

*PROPOSED AGRICULTURAL DEVELOPMENT ON
PORTION 8 OF THE FARM STUURMANS KOP 55 AND
PORTION 125 OF THE FARM QUACHA 49, NEAR
PATENSIE, WITHIN THE KOUGA LOCAL
MUNICIPALITY, EASTERN CAPE*

DRAFT BASIC ASSESSMENT REPORT

DEDEAT REFERENCE NUMBER: *EC08/C/LN1/27/61-2022*



Prepared by:



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JANUARY 2023

Report Details

Report Title	Draft Basic Assessment Report, Kwagga Citrus Agricultural Development, Patensie, Eastern Cape
Report Status	Draft Report
Report Date	January 2023
Purpose of this Report	<p>This Draft Basic Assessment Report forms the main information document provided during the Environmental Impact Assessment (EIA) process for the proposed Kwagga Citrus Agricultural Development, within the Kouga Local Municipality, Eastern Cape. As per Appendix 1 of the 2014 EIA Regulations (as amended), <i>“the objective of the basic assessment process is to, through a consultative process—</i></p> <ul style="list-style-type: none"> <i>(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;</i> <i>(b) identify the alternatives considered, including the activity, location, and technology alternatives;</i> <i>(c) describe the need and desirability of the proposed alternatives;</i> <i>(d) through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine—</i> <ul style="list-style-type: none"> <i>(i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and</i> <i>(ii) the degree to which these impacts—</i> <ul style="list-style-type: none"> <i>(aa) can be reversed;</i> <i>(bb) may cause irreplaceable loss of resources; and</i> <i>(cc) can be avoided, managed or mitigated; and</i> <i>(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—</i> <ul style="list-style-type: none"> <i>(i) identify and motivate a preferred site, activity and technology alternative;</i> <i>(ii) identify suitable measures to avoid, manage or mitigate identified impacts; and</i> <i>(iii) identify residual risks that need to be managed and monitored.</i> <p>The primary objective of this Basic Assessment Report is thus to present the project, outline its legislative requirements and identify impacts, as well as mitigation measures, that will be relevant to specific environmental attributes of the site and the proposed development.</p>
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Document Checklist

The requirements for the content of the Basic Assessment Report have been met in terms of Appendix 1 of the 2014 EIA Regulations (as amended). The table below indicates where the relevant information can be found within this report:

2014 EIA Regulation (Appendix 1)	Information Requirement	Relevant Section of this Report
3	(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
(a) details of—	(i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	Introduction, The Environmental Assessment Practitioner (EAP) (page vii and viii) and Appendix G.1.
(b) the location of the activity, including—	(i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section A (3), Activity Position.
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is—	(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Appendix A.
(d) a description of the scope of the proposed activity, including—	(i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure;	Section A (1), Activity Description.
(e) a description of the policy and legislative context within which the development is proposed including—	(i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section A (10), Applicable Legislation, Policies and/or Guidelines.
(f)	a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section A (9), Activity Motivation.
(g)	a motivation for the preferred site, activity and technology alternative;	Section A (2), Feasible and Reasonable Alternatives.
(h) a full description of the process	(i) details of all the alternatives considered;	Section A (2), Feasible and Reasonable Alternatives.

2014 EIA Regulation (Appendix 1)	Information Requirement	Relevant Section of this Report
3	(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
followed to reach the proposed preferred alternative within the site, including—	(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section C, Public Participation and Appendix E.
	(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Section C (5), Comments and Response Report and Appendix E.
	(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section B, Site / Area / Property Description.
	(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts— (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section D (2), Impacts that May Result from the Planning and Design, Construction, Operational, Decommissioning and Closure Phases as well as Proposed Management of Identified Impacts and Proposed Mitigation Measures.
	(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Appendix G.4 Impact Assessment Methodology.
	(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section D (2), Impacts that May Result from the Planning and Design, Construction, Operational, Decommissioning and Closure Phases as well as Proposed Management of Identified Impacts and Proposed Mitigation Measures.
	(viii) the possible mitigation measures that could be applied and level of residual risk;	
	(ix) the outcome of the site selection matrix;	Section D (3), Environmental Impact Statement.
	(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	Section A (2), Feasible and Reasonable Alternatives.
	(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Section A (2), Feasible and Reasonable Alternatives and Section A (3), Activity Position.

2014 EIA Regulation (Appendix 1)	Information Requirement	Relevant Section of this Report
3	(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including—	(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section D (2), Impacts that May Result from the Planning and Design, Construction, Operational, Decommissioning and Closure Phases as well as Proposed Management of Identified Impacts and Proposed Mitigation Measures.
(j) an assessment of each identified potentially significant impact and risk, including—	(i) cumulative impacts;	
	(ii) the nature, significance and consequences of the impact and risk;	
	(iii) the extent and duration of the impact and risk;	
	(iv) the probability of the impact and risk occurring;	
	(v) the degree to which the impact and risk can be reversed;	
	(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and	
	(vii) the degree to which the impact and risk can be avoided, managed or mitigated;	
(k)	where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	
(l) an environmental impact statement which contains—	(i) a summary of the key findings of the environmental impact assessment;	Section D (3), Environmental Impact Statement.
	(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and	Section E, Recommendations of the Practitioner and Appendix A, Environmental Sensitivity Map.
	(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section D (3), Environmental Impact Statement.
(m)	based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;	Section E, Recommendations of the Practitioner.
(n)	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;	
(o)	a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Introduction, Assumptions and Limitations (page vii).
(p)	a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is	

2014 EIA Regulation (Appendix 1)	Information Requirement	Relevant Section of this Report
3	(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
	that it should be authorised, any conditions that should be made in respect of that authorisation;	
(q)	where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	Section E, Recommendations of the Practitioner.
(r) an undertaking under oath or affirmation by the EAP in relation to—	(i) the correctness of the information provided in the reports;	<u>Appendix G.1.</u>
	(ii) the inclusion of comments and inputs from stakeholders and I&APs;	
	(iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and	
	(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 and affected parties; and	
(s)	where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts	Not Applicable.
(t)	any specific information that may be required by the competent authority; and	Not Applicable.
(u)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	All matters required in terms of Section 24(4)(a) and (b) are included in this report.

Introduction

Background and Project Overview

Habitat Link Consulting (Pty) Ltd has been appointed by Patensie Sitrus Beperk (Ltd), to apply for an Environmental Authorisation (EA) for the abovementioned project. The proposed agricultural development will include the clearance of approximately 12 ha of vegetation and will include the establishment of new citrus orchards with associated irrigation infrastructure and new access tracks. The development will be situated approximately 4 km north-west of the town of Patensie, located within the Kouga Local Municipality, Eastern Cape Province. The proposed development requires the submission of a Basic Assessment Report (BAR) in terms of the 2014 National Environmental Management Act (NEMA) EIA Regulations (amended).

Assumptions and Limitations

According to Appendix 1, Section 3 (1), of the 2014 EIA Regulations (as amended), a Basic Assessment Report must include “(a) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed.”

This report is based on information that is currently available and, as a result, the following limitations and assumptions under which this report were compiled are implicit:

- Descriptions of the natural and social environment are based on the fieldwork conducted and available literature at the time of compiling this report;
- The report is based on a project description and site layouts provided by the proponent that are likely to undergo several refinements (based on environmental and technical inputs); and
- It should be emphasised that information, as presented in this document, only has reference to the study area as indicated on the project maps. Therefore, this information cannot be applied to any other area without a detailed investigation being undertaken.

The Environmental Assessment Practitioner (EAP)

According to Appendix 1, Section 3 (1), of the 2014 EIA Regulations (as amended), a Basic Assessment Report must include “(a) details of— the EAP who prepared the report; and the expertise of the EAP, including a curriculum vitae.”

Details of the EAP

Mr Roberto Almanza, Habitat Link Consulting (Pty) Ltd

MSc Geology; Registered Environmental Assessment Practitioner (EAPASA Reg. No. 2020/2530)

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In addition to the EAP, Habitat Link Consulting will include a number of specialists in the study who will contribute to various aspects of the assessment (refer to the table below). Please refer to [Appendix G.1](#) for the curriculum vitae (CV) of the EAP, as well as a copy of the EAP’s declaration. Please refer to [Appendix G.2](#) for CVs of the specialists.

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BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:

NEAS Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014 as amended, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 as amended and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for. This report is current as of **1 OCTOBER 2022**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority **unless indicated otherwise by the Department**.
7. No faxed or e-mailed reports will be accepted **unless indicated otherwise by the Department**.
8. The report must be compiled by an independent environmental assessment practitioner (EAP). The EAP must satisfy conditions 11 below.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

11.1 The Environmental Assessment Practitioner (EAP) must be registered in terms of S24H Regulations with the Registration Authority EAPASA as from 8 August 2022.

11.2. S24H (14) states that “only a person registered as an Environmental Assessment practitioner may perform tasks in connection with an application for an environmental authorisation contemplated in

(a) Chapter 5 of the Act read with the Environmental Impact Assessment Regulations.

(b) Section 24G of the Act

(c) Chapter 5 of the National Environmental Management Waste Act 2008 (Act No 59 of 2008) read with the Environmental Impact Assessment Regulations

11.3. Tasks in regulation 14 may only be conducted by an EAP that is registered

11.4. Regulations 20 of S24H indicates the offences and penalties as indicated below:

“20. Offences and penalties

(1) A person is guilty of an offence if that person-

(a) contravenes regulation 14 of the Regulations; or

(b) pretends to be a registered environmental assessment practitioner or registered candidate environmental assessment practitioner.

(2) A person convicted of an offence in terms of subregulation (1) is liable to the penalties contemplated in section 49B(3) of the Act.”

Section 49B(3) of the Act states:

“A person convicted of an offence in terms of section 49A(1)(h), (l), (m), (n), (o) or (p) is liable to a fine or to imprisonment for a period not exceeding one year, or to both a fine and such imprisonment.”

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES
X

If YES, please complete form XX for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

Please refer to [Appendix D](#) for the Specialist Reports.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

Introduction

The applicant (Patensie Sitrus Beperk Ltd) proposes to implement a new agricultural development that will include the clearance of approximately 12 hectares (ha) of vegetation and the establishment of new citrus orchards with associated irrigation infrastructure and new access tracks (Figure 1 and 2). The development will be situated approximately 4 kilometers (km) north-west of the town of Patensie, located within the Kouga Local Municipality, Eastern Cape Province.

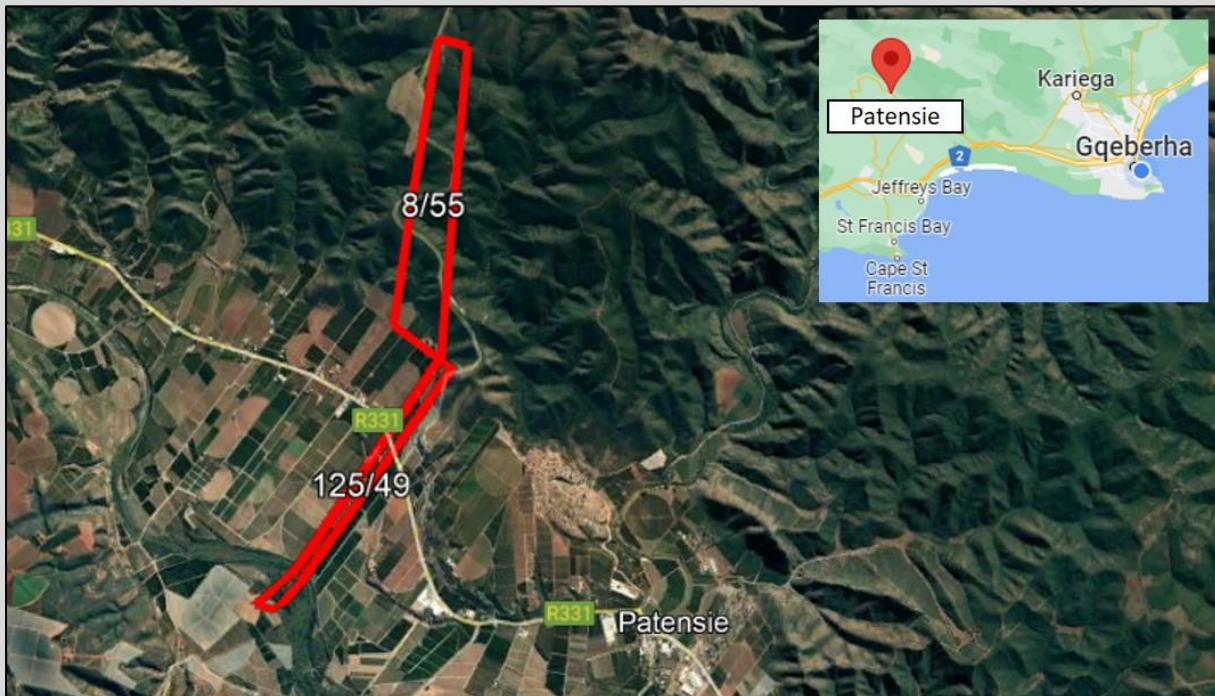


Figure 1: Locality map of the proposed citrus development near Patensie.

