
d.	<i>Storage facilities for agricultural chemicals shall comply with the required Standards (SANS 10602) Regulation:</i> <ul style="list-style-type: none"> ▪ <i>Chemical storage, chemical preparation area and rinsing site must not be located at the new cultivation sites but at the existing farm shed that is ±100m away from a watercourse.</i> ▪ <i>Organic fertiliser stockpiles should not be placed near natural water sources or where groundwater water can be contaminated.</i> 	LO
e.	<i>The Landowner must ensure that any agricultural remedy to be used on the farm complies with the Act (Act 36 of 1947).</i>	LO

7.5	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
	FIRE SHALL NOT BE USED DURING THE OPERATIONAL PERIOD WITHOUT AUTHORISATION AND PRECAUTION.	
a.	<i>The Landowner must take cognisance and comply with the annually published FPA rules and minimum requirements with regard to fire fighting equipment and trained personnel that are required on the property as well as the regulations on the burning of fire breaks and harvest residue as well as pre- and post-burning procedures.</i>	LO

7.6	IMPACT MANAGEMENT OUTCOME	RESPONSIBILITY
	IMPACT MANAGEMENT ACTIONS	
	WATER RESOURCES SHALL BE UTILISED SUSTAINABLY AND WITHIN AUTHORISED LIMITS.	
a.	<i>Ground water pumps must be metred as required in terms of Government Regulation.</i>	LO
b.	<i>The extraction rates as recommended by the geo-hydrological report must be strictly adhered to.</i>	
c.	<i>Continuous monitoring and data logging of groundwater extraction volumes, groundwater levels, surface water levels in the Kgwete River and rainfall must be kept by the Water User and such data must be used to verify the sustainable use of groundwater within the recommended safe extraction rates. This data must be provided to the Department of Water and Sanitation, the relevant Catchment Management Agency and to the applicable Water Users Association upon request.</i>	
d.	<i>The gauging weirs must be maintained to ensure correct flow measurements .</i>	
e.	<i>Groundwater abstraction must remain within the safe abstraction rates as determined by the Hydro-Geological Report, taking into account the monitoring data mentioned in Section c. above. Upon identification of critical groundwater reserve baseline conditions and/or upon verification that groundwater abstraction impacts adversely on surface water flow or on the baseflow of the Kgwete River, the groundwater abstraction rates must be adjusted in compliance with the safe extraction rates.</i>	

MONITORING AND REPORTING

8.1 THE METHOD OF MONITORING THE IMPLEMENTATION OF THE IMPACT MANAGEMENT ACTIONS.

- *The method and requirements for environmental monitoring and reporting is contained in the conditions of Environmental Authorisation.*
- *Environmental monitoring and reporting in terms of NEMA during the pre-orchard establishment and orchard establishment phase will be done by an Environmental Control Officer (ECO) as required in terms of the EIA Regulations and as appointed by the Landowner and agreed by the competent Authority.*
- *The Provincial Environmental Compliance and Enforcement Inspectorate, constituted under NEMA shall monitor environmental during the operational phase.*
- *Where actions indicated in this programme are regulated by laws, regulations, norms and standards, the compliance monitoring and enforcement of such actions shall be the responsibility of the relevant Government Department that administers the relevant laws, regulations, norms and standards.*

8.2 THE FREQUENCY OF MONITORING THE IMPLEMENTATION OF THE IMPACT MANAGEMENT ACTIONS.

- *An unscheduled monitoring programme will be followed during the planning and pre-orchard establishment phases.*
- *During the orchard establishment phase, monitoring of the implementation of impact management actions shall be done monthly.*
- *An unscheduled programme will be followed during the operational phase.*
- *Monitoring of groundwater use as well as rainfall must be conducted on a daily base.*

8.3 THE PERSONS WHO WILL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE IMPACT MANAGEMENT ACTIONS.

Pre-orchard establishment compliance

The Landowner must ensure that soil conservation and watercourse rehabilitation and maintenance outcomes are considered during the planning of the orchard layout.