The study area currently consists of predominantly natural vegetation with sparser vegetation located in the southern section of the proposed planting area. Water will be sourced via the Gamtoos Irrigation Board (GIB) canal as per existing abstraction agreements with the irrigation board (Appendix G.3).

Vegetation on the proposed development site is listed as Sundays Valley Thicket and Albany Alluvial Vegetation. The entire property is mapped as an Ecological Support Area (ESA) in terms of the Eastern Cape Biodiversity Conservation Plan (ECBCP, 2019). The proposed development site is in close proximity to a number of non-perennial drainage lines, but there are no wetlands identified within 500 m of the proposed development. The entire development is also located within 10 km of The Cape Floral Region (Baviaanskloof Nature Reserve), which is a national park and world heritage site.

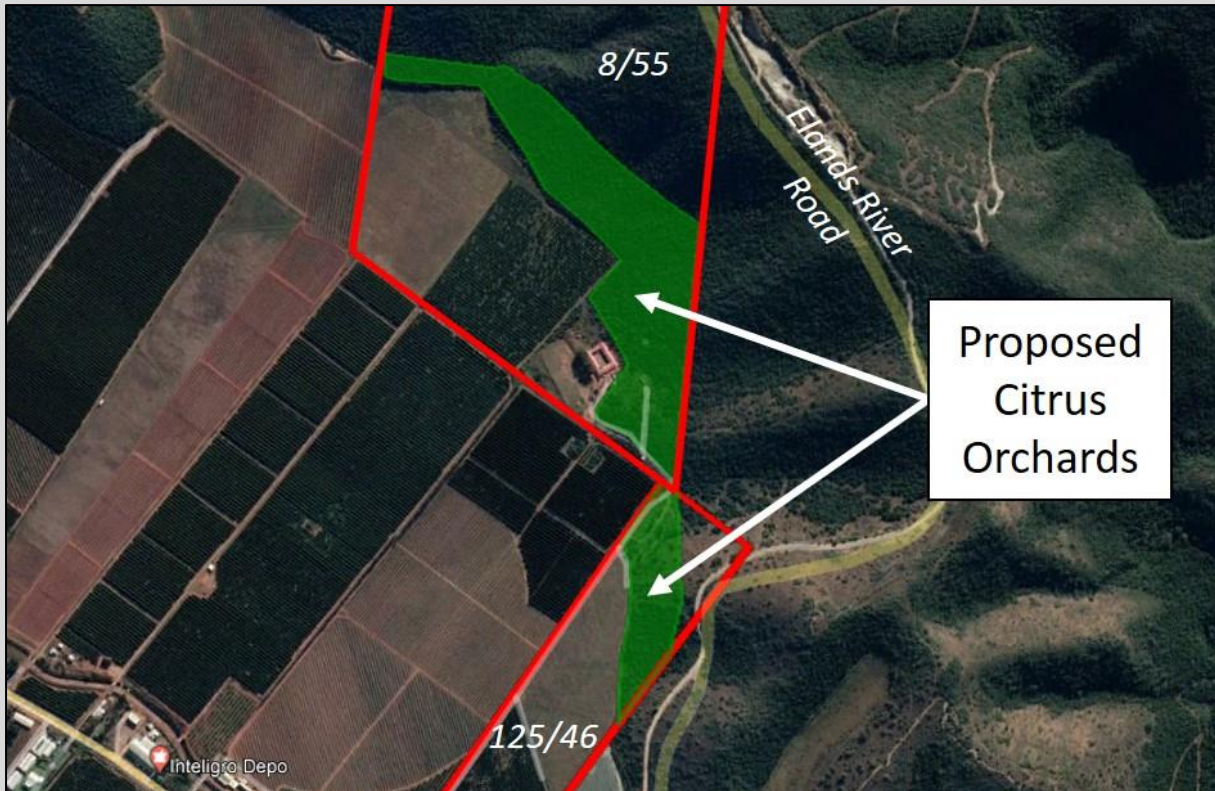


Figure 2: Proposed citrus planting areas.

Project Overview

The proposed development includes the following aspects:

- Site clearance;
- Establishment of citrus orchards;
- Abstraction from the Gamtoos Irrigation Board (GIB) canal system;
- Construction of water reticulation system for irrigation purposes; and
- Construction of new internal access roads.

The exact area to be cleared will be subject to the outcome of the specialist studies undertaken as part of the EIA process and the total development footprint will be no larger than 12 ha. The clearance of vegetation and the establishment of the new citrus orchards will be undertaken over a period of a few months. The citrus orchards will be laid out in various 'blocks' and will be separated by service tracks that will also be utilised as routes for the irrigation pipelines. The main internal access road will remain unpaved and new access tracks leading to the orchards will be gravel surfaces designed to be suited to tractors and other farm vehicles.

Existing Infrastructure and Facilities

All farming equipment including tractors, trailers, plastic crates, wooden pallets and chemicals will be stored at this warehouse and no additional building infrastructure will be required on the property. The fruit will be packed at the applicant's existing packaging warehouse located approximately 5.4 km southeast from the proposed development at Patensie Citrus Beperk packhouse, Fred Ferreira Way, Patensie. No additional building infrastructure will be required for this proposed agricultural development.

Entrances and Access Road

The harvested fruit will be transported directly from the orchard, via the current road network, to the existing facility, where it will be packaged or juiced for sale to local and international markets. Existing farm roads will be utilised during the construction and operation of the proposed development in order to access the site. Additional gravel farm roads, no wider than 4 m, will be developed in between the orchard blocks within the proposed footprint, and are required for the continuous preparation and harvesting of the fruits. No additional bush clearing will be required for access roads.

Stormwater Infrastructure

Due to the limited construction activity that is required for the implementation of the proposed development, no stormwater structures will be necessary to facilitate the construction phase. All internal gravel roads and service tracks will be designed and constructed to accommodate stormwater runoff (e.g. via the utilisation of natural berms). During the operational phase, the management of excess runoff during storm events will be controlled by the implementation of contour ploughing and erosion berms throughout the proposed development area. Runoff will be diverted into the adjacent land via natural berms. Due to the nature of the proposed development (the development of citrus orchards), the overall stormwater runoff experienced as a result of the development is likely to be similar to the natural stormwater control currently occurring on site. The service tracks between the orchards will be equipped with low barriers to deflect run-off into the adjacent vegetation.

Water Supply and Irrigation

Limited water will be required during the construction phase. This water will be used primarily for the suppression of dust following the clearance of vegetation. During the operational phase, the citrus orchards will be irrigated with approximately 0.70 litres of water per hour (a maximum of 6 000 m³ per annum), dependant on the amount of rain received in the area. Initially, the small trees will require less water, but this will increase as the trees become bigger and start producing fruit. All water required for the purposes of the development will be sourced from the GIB canal via an existing abstraction point. Should the water allocation not be deemed sufficient, the proponent has suggested that a borehole may be drilled at a later stage, however, this is unlikely as the current water availability (51.2 ha from the GIB) is sufficient for the requirements of the project.

Energy Sources

During construction, diesel-powered generators will be used to operate electrical machinery that is required for the installation of the irrigation pipelines. Fuel will be required for the bulldozer and

excavator during the construction period and for the tractors during the operational phase. The water abstraction infrastructure (e.g. pump) will be connected to the existing Eskom electricity supply.

Solid Waste, Wastewater and Sewage

Solid waste derived from the construction phase of the proposed development will include minor discarded construction material (e.g., pipeline cut-offs and packaging material etc.), general domestic waste, excess soil/spoil (from levelling) and a large volume of cleared bush vegetation (predominantly thicket vegetation). This soil/spoil waste will be reused, wherever possible (e.g., as fill material or topsoil, depending on the quality). The vegetation waste will be chipped and mulched by the farmer in order for this to be used as compost material. All additional waste will be removed and disposed of in the correct manner at a licenced landfill site. There is unlikely to be any liquid waste (e.g., wastewater or effluent) derived from the construction phase. Should any soil become contaminated by a hydrocarbon spill, this will be separated as hazardous waste and removed to an adequate disposal facility. Construction phase activities may also generate hazardous waste such as empty chemical containers, oil rags and possible cement bags. These will be disposed by the Contractor at the nearest permitted landfill site.

During the operational phase, the majority of the waste derived from the development will be in the form of organic waste. All fruit waste will be handled at the existing packaging warehouse where it will be disposed of as per the existing protocols of the business. Additional organic waste will be added to the compost utilised in the soil. Pesticides and/or fertilizers will be used during the operational phase and will be stored in a locked compartment inside the existing warehouse. The plastic containers used for the pesticides and fertilizers will be collected by a local recycling company. No additional wastewater or sewage will be derived from the proposed development during the operational phase and therefore there will be no new sewerage and/or effluent treatment systems required for the proposed development. The farm workers will make use of the existing ablution facilities located at the warehouse.

NEMA Listed Activities Triggered by the Proposed Development

In terms of the 2014 NEMA Environmental Impact Assessment (EIA) Regulations, as amended, the following activities are subject to an assessment (Table 1):

Table 1: NEMA Listed Activities Triggered by the Proposed Development.

Activity No.	Description	Triggering activity
LISTING NOTICE 1 – GN R. 983 (GN R. 327)		
Activity 27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.	The proposed agricultural development will lead to the clearance of potentially indigenous vegetation, which will exceed an area of 1 ha.

Based on the listed activity identified in Listing Notice 1 of the NEMA EIA Regulations, the proposed project will be subject to a Basic Assessment process.

2. FEASIBLE AND REASONABLE ALTERNATIVES

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Locality/Site Alternatives

The location for the activity has been chosen primarily because the applicant has an agreement with the landowners of these properties. Locality alternatives were thus limited to the fact that applicant only intends to apply to develop on these particular properties. Within the properties, there is only one potential development area that was considered for the development of citrus orchards, as the remainder of the properties are either too steep, and therefore not accessible, or are already being utilised for citrus orchards or other activities. This location is also in close proximity to existing agricultural infrastructure as well as the existing farm road linkages and access roads.

The location has no fatal flaws and will allow the applicant to expand the existing agricultural area instead of negotiating for land use elsewhere in the area. For these reasons, location alternatives have not been considered in the Basic Assessment and the preferred alternative is the only location alternative assessed.

Activity Alternatives

In order to achieve the purpose of developing citrus orchards on the applicant’s property, the activity of clearing indigenous vegetation and the construction of farm roads and water reticulation system for irrigation purposes, will be required. There are no other reasonable or feasible activity alternatives associated with this project.

Operational Alternatives

The operational alternatives for this project relate to the type of agricultural activity that will take place within the proposed site. Possible operational alternatives in terms of products could include potatoes, dragon fruit and/or strawberries. Due to the type of surrounding agricultural activity, the proponent’s particular area of expertise and the current economic demand, the only agricultural activity that will be undertaken is the cultivation of citrus orchards. Therefore other operational alternatives will not be

assessed further as the applicant has no intention of producing alternative agricultural products. The establishment of irrigated citrus orchards does not lend itself to specific operational alternatives however, the overall operation of the development will aim to promote conservation agriculture, minimum tillage, reduced water consumption, reduced use of herbicides and continuous improvement of harvesting methods. These aspects would not only be beneficial to the environment, but would also result in reduced expenses for the farmer.




Design or Layout Alternatives

The applicant, together with the EAP and the appointed specialists, have considered various specific layout alternatives in order to ensure that the most practical and feasible design is chosen for the proposed development. Due to the topography of the site, the remainder of the properties are considered to be too steep for citrus orchards and the soil classification study ([Appendix G.5](#)) also indicated the layouts presented here are the only ones suitable from a cultivation perspective. The following layout alternatives have been considered (Table 2):

- Layout Alternative 1 (Preferred): Development including all possible areas suitable for cultivation;
- Layout Alternative 2: Development avoiding 'non-preferred areas' as identified by the soil specialist; and
- Layout Alternative 3: Development avoiding 'non-preferred areas' as identified by the soil specialist, as well as the 15 m buffer around the identified graves and the 32 m buffer around the drainage lines.

The orchards and irrigation will be placed in such a manner that it has the least impact on any natural vegetation and makes use of the topography and gradient of the site in order to rely on the gravity-assisted irrigation services. All three (3) layouts proposed above allow for the installation of the irrigation infrastructure within an existing or future development footprint (i.e. within the existing or future farm access tracks). The final designs and finishes will be determined prior to construction and as per the approved Environmental Management Programme (EMPr).

Table 2: Assessment of layout alternatives.

Layout Alternative	Layout Illustration	Potential Advantages	Potential Disadvantages
Layout Alternative 1 (Preferred Alternative) (includes all areas potentially suitable for cultivation)		<ul style="list-style-type: none"> Utilises all potential areas suitable for citrus orchards Avoids steep slopes Additional fruit production 	<ul style="list-style-type: none"> Certain soils may not be suitable for citrus trees Required relatively more soil amelioration Relatively larger loss of indigenous vegetation
Layout Alternative 2 (avoids 'non-preferred areas' as identified by the soil specialist)		<ul style="list-style-type: none"> Avoids steep slopes Only soils that are suitable for citrus are utilised Relatively smaller loss of indigenous vegetation Relatively less soil amelioration required 	<ul style="list-style-type: none"> Relatively less cultivation areas and therefore reduced economic benefit
Layout Alternative 3 (avoids 'non-preferred areas' as identified by the soil specialist, the 15 m buffer around the graves and the 32 m buffer around the drainage lines)		<ul style="list-style-type: none"> Avoids steep slopes Only soils that are suitable for citrus are utilised Relatively smaller loss of indigenous vegetation Relatively less soil amelioration required Avoids 15 m around grave sites Avoids 32 m around drainage lines 	<ul style="list-style-type: none"> Significantly less cultivation areas and therefore reduced economic benefit



Technology Alternatives

Citrus farming technology has developed significantly over the past decade and is expected to continue developing during the lifetime of this proposed project. The technology utilised in citrus farming is primarily associated with the irrigation requirements of the orchards. The proposed development will require 0.7 litres of water per hour for irrigation purposes, which translates to approximately 6 000 m³ of water per annum. In order to utilise water appropriately, two technology alternatives have been proposed for irrigation (Table 3):

- Technology Alternative 1: Drip irrigation
- Technology Alternative 2: Spray irrigation

Drip irrigation occurs by allowing water through small holes that are punctured along the length of the irrigation pipeline. The irrigation infrastructure is placed on the ground which may result to damage to the pipeline. The spray irrigation consists of the spraying of water through small nozzles that are connected to the irrigation pipeline. The main difference between the two irrigation methods is that drip irrigation reduces the amount of evaporation. In addition, the nozzles associated with the spray irrigation are known to become blocked and therefore require replacement and/or additional maintenance on an ongoing basis.

Table 3: Assessment of preliminarily identified technology alternatives.

Technology Alternative	Layout Illustration	Potential Advantages	Potential Disadvantages
Technology Alternative 1 (Drip Irrigation)		<ul style="list-style-type: none"> • Less evaporation. • Less repairs / maintenance required. • Easier installation. 	<ul style="list-style-type: none"> • Requires more maintenance, repair and replacement
Technology Alternative 2 (Spray Irrigation)		<ul style="list-style-type: none"> • Easily moveable and can be placed wherever the trees are planted. 	<ul style="list-style-type: none"> • Requires additional installation time. • Relatively more water evaporation. • Can become blocked and require maintenance, repair and replacement.

Preferred Alternative

The preferred alternative for the proposed development would consist of the development footprint of 12 ha for the establishment of citrus orchards along with the supporting infrastructures. The following layout and technology specifications are preferred by the applicant:

- Layout Alternative 1: Development including all possible areas suitable for cultivation; and
- Technology Alternative 1: Drip irrigation.

The reason for the assignment of the abovementioned alternatives as being the preferred options are attributed to the outcome of the advantages and disadvantages outlined in the tables above. The preferred layout alternative may have more significant biodiversity impacts, but would also have a larger economic contribution through the cultivation of more hectares of citrus orchards. The significance of the negative and positive impacts associated with the various alternatives is detailed in Section D of this report. The EAP's recommendation with regards to the alternative that should be approved by the authorities is provided in Section E of this report.

No-Go Alternative

The 'No-go' alternative assumes that the *status quo* will remain unchanged and the proposed development site will remain as natural vegetation with no further disturbance. This alternative refers to the option of not implementing the proposed activity (i.e., in this case, not proceeding with the development of citrus orchards).

While this alternative will mitigate the construction-related impacts associated with the proposed development, as well as the overall loss of thicket vegetation and associated habitats, the employment opportunities, as well as the economic benefits and contribution to the agricultural sector, would be lost under the 'No-go' alternative. While other portions of the applicant's property will continue to be operated as citrus agricultural, the culmination of these facilities would not be realised and a potentially large contribution to citrus exports would be lost.

Paragraphs 3 – 13 below should be completed for each alternative.

Where relevant, each alternative has been described below however, the majority of the information provided below is applicable to all potential alternatives described above.

3. ACTIVITY POSITION

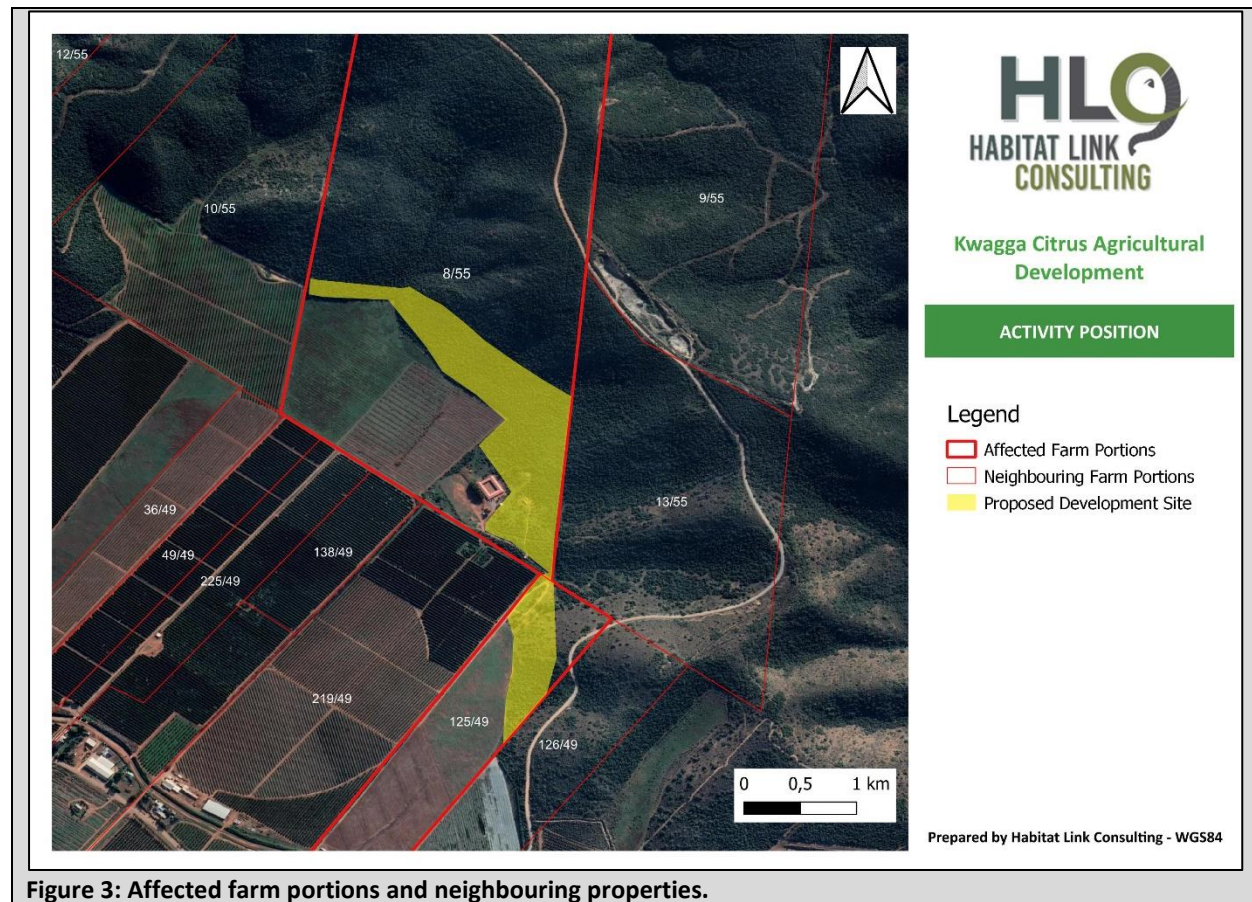
Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites if applicable.

The proposed agricultural development will be located on sections of Portion 8 of the Farm Stuurmans Kop 55 and Portion 125 of the Farm Quacha 49. The development will be situated approximately 4 km north-west of the town of Patensie, located within the Kouga Local Municipality, Eastern Cape Province (Figure 3 and Table 4).

Table 4: Details of the affected farm portions (as defined by the Chief Surveyor-General).

Property Name and Number	21-Digit Surveyor General Code	Ward	Municipality
Portion 8 of the Farm Stuurmans Kop 55	C0340000000005500008	10	Kouga Local Municipality
Portion 125 of the Farm Quacha 49	C0340000000004900125	10	Kouga Local Municipality

**Alternative:**Alternative S1¹ (preferred or only site alternative)

Alternative S2 (if any)

Alternative S3 (if any)

Latitude (S):**Longitude (E):**

33°	51'57.81"	23°	50'15.69"

In the case of linear activities:

Not applicable. There are no linear structures that would trigger a listed activity in terms of NEMA.

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

Not applicable. There are no linear structures that would trigger a listed activity in terms of NEMA.

¹ "Alternative S.." refer to site alternatives.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

12 ha
11 ha
10 ha

or, for linear activities:

Not applicable. There are no linear structures that would trigger a listed activity in terms of NEMA.

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

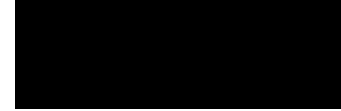
Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the site/servitude:



5. SITE ACCESS

Does ready access to the site exist?

YES X

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

No new access road is planned for this development. The site is accessible via the R331 regional road and then via several internal un-tarred access roads and farm roads (Figure 3 and 4). There are several existing vehicle tracks, which are currently utilised within the property, which can be used to access the boundaries of the project area. The applicant also proposes to construct some internal roads within the development site, in order to gain access to the citrus orchards. These internal roads will be utilised during the construction and operation of the proposed development.