Orchard establishment and rehabilitation phase

The Contractor/s referred to in this document includes the Landowner, Contractors and Sub-contractors involved with earth moving, infrastructure orchard establishment and maintenance actions listed in this EMPR. The Landowner will ensure that all Contractors and Sub-contractors as well as own staff are familiar with, understand and adhere to the EMPR for the duration of all orchard establishment and maintenance operations. In addition, during orchard establishment the Contractors and Sub-contractors must ensure that all personnel under their employment are fully aware of any environmental issues relating to the orchard establishment and maintenance activities that are being undertaken on site and of the related environmental precautions that need to be taken.

Operational phase

During the operational phase it is the responsibility of the Landowner or any other party delegated by way of contractual agreement or by legal obligation to ensure that all operational requirements of the EMP are adhered to. If a transfer of ownership is affected, the existing Landowner must furnish the new owner with a copy of the Environmental Authorisation and Approved Environmental Management Programme Report.

8.4 THE TIME PERIODS WITHIN WHICH THE ORCHARD ESTABLISHMENT IMPACT MANAGEMENT ACTIONS MUST BE IMPLEMENTED.

A 3-year period is anticipated from date of Environmental Authorisation for establishment of the orchard during which orchard establishment impact management actions must be implemented.

8.5 THE MECHANISM FOR MONITORING COMPLIANCE WITH THE ORCHARD ESTABLISHMENT IMPACT MANAGEMENT ACTIONS.

Before commencement with a specific orchard establishment phase an independent Environmental Control Officer (ECO) must be appointed by the Landowner up to completion of that specific phase. The ECO shall conduct compliance monitoring as stipulated by the Environmental Authorisation.

8.6 A PROGRAM FOR REPORTING ON COMPLIANCE, TAKING INTO ACCOUNT THE REQUIREMENTS AS PRESCRIBED BY THE REGULATIONS.

A compliance report shall be submitted to the Provincial Environmental Compliance and Enforcement Directorate according to an agreed schedule.
A compliance audit shall be performed after completion of the orchard establishment phase according to the requirements of the Provincial Environmental Compliance and Enforcement Directorate.

8.7 ENVIRONMENTAL AWARENESS PLAN

(i) Information to employees of any environmental risk which may result from their work.

The Landowner will ensure that an environmental awareness program is initiated before orchard establishment and orchard maintenance commence as follows:

- *All Contractors and employees must be informed formally of any environmental risk which may result from their work specifically with regard to heritages resources, vegetation clearing, liquid and solid wastes, material handling and fire prevention including site hazards such as open trenches and overhead powerlines.*
- *The awareness program must include the risks and how it must be dealt with in order to avoid injury, pollution or the degradation of the environment.*
- *The method of reporting an incident as well as immediate remedial action must also be communicated to all employees.*
- *A copy of the EMPR must be provided to all Contractors and Sub-contractors and a copy must be available at the farm office for reference purposes.*

(ii) Information to employees on how risks must be dealt with in order to avoid pollution or the degradation of the environment.

The process for managing any environmental incident, damage or pollution during the orchard establishment period will be as follows:

- *The Contractor/ Employee must immediately report the incident to the Landowner.*
- *Identify the cause and extent of the problem and immediately stop the cause of any further environmental damage.*
- *Immediately report the incident to the authorities if it constitutes an act of non-compliance to the Environmental Authorisation / EMP or contravention of any environmental law or regulation.*
- *Immediately report the incident if it comprise a Section 30 incident as stipulated in NEMA.*
- *Determine a plan of action to provide a remedy to the problem.*
- *Implement the remedial action as a matter of urgency, monitor the remedial action and maintain the remedial action where applicable.*
- *Rehabilitate the affected area if required.*

(iii) The Chance Find Protocol : Monitoring Programme for Archaeology & Palaeontology – to commence once the clearing of vegetation and ploughing activities begin.