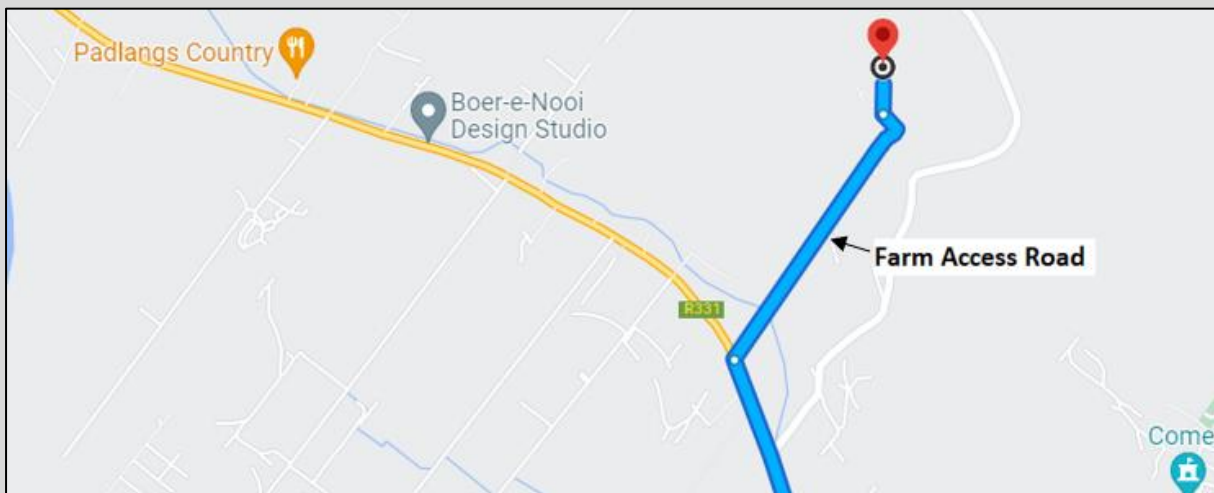
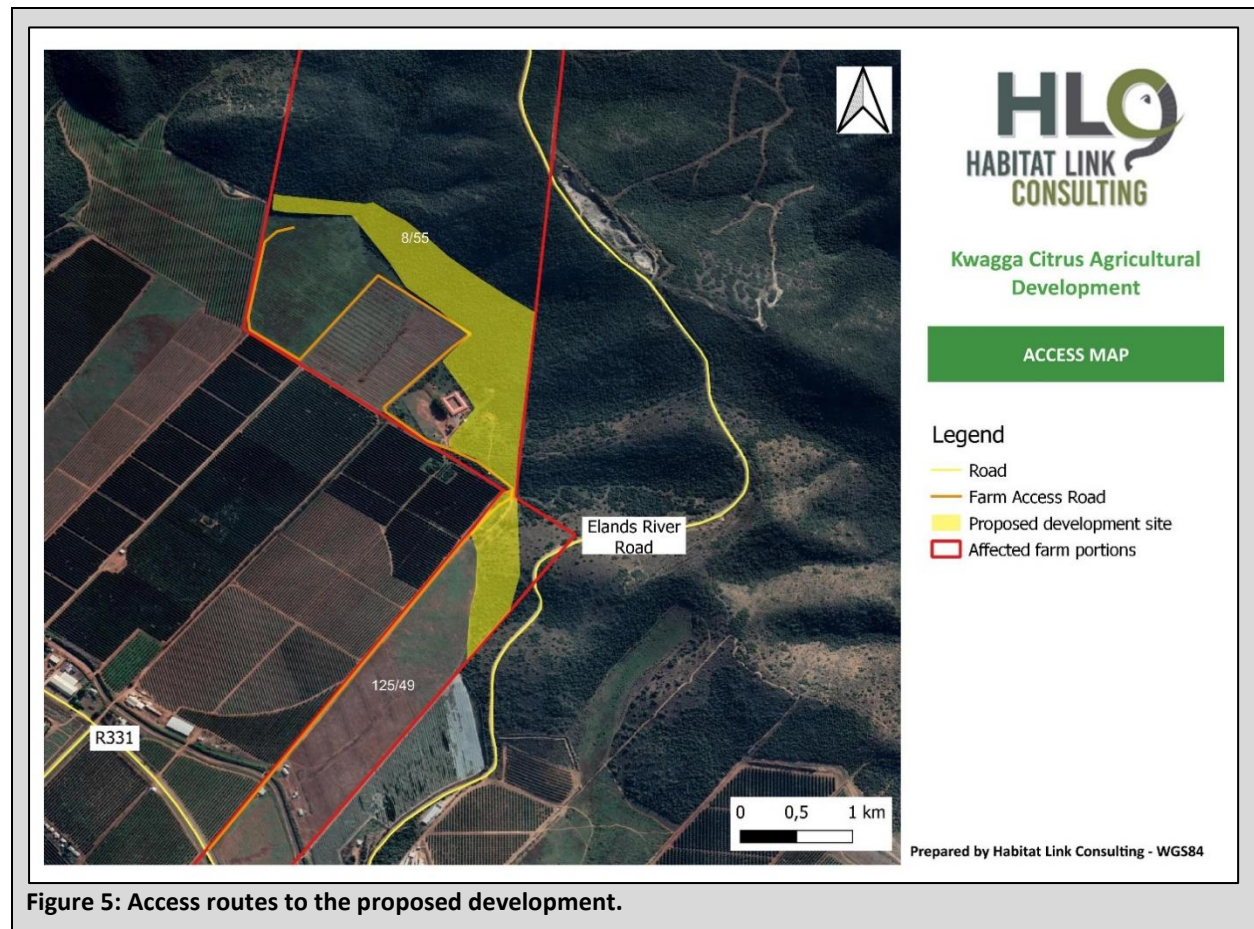


Figure 4: Existing access roads to be utilised to access the proposed area.



Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

Please refer to [Appendix A](#) for the detailed site plan

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- 6.1 the scale of the plan which must be at least a scale of 1:500;
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 all trees and shrubs taller than 1.8 metres;
- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;
- 6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):

- rivers;
 - the 1:100-year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.11 the positions from where photographs of the site were taken.

Please refer to [Appendix A](#) for the detailed site plan and associated maps.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

Please refer to [Appendix B](#) for the site photographs.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

Please refer to [Appendix C](#) for the detailed facility illustrations.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

What is the expected yearly income that will be generated by or as a result of the activity?

Will the activity contribute to service infrastructure?

Is the activity a public amenity?

How many new employment opportunities will be created in the development phase of the activity?

What is the expected value of the employment opportunities during the development phase?

What percentage of this will accrue to previously disadvantaged individuals?

How many permanent new employment opportunities will be created during the operational phase of the activity?

What is the expected current value of the employment opportunities during the first 10 years?

What percentage of this will accrue to previously disadvantaged individuals?

R 3 to 7 million	
Up to R 6 million	
	NO X
	NO X
10 to 15	
R 40 000 to R 60 000	
100 %	
15-20 (permanent); up to 100 (seasonal)	
R 400 000 to R 700 000	
40 – 60 %	

9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

The main purpose of the proposed development is to clear approximately 12 ha of vegetation over the two subject properties (i.e. 9 ha of the 154 ha from Portion 8 of the Farm Stuurmans Kop 55, and approximately 3 ha of the 53 ha of Portion 125 of the Farm Quacha 49 for the establishment of citrus orchards, the routing of water pipelines and the construction of internal access roads. The 2030 National Development Plan (NDP, 2013) categorises the citrus industry as a “high-growth potential, labour intensive” commodity in terms of South Africa’s agricultural growth and employment potential (Figure 6). It is estimated that at least one worker is required per hectare of citrus orchards and this does not include employment associated with packaging plants, transportation, warehousing, port handling, research and development and processing of the fruits.

The NDP’s main goal is to boost economic growth, increase employment opportunities and reduce overall poverty in South Africa. It details the goals of achieving an inclusive and integrated rural economy in which people living in the rural areas may have more opportunities to take part in the economic activities. In addition to this, the NDP (2013) lists a number of ‘critical actions’ that need to be taken to achieve the 2030 milestones, and one of these is to “boost private investment in labour-intensive areas, competitiveness and exports.” In terms of the rural development, the NDP (2013) lists ‘food security’ as one of the key points for achieving an integrated and inclusive rural economy. The proposed development aligns itself with the NDP (2013) as it will be contributing to national exports, citrus production (food security), labour-intensive job creation, rural development and market competitiveness.

The Eastern Cape Vision 2030 Provincial Development Plan (PDP, 2014) outlines several strategic objectives to improve social development and increase economic growth, particularly through employment creation. One of the actions identified in the PDP is to “increase employment through irrigated horticulture”. Agriculture is identified as one of the sectors with high potential for development in the Eastern Cape and therefore the proposed development align itself with the Provincial Development Plan.

The Kouga Integrated Development Plan IDP (2022) lists high-value agriculture as a goal which includes the development of agriculture value chains, sustainable community agriculture and accelerated land reform and land rehabilitation programmes. The IDP also lists the promotion of sustainable agriculture as one of the Sustainable Development Goals.

The 2013 Spatial Development Framework (SDF) for the Sarah Baartman District Municipality (previously the Cacadu District Municipality) does not indicate the current or desired spatial form of the property, however, the current zoning of the farm is agriculture and the proposed development intends to keep to the current property zoning.

The projected annual revenue to be derived from the development is estimated to reach up to R 6 million. Local communities will benefit from the new employment opportunities which will become available during the construction and, more importantly, the operational phases of the project. The proposed development will provide opportunities for unskilled workers to develop new skills and have an additional contribution towards the economy. The proposed development thus aligns itself with

national, provincial, district and local development plans as well as the local spatial development framework. It will contribute to agricultural employment, food security and local/national revenue.

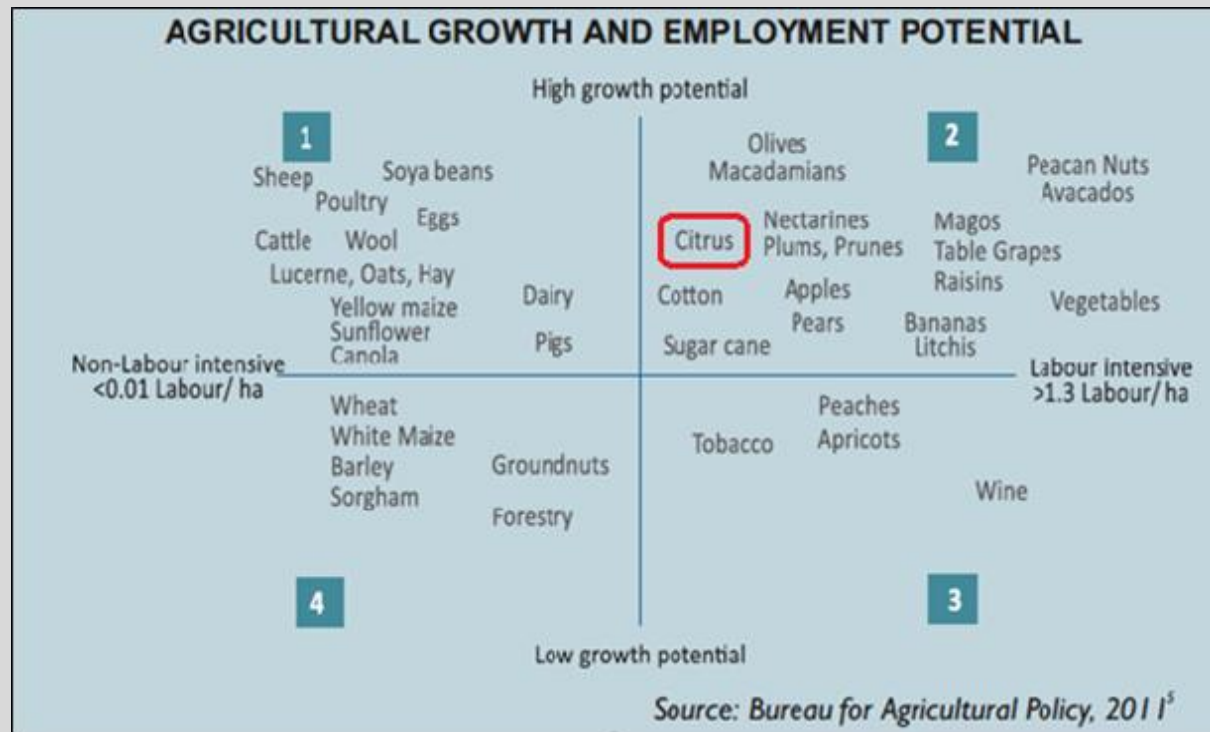


Figure 6: Agricultural growth and employment potential of various crops and commodities (Source: National Development Plan, 2013).

Indicate any benefits that the activity will have for society in general:

As per the NDP (2013), the proposed development will contribute to the aim of achieving the “*socio-economic objectives of poverty alleviation and generation of employment*”, hence contributing positively to the economy. In addition, the proposed development will contribute to production of fruits which will also result to an increase in food security.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The proposed development is expected to result in approximately 10 to 15 temporary employment opportunities during the construction phase as well as up to 15 to 20 permanent and up to 100 seasonal positions during the operational phase. The workers will likely be sourced from the local community.

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (Act No. 107 of 1998)	Department of Environmental Affairs (DEA) and the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism	1998
National Environmental Management Act (Act No. 107 of 1998), Environmental Impact Assessment Regulations		2017
National Environmental Management: Waste Act (Act No. 59 of 2008)		2008
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)		2004
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) Alien and Invasive Species regulations		2014
National Environmental Management: Protected Areas Act (Act No. 57 of 2003)		2003
National Environmental Management: Air Quality Act (Act No. 39 of 2004)		2004
Environmental Conservation Act (Act No. 73 of 1989)		1989
National Climate Change Response White Paper		2011
National Guideline for Consideration of Climate Change Implications in Applications for Environmental Authorisations, Atmospheric Emission Licences and Waste Management Licences		2021
National Heritage Resources Act (Act No. 25 of 1999)	South African Heritage Resources Agency (SAHRA) and the Eastern Cape Provincial Heritage Resource Authority (ECPHRA)	1999
Hazardous Substances Act (Act No. 15 of 1973)	Department of Health (DoH)	1973
Occupational Health and Safety Act (Act No. 85 of 1993)	Department of Labour (DoL)	1993
National Road Traffic Act (Act No. 93 of 1996)	Department of Transport (DoT)	1996
National Forests Act (Act No. 84 of 1998)	Department of Agriculture, Forestry and Fisheries (DAFF)	1998
National Veld and Forest Fires Act (Act No. 101 of 1998)		1998
Conservation of Agricultural Resources Act (Act No. 43 of 1983)		1983
Fertilizers, Farm Feeds, Seeds and Remedies Act (Act No. 36 of 1947).		1947
Agricultural Pests Act (Act No. 36 of 1983)		1983
Nature Conservation Ordinance (19 of 1974)	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism	1974
Municipal By-Laws	Kouga Local Municipality	Various

The South African Vegetation Map (Mucina and Rutherford)	South African National Biodiversity Institute (SANBI)	2006
The Eastern Cape Biodiversity Conservation Plan (ECBCP)	South African National Biodiversity Institute (SANBI)	2007
The National Freshwater Ecosystem Priority Areas (NFEPA) project	South African National Biodiversity Institute (SANBI)	2011 / 2014
Protection of Personal Information Act (POPIA)	Information Regulator	2013 (2021)

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?
If yes, what estimated quantity will be produced per month?

YES X	
UNKNOWN	

How will the construction solid waste be disposed of (describe)?

Solid waste derived from the construction phase of the proposed development will include minor discarded construction material (e.g., pipeline cut-offs and packaging material etc.), general domestic waste, excess soil/spoil (from levelling) and a large volume of cleared bush vegetation (predominantly thicket vegetation). This soil/spoil waste will be reused, wherever possible (e.g. as fill material or topsoil, depending on the quality). The vegetation waste will be chipped and mulched by the farmer in order for this to be used as compost material. All additional waste will be removed and disposed of in the correct manner at a licenced landfill site. There is unlikely to be any liquid waste (e.g. wastewater or effluent) derived from the construction phase. Should any soil become contaminated by a hydrocarbon spill, this will be separated as hazardous waste and removed to an adequate disposal facility.

Where will the construction solid waste be disposed of (describe)?

The construction phase general solid waste that cannot be reused or recycled will be disposed by the appointed Contractor at a general landfill site.

Will the activity produce solid waste during its operational phase?
If yes, what estimated quantity will be produced per month?

YES X	
UNKNOWN	

How will the solid waste be disposed of (describe)?

During the operational phase, the majority of the waste derived from the development will be in the form of organic waste. All fruits not suitable for the international or national markets will be handled at the existing packaging warehouse where it will be disposed of as per the existing protocols of the business. Any fruit waste that won't go to the warehouse will be used as organic waste and will be added to the compost utilised in the soil. No additional wastewater or sewerage will be derived from the proposed development during the operational phase, as the works will make use of the existing ablution facilities located in the warehouse. Therefore, there will be no new sewerage and/or effluent treatment systems required for the proposed development.

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

Not applicable. All solid waste generated from the operational phase will be reused or recycled or will feed into the municipal waste stream, which will be disposed at the municipal landfill site.

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

NO X

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Not applicable. Very limited hazardous waste, such as empty chemical containers and oil rags will be disposed of by the Contractor at the nearest permitted landfill site.

Is the activity that is being applied for a solid waste handling or treatment facility?

NO X

If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Not applicable. The activity is not a solid waste handling or treatment facility.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

NO X

If yes, what estimated quantity will be produced per month?

Will the activity produce any effluent that will be treated and/or disposed of on site?

NO X

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Not applicable. The activity will not produce liquid effluent.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

NO X

If yes, provide the particulars of the facility:

Facility name:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Cell:

Fax:

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

No reuse or recycling of waste water is proposed for this particular development. The proponent will only utilise canal water for irrigation of fruit trees and is within his permitted water irrigation volumes. Reuse and/or recycling of waste water may be undertaken as part of the existing fruit handling facilities operated by the applicant, but this does not form part of the assessment for this particular project.

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES X

If yes, is it controlled by any legislation of any sphere of government?

NO X

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

It is highly likely that dust will be generated during the construction phase, particularly during strong winds. In addition, vehicle exhaust emissions from construction vehicles may occur. However, both of these construction-related emissions will be short-term and can be adequately controlled using simple management measures.

During the operational phase, it is possible that dust will be generated from vehicles travelling to and from the site during harvesting, especially during periods of strong winds. Other air emissions, including odours, may result from incorrect or excessive use of herbicide or pesticide, should this be required at some stage during the farming process.

11(d) Generation of noise

Will the activity generate noise?

YES X

If yes, is it controlled by any legislation of any sphere of government?

NO X

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Not applicable.

If no, describe the noise in terms of type and level:

The construction phase of the proposed development will result in elevated noise levels related to the use of machinery, vehicles and contractors on site. Since the surrounding area is predominantly agricultural and natural land, there are very few sensitive receptors. Provided that construction activities occur within normal working hours, disturbance by elevated noise levels is likely to be minimal.

During the operational phase, noise will be generated by vehicles and staff conducting harvesting activities on site. Due to the remoteness of the site, this unlikely to have any significant impact on sensitive receptors.

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

Municipal	water board X	groundwater	river, stream, dam or lake	other	the activity will not use water
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Water will be sourced from the existing abstraction point along the GIB canal, currently used to irrigate existing orchards located directly north-west of the proposed development areas. The details of the water reticulation and irrigation infrastructure will be finalised prior to implementation.

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

N/A

Does the activity require a water use permit from the Department of Water Affairs?

NO

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

Not applicable. Water is obtained directly from the GIB as per existing water allocations. Should the development occur within the regulated area of one of the nearby drainage lines, the DWS will be engaged to advise on any other water use authorisation (WUA) requirements.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Where possible, recycling of waste and re-use of materials will be undertaken. Any lighting that will be required will be energy efficient (e.g., solar and/or motion activated). Harvesting of fruit will be done manually, therefore requiring less agricultural equipment and vehicles.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Additional power will be supplied by means of small-scale Photo Voltaic panels connected to motion activated lights. Additionally, any pumps required as part of the irrigation infrastructure should be fitted with solar power sources in order to reduce energy consumption. The use of variable speed pumps and strategic irrigation scheduling can reduce pumping costs (and water use) significantly. Farmers can install photovoltaic systems on the roofs of farm buildings (e.g. sheds, packhouses), or attached to water pumps, to increase reliability of supply, bring down costs, and simultaneously reduce the carbon footprint of the farm operations. In addition, reduce the synthetic nitrogen fertiliser usage, which can be achieved through more precise application as and when the plant needs it, and utilize small scale waste-to-energy technology which could provide an opportunity to both reduce waste-related emissions and reduce the reliance on grid electricity.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A):

A (only copy)

- Paragraphs 1 - 6 below must be completed for each alternative.

There is only one (1) reasonable and feasible locality/site alternative identified in Section A(2) above.

- Has a specialist been consulted to assist with the completion of this section?

YES X

If YES, please complete form XX for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Please refer to Appendix D for the Specialist Reports.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

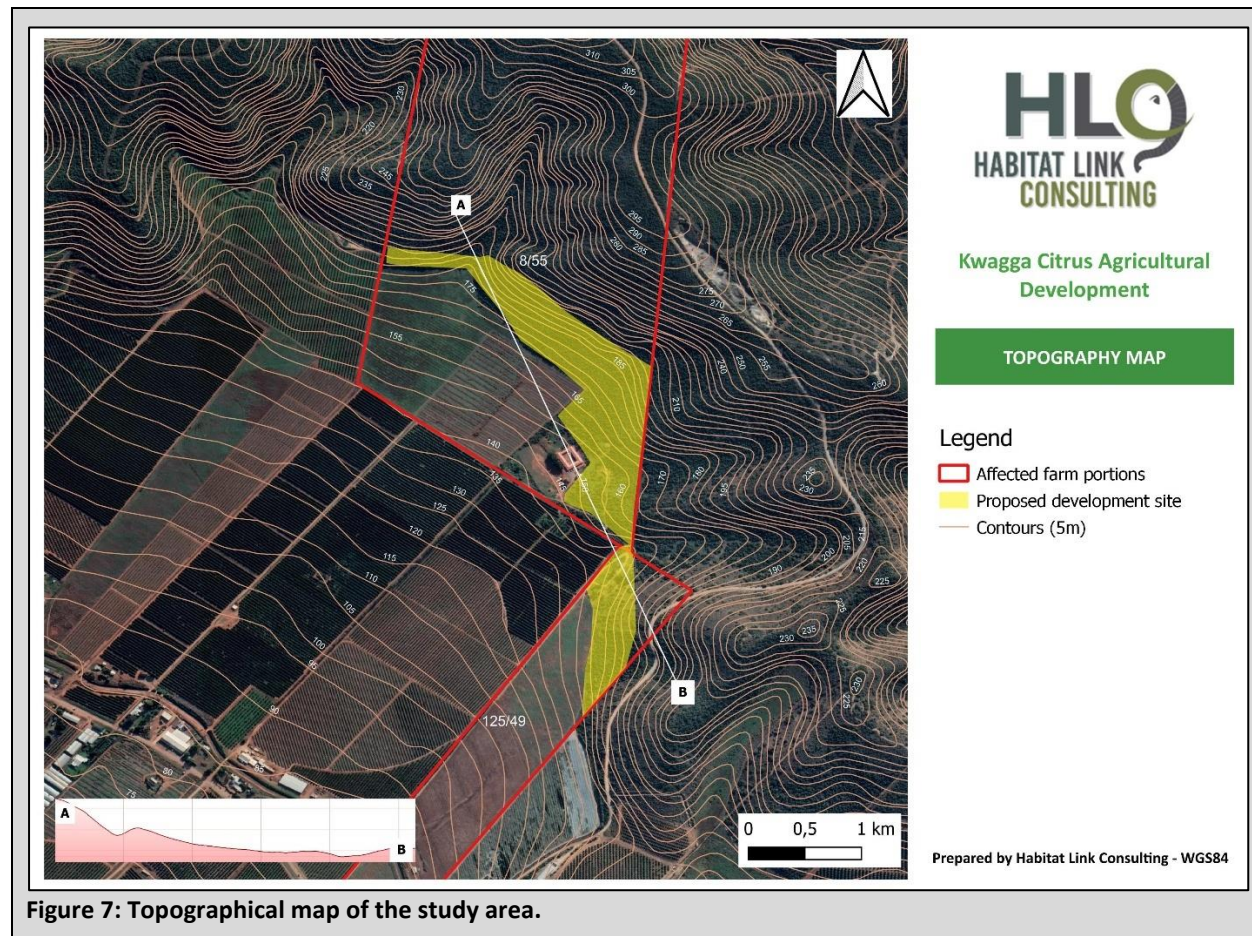
Flat	1:50 – 1:20 X	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (if any):

Alternative S3 (if any):

Topography

The topography of the study area is a combination of lower lying valley areas and valley sides containing rocky outcrops with a steep gradient on the north-eastern part of the proposed site. The proposed site slopes from a mountain side in the north-east towards the Gamtoos River in the south-west. In general, the topography of study area is on a concave slope between 580 and 630 metres above sea-level (Figure 7).