- *The following procedure is only required if archaeological remains or fossils are seen on the surface and when clearing and ploughing commence.*
- *When the activities begin the rocks must be given a cursory inspection for fossils by the environmental officer or designated person. Any fossiliferous material (dolomite with stromatolites) should be put aside in a suitably protected place.*
- *Photographs of similar fossils must be provided to the developer to assist in recognizing the trace fossils in the dolomites.*
- *Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.*
- *If any archaeological or fossil material is found by the developer/environmental officer then the qualified archaeologist / palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the site where feasible.*
- *Trace fossils, fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed.*
- *Before the archaeological remains or fossils are removed from the site a SAHRA permit must be obtained.*
- *If no archaeological material or good fossil material is recovered then no site inspections by the palaeontologist or archaeologist will be necessary. A final report by the archaeologist / palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils or archaeological finds.*
- *If no archaeological or fossil material are found and the site preparations have finished then no further monitoring is required.*

GUIDELINES / METHODS / NORMS / STANDARDS

The following practical guidelines, methods, norms and standards as published by relevant Government Departments and Non-Government Institutions have been found credible and suitable for implementation, where applicable wholly or partially, as supplement to environmental management actions.

	PUBLISHER	YEAR	TITLE	RELEVANCE TO THE PROJECT
1.	National Department of Agriculture		National Soil Conservation Manual.	<i>Planning and design of run-off control measures, contour banks, gabion structures, farm roads and road drainage and methods to reclaim bare patches and sparsely covered veld.</i>
2.	National Department of Agriculture	2001	A primer on soil conservation.	<i>Planning, design and orchard establishment of constructed waterways, storm water drains, erosion control measures, stream bank protection, veld improvement.</i>
3.	KZN Department of Agriculture	1997	The orchard establishment of grassed waterways and infield access roads.	<i>Planning and design of grassed waterways, marking the waterway in the field, depth of waterway excavation, orchard establishment using various implements.</i>
6.	Department of Water & Forestry	2005	Environmental Best Practice Specifications : Planning, Orchard establishment	<i>Site rehabilitation, shaping, topsoil replacement, ripping and scarifying, planting, grassing, maintenance, erosion control.</i>
7.	Cape Nature	2008	Best Practice Guideline: Alien vegetation management (in compliance with CARA).	<i>Control methods, herbicide use, bark application, ring barking, bark stripping, frilling. Using labour intensive methods: hand pulling, chopping/cutting/slashing. Using mechanical methods: felling, bark stripping. Using chemical control: injection, foliar spray, use and disposal of plant material.</i>
8.	KZN Department of Agriculture & Rural Development	2015	Storage and safe use of agrochemicals	<i>Storage, stacking, fire protection, clothing, treatment, disposal, waste pit, classification.</i>
9.	Department of Agriculture, Forestry & Fisheries	2010	SANS 10602 : STANDARD: The handling, storage and disposal of pesticides.	<i>Regulatory compliance, medical facilities, protective clothing, washing facilities, storage, preparation, application, disposal.</i>
10.	Department of Agriculture Forestry & Fisheries	2017	Guidelines on the management of the risk of agricultural remedies on insect pollinators.	<i>Routes for exposure, application of pesticides, integrated pest management, crop specific mitigation.</i>
11	Department of Water and Sanitation	2008	Flow-gauging structures in South African rivers Part 1: An overview Part 2: Calibration	<i>The planning, construction and use of gauging weirs in rivers to measure flow.</i>
12	University of KwaZulu-Natal	2005	Caring for Natural Rangelands.	<i>Soil erosion control: planning, design, implementation, monitoring. Measures: stone gabions, brush check dams, wire netting check dams, brush checks for deep gullies, fencing and geo-textiles, shade netting. Water drainage of road surfaces. Rehabilitation: hollows, brush fences, mulching, bush packing, use of logs.</i>