2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline

2.2 Plateau

2.3 Side slope of hill/mountain **X**

2.4 Closed valley

2.5 Open valley

2.6 Plain

2.7 Undulating plain / low hills

2.8 Dune

2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1:	Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep)	<input type="checkbox"/> NO X	<input type="checkbox"/>	<input type="checkbox"/>
Dolomite, sinkhole or doline areas	<input type="checkbox"/> NO X	<input type="checkbox"/>	<input type="checkbox"/>
Seasonally wet soils (often close to water bodies)	<input type="checkbox"/> NO X	<input type="checkbox"/>	<input type="checkbox"/>
Unstable rocky slopes or steep slopes with loose soil	<input type="checkbox"/> NO X	<input type="checkbox"/>	<input type="checkbox"/>
Dispersive soils (soils that dissolve in water)	<input type="checkbox"/> NO X	<input type="checkbox"/>	<input type="checkbox"/>
Soils with high clay content (clay fraction more than 40%)	<input type="checkbox"/> NO X	<input type="checkbox"/>	<input type="checkbox"/>
Any other unstable soil or geological feature	<input type="checkbox"/> NO X	<input type="checkbox"/>	<input type="checkbox"/>
An area sensitive to erosion	<input type="checkbox"/> NO X	<input type="checkbox"/>	<input type="checkbox"/>

Geology

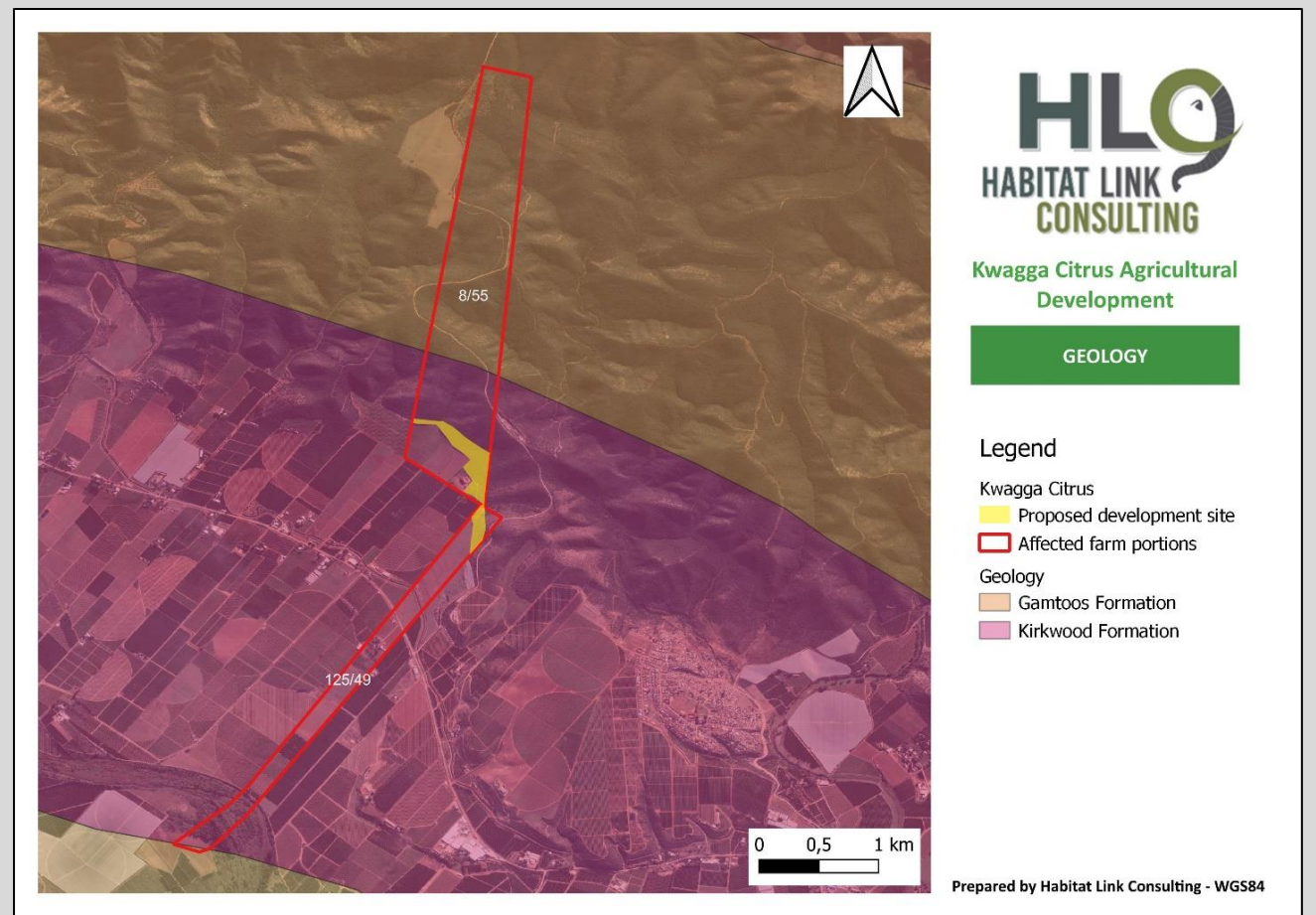


Figure 8: Geology map of the study area.

The area is underlain by the Lime Bank Formation and the Kleinrivier Formation of the Gamtoos Group, and the Kirkwood Formation of the Uitenhage Group (Mucina & Rutherford, 2007) (Figure 8). The Kirkwood Formation is composed of sedimentary rocks deposited under fluvial conditions at or near sea level, such as variegated mudstone, medium-grained lithic sandstone, a significant deposit of fine-to-medium grained, poorly-sorted estuarine sandstone with subordinate dark grey to brown shale layers. The lower portion of the

remainder of the Formation is composed predominantly of siltstones, but includes a smaller sandstone layer. The upper portion of the Formation is composed predominantly of fine, clay-rich mudstones, with multiple smaller layers of estuarine sandstone.

The Kleinrivier Formation consists predominantly of yellowish grey phyllite but also includes intercalations grit and arkose as well as minor quartzite and conglomerate layers. This formation grades through calcareous shale and thin siliceous limestone and grit layers. The Lime Bank Formation occurs as an apparently overfolded anticline along the southern boundary of the Gamtoos Valley inlier and consists of a limestone unit, 30 to 35 m thick, with underlying or intercalated contorted phyllite and carbonaceous pyritic shale. The limestone is massive and bluish grey with numerous calcite veins and grades upward through calcareous grit and carbonaceous shale into the next unit.

Please refer to [Appendix D.6](#) for Palaeontological Impact Assessment.

Surface Water Features

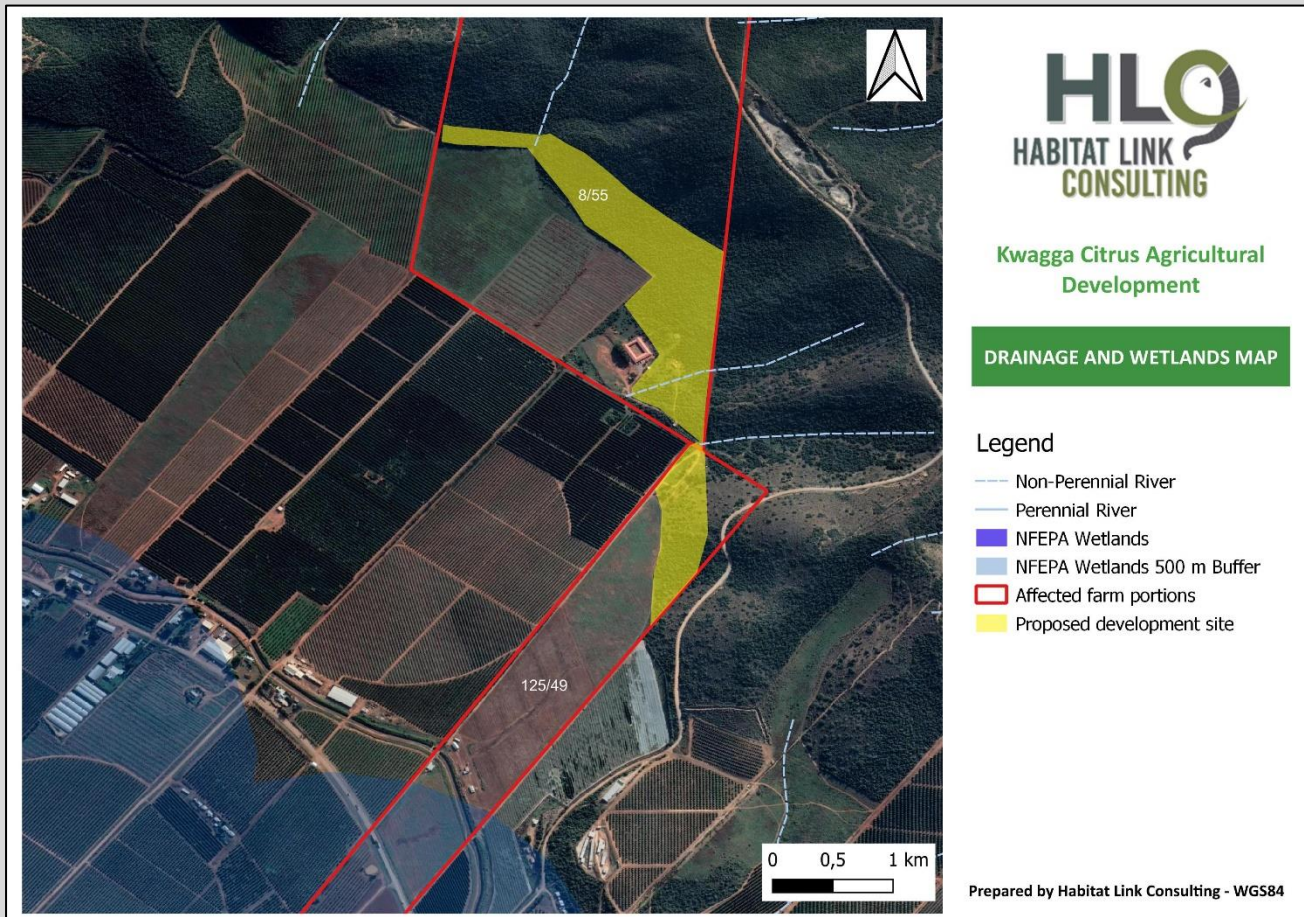


Figure 9: Drainage map of the study area (DWS, NWI and NGI).

The study area is situated within the L90A quaternary catchment, located within the Mzimvubu-Tsitsikamma Water Management Area. The Gamtoos River is the most prominent drainage line in the wider Patensie area. The Gamtoos river system is formed by the Groot, the Kouga and the Baviaanskloof rivers. The latter is a tributary of the Kouga River. Although the rainfall in the catchment area is low, it supports commercial irrigated agriculture in the lower catchment in which citrus fruit and vegetables are grown. There is an estuary where

the Gamtoos river enters the Indian Ocean is located between Jeffreys Bay and Port Elizabeth and the Gamtoos River Mouth Nature Reserve is in the area.

The proposed development area will dissect three (3) non-perennial drainage lines (Figure 9). These drainage lines do not appear to connect to a larger watercourse, but instead drain water from the high-lying area (north-east of the site) to the existing agricultural areas (south-west of the site) during heavy rainfall conditions. No natural wetlands or wetland clusters were shown in National Wetland Inventory (NWI) with the exception of some artificial dams located on neighbouring properties. The Gamtoos Irrigation Board's irrigation canal runs to the south of the site but is also more than 500 m away from the proposed site boundary.

The nearest wetland is a large, channelled valley-bottom wetland that lies 1.9 km to the west of the study site (Figure 8). this wetland will not be affected by the proposed citrus development. The Gamtoos River, a Class D (Largely modified river) Freshwater Ecosystem Priority Area (FEPA) perennial river is situated approx. 1.9 km to the south of the site. Even though both the river and the proposed citrus development will be located on the same farm (Farm 125/49), there will be no impact on the river due to the distance. Another FEPA River, the Hol River, also a Class D non-perennial river, lies approx. 2.9km to the east of the site. Again, this river will not be impacted by the proposed development. As a result, the river PES (Present Ecological State) or ESS (Ecological Sensitivity State) values are not discussed. Please refer to [Appendix D.4](#) for the Aquatic Biodiversity Compliance Statement.

Soils and Agricultural Potential

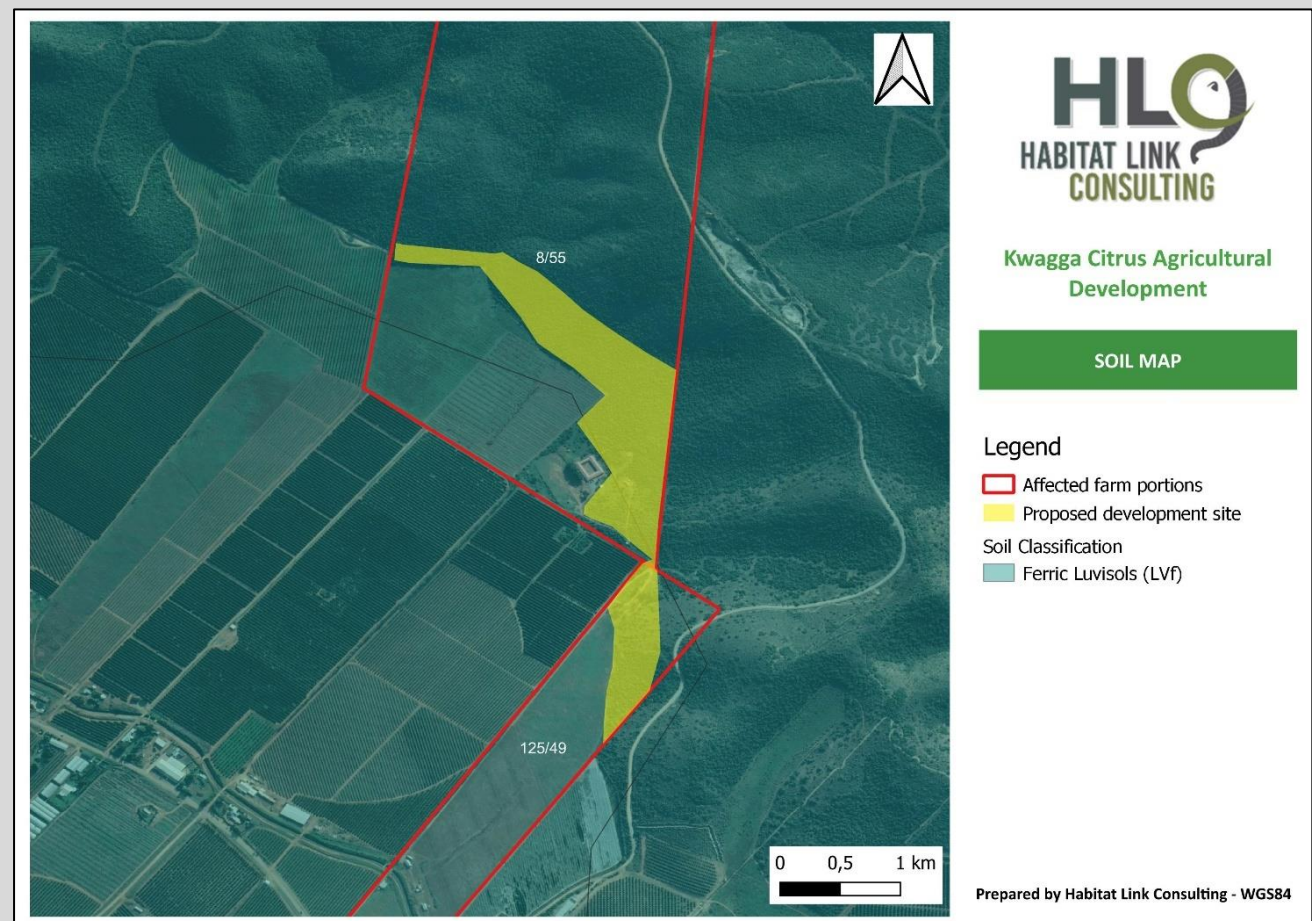


Figure 10: Soil classification map (SOTER, 2008).

The Soil and Terrain (SOTER) database, as published by the International Soil Reference and Information Centre (ISRIC, 2008), defines the project area soils as 'Ferric Luvisols' (LVf) (Figure 10). Luvisols are widespread within temperate climate regions, are generally fertile and are characterised by an argic horizon (a soil layer with higher clay content than the surrounding material). The term 'ferric' refers to the scientific value of iron contained in the B-horizon of the soil and is relatively more iron-rich than other similar soil types (FAO, 1998). The majority of the study area is thus classified as having either low or moderate agricultural sensitivity, while a small section located outside of the preferred layout alternative is classified as high sensitivity. In general, the study area is suitable, to varying degrees, as arable or grazing land (DARLLD, 2002).

A permit application was submitted to the Eastern Cape Department of Agriculture, Land Reform & Rural Development (DALRRD) for the cultivation of virgin soil in terms Regulation 2 of the Conservation of Agricultural Resources Act (CARA). During the application process, the Agri Technovation (Laeveld Agrochem) assisted the applicant in determining the most suitable areas for citrus orchards and thus the preferred layout alternative for the development has been aligned with the recommendations of Agri Technovation (refer to Soil Suitability map in [Appendix G.6](#)).

Please refer to [Appendix D.3](#) for the Agricultural Compliance Statement.

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

4. GROUND COVER

Indicate the types of groundcover present on the site:

4.1 Natural veld – good condition^E ————— X

4.2 Natural veld – scattered aliens^E

4.3 Natural veld with heavy alien infestation^E

4.4 Veld dominated by alien species^E

4.5 Gardens

4.6 Sport field

4.7 Cultivated land

4.8 Paved surface

4.9 Building or other structure

4.10 Bare soil —

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition^E X	Natural veld with scattered aliens ^E X	Natural veld with heavy alien infestation ^E X	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an "E" is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

Vegetation

The South African National Biodiversity Institute (SANBI) vegetation map (called the VegMap; 2018) lists the proposed activity within 2 vegetation types, namely Albany Alluvial Azonal Vegetation and Sundays Valley Thicket (Figure 11).

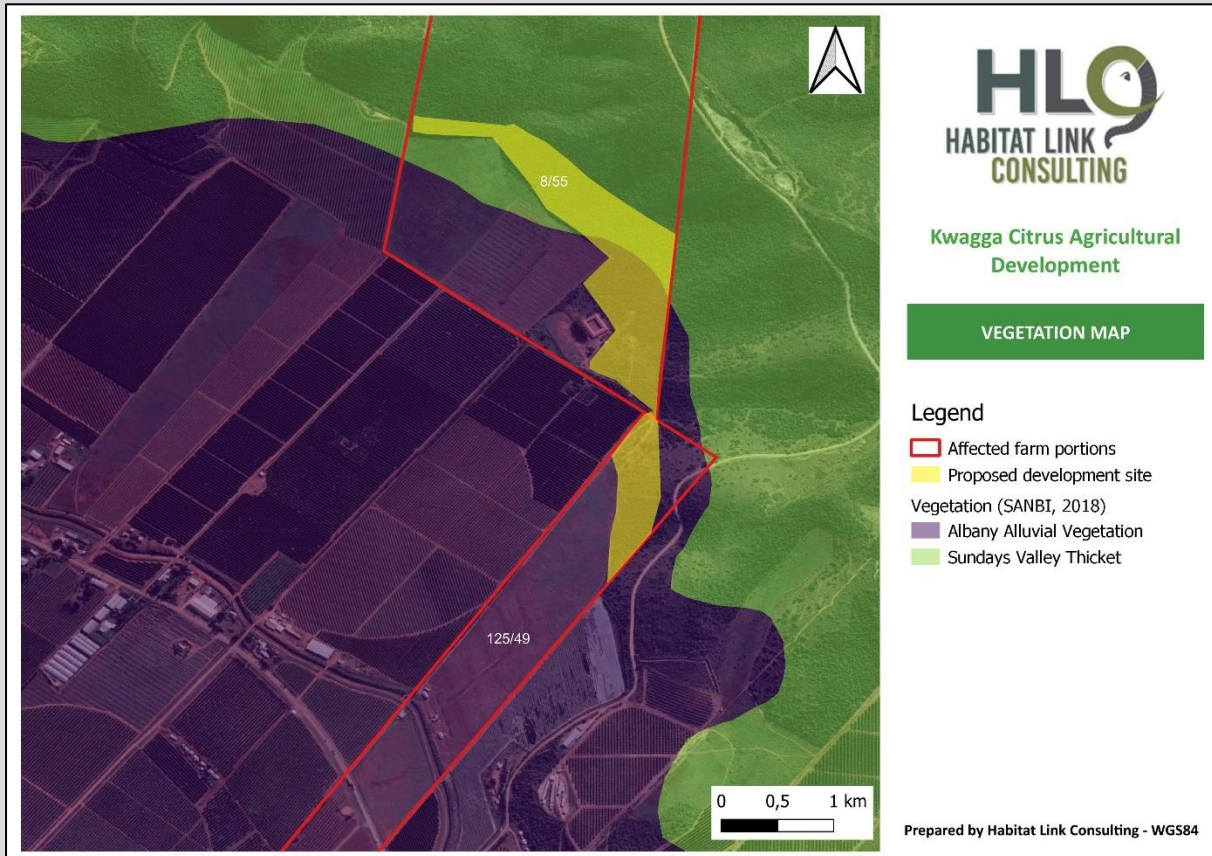


Figure 11: SANBI vegetation map of the study area.

Sundays Valley Thicket occurs on undulating plains, low foothills and mountain slopes in the lower Sundays River Valley. Vegetation consists of medium-sized to tall (3 - 5 m) dense thicket in which the woody tree and shrub component, and the succulent component, are well developed, with many spinescent species. There are no distinct strata in the vegetation as the lower and upper canopy species intertwine, often with a wide variety of lianas linking the understorey with the canopy. Emergents are uncommon, but *Euphorbia grandidens*, *E. triangularis*, and occasionally *Cussonia gamtoosensis* and *C. spicata* emerge above the canopy. The abundance of *Portulacaria afra* and other succulent shrubs (e.g., *Aloe speciosa*, *Euphorbia caerulea*) increases in more arid sites, while local soil conditions also influence composition of the vegetation - there is thus considerable structural heterogeneity within this vegetation unit. Albany Alluvial Azonal Vegetation consist of riparian thicket including reed beds and flooded grassland and herbland as well thornveld (including species such as *Vachellia natalitia*). The thornveld occurs further inland where topography is on wider floodplains while riverine thicket is found closer to coastal areas and on narrower floodplains. The SANBI VegMap (2021) classified this vegetation type as 'Endangered'.



Figure 12: Fine-scale vegetation map of the study site by Roy de Kock (Specialist Report).

Even though the SANBI VegMap (2018) indicated two distinct vegetation types within the study site, a site investigation confirmed the following (Figure 12):

- A total amount of 10.97 ha of natural vegetation will be removed consisting of 8.67 ha of intact thicket and 2.3 ha of open thornveld.
- The remaining 0.77 ha of land to be cleared consist of transformed vegetation.
- The northern half of the study site consist of dense, impenetrable thicket representing the original extent of Sundays Valley Thicket.
- Dominant large species consist of spekboom (*Portulacaria afra*), *Euphorbia caerulescens*, *Euclea undulata*, *Pappea capensis* and *Schotia afra*.
- Smaller species dominating the fringes include *Sansevieria hyacinthoides*, *Curio radicans*, *Aloe speciosa* and *Aloe africana*.
- The southern section consists of open thornveld dominated by *Vachellia natalitia*. This section represents the original extent of Albany Alluvial Azonal Vegetation.
- The remaining areas are split into two smaller areas that has been heavily degraded by human development. Both areas contain farmworker houses with most of the natural vegetation removed and replaced by alien and garden varieties.
- There is no natural vegetation bordering the western borders of the study site. These areas have been completely cleared of natural vegetation for agriculture (citrus orchards).
- The northern and eastern boundaries are bordered by natural vegetation consisting of either dense thicket or open thornveld.

Please refer to [Appendix D.2](#) for the Terrestrial Biodiversity, Plant and Animal Species Assessment report.

Fauna

According to Gamtoos Tourism (2022), a number of the faunal species of the Gamtoos Valley are lost due to agriculture and resultant loss of habitat. The valley bush hosts a number of species like kudu, bush buck, common duiker and Cape grysbok. Buffalo, red hartebeest, Cape mountain zebra, mountain reed buck, grey rhebok and klipspringer and eland also move over vast distances and a variety of habitats within the valley. Caracal and leopard are the main predators in the area. Although caracal may occasionally be seen, the sighting of a leopard is still a very rare. The Cape clawless otter, bush pig, aardwolf, armadillo and other smaller mammals are still reasonably common despite being observed very seldom.

Several invertebrates are protected under the NEMBA (ToPS) Act. All baboon spider species in South Africa, (*Harpactirinae*) are protected under NEMBA and the Golden Baboon Spider (*Harpactira tigrine*) has been observed in the local area. Certain scorpions, under the *Opisthacanthus* genus are also protected under NEMBA. Both spiders and scorpions have a high likelihood of occurring on site. A variety of river frogs (*Pyxicephalidae*), Painted Reed Frogs (*Hyperolius marmoratus*), and Caco's (*Cacostrum*) may also occur, especially during the warmer summer times.

Although the majority of the 24 snake species found in the area have a wide distribution range, 4 of these are South African endemics. The snakes most likely to be seen are Cape cobra, puffadder, boomslang, rhombic 'skaapsteker', Karoo and montane grass snakes and the brown water snake. The Cape cobra and puff adder, are generally regarded as the two most dangerous. Of the 28 lizard species present, 2 newly discovered species, a dwarf chameleon and a flat gecko are endemic to the area. A further 7 species are Cape endemics and 7 others are South African endemics. Most of these occur in the mountainous parts of the Gamtoos Valley. In summer, the Nile monitor is commonly seen near water. The ubiquitous Southern rock agama can be found almost wherever there are rocks and sunshine. The rivers flowing through the area support a diverse indigenous fish fauna. 15 species are known to occur here, of which 3 are endemics to the rivers of the Cape.

Nearly 300 bird species have been recorded in the area (Gamtoos Tourism, 2022). Most species may also be seen in the bushveld on the lower mountain slopes, and along river and stream banks, a habitat which also offers the opportunity of seeing a range of other species, including the Paradise flycatcher, Red-billed woodhoopoe, Brown-hooded kingfisher, Black-collared barbet, Black headed oriole, Glossy starling and 6 different species of weaver. The area boasts an impressive 25 number of raptor species. Ranging from the Little Sparrowhawk to Martial eagle. Others include the Crowned eagle and Black sparrow head. Eight sunbirds occur in the area. The Orange-breasted sunbird is the characteristic species in the fynbos, while the Greater double-collard and Black sunbirds will usually be found in the low-lying bushy parts. Some threatened and near-threatened species inhabit, or make use of the area at certain times of the year. These include Blue crane, African marsh harrier, Striped fluff tail, Stanley's bustard, Black harrier, Protea canary, Black stork and Peregrine falcon. Please refer to [Appendix D.2](#) for the Terrestrial Biodiversity, Plant and Animal Species Assessment report.

Biodiversity and Protected Areas

The project site is not located in a Terrestrial Critical Biodiversity Area (Figure 13). Most of the site situated within a terrestrial ESA 1 (Ecological Support Area 1) as per the ECBCP (2018). ESA 1 areas has no conservation management requirements to meet biodiversity targets, but they still perform essential roles in terms of connectivity, ecosystem service delivery and climate change resilience. Owing to the varying nature of ecological support areas, if the area is still in a relatively natural state that needs to be maintained but if the area is moderately disturbed or degraded then it needs to be restored.

Although the proposed project site is classified as an ESA, the smaller ESAs (see ESA 2 on Figure 14) to the southwest of the study site no longer functions as ESAs mainly due to the transformation of land to citrus orchards. The project site is on the fringe of a large ESA and will not reduce any functionality of fragment the ESA. No protected areas were identified within the project site. The Cape Floral Region Protected Area is located within 10 km north-west of the site (approx. 6.25 km) but will not be impacted, directly or indirectly, by the proposed agricultural development. Figure 14 below illustrates the location relevant to the project site (in orange).

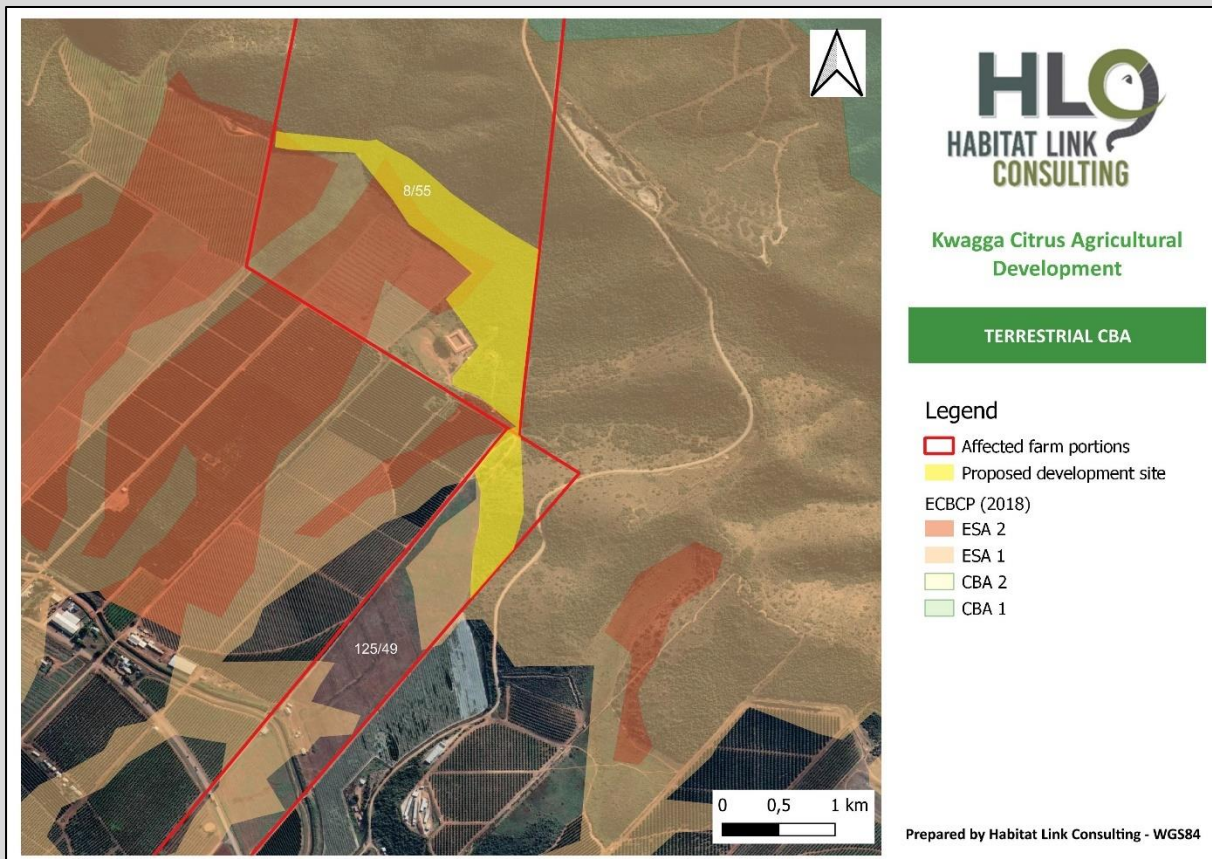
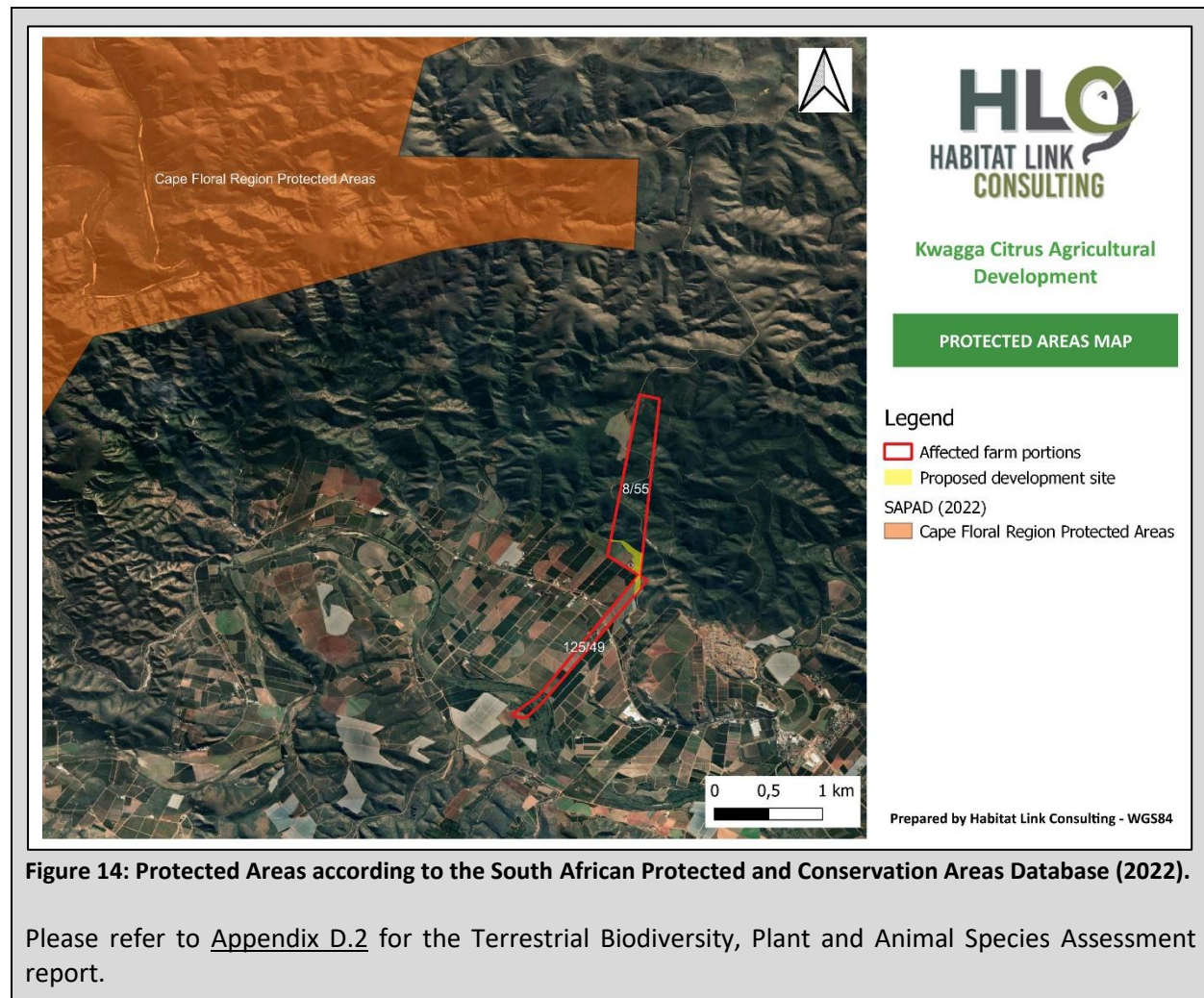


Figure 13: Terrestrial Critical Biodiversity Areas according to the Eastern Cape Biodiversity Conservation Plan (2018).



5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

5.1 Natural area	X
5.2 Low density residential	
5.3 Medium density residential	
5.4 High density residential	
5.5 Informal residential	
5.6 Retail commercial & warehousing	
5.7 Light industrial	
5.8 Medium industrial ^{AN}	
5.9 Heavy industrial ^{AN}	
5.10 Power station	
5.11 Office/consulting room	
5.12 Military or police base/station/compound	
5.13 Spoil heap or slimes dam ^A	
5.14 Quarry, sand or borrow pit	
5.15 Dam or reservoir	X

5.16 Hospital/medical centre

5.17 School	X
--------------------	----------

5.18 Tertiary education facility

5.19 Church

5.20 Old age home

5.21 Sewage treatment plant^A5.22 Train station or shunting yard^N5.23 Railway line^N5.24 Major road (4 lanes or more)^N5.25 Airport^N

5.26 Harbour

5.27 Sport facilities

5.28 Golf course

5.29 Polo fields

5.30 Filling station^H

5.31 Landfill or waste treatment site

5.32 Plantation	X
------------------------	----------

5.33 Agriculture	X
-------------------------	----------

5.34 River, stream or wetland	X
--------------------------------------	----------

5.35 Nature conservation area

5.36 Mountain, koppie or ridge	X
---------------------------------------	----------

5.37 Museum

5.38 Historical building

5.39 Protected Area

5.40 Graveyard	X
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5.41 Archaeological site

5.42 Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity.

Not applicable.

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

If YES, specify:

Not applicable.

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

If YES, specify:

Not applicable.

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or palaeontological sites, on or close (within 20m) to the site?

NO X

If YES, explain:

Not applicable.

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:

No archaeological sites/materials were observed during the investigation of the proposed agricultural area. Although it is unlikely that archaeological remains will be found in situ, there is always a possibility that human remains and/or other archaeological and historical material may be uncovered during the development.



Figure 15: The proposed agricultural area is outlined in red. The buildings / structures that are located within the proposed development area are indicated with the yellow placemarks and the location of the graves is indicated with the red placemark.

Some of the graves that are located outside of the proposed agricultural area (Figure 15) can possibly be older than 60 years and may therefore be protected in terms of Section 36 of the National Heritage Resources Act, No. 25 of 1999. Although the graves are located outside of the proposed development area they are in very close proximity to the boundary where the activities will take place. A resident of one of the farm workers houses adjacent to the gravesites indicated that he has been living in the area since 1979 and that the graves were already there when he arrived (Herklaas Plaatjies. pers.comm. 2022). This provides an indication that some of the graves are at least 42 years old or older. Some of the other graves are not older than 60 years and fall under the Human Tissues Act, No. 65 of 1983, as well as any local and regional laws and by-laws. Due to the cultural and spiritual significance of graves and burial sites to the community, any disturbance of these sites should be avoided.

Please refer to [Appendix D.5](#) for the Archaeology Impact Assessment.

Will any building or structure older than 60 years be affected in any way?

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

NO X

NO X

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

Not applicable. Although the proposed development will occur within close proximity to grave sites, it has been proposed that a buffer of 15 m is placed around the graves and therefore these will not be disturbed during the construction and/or operational phases.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
 - (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
 - (iii) the nature and location of the activity to which the application relates;
 - (iv) where further information on the application or activity can be obtained; and

- (iv) the manner in which and the person to whom representations in respect of the application may be made.

Site Notices

A site notice was placed at the main entrance to the proposed site (as per the requirements of Section 41 of the 2014 NEMA EIA Regulations) on 14 June 2022 (Figure 16 and 17).



Figure 16: Site notices placed on site.



Figure 17: Position where site notice was placed.

Notification of the Basic Assessment Process

Initial notification of the BA process commenced on 26 July 2022, when letters of notification were sent, via email, to all Interested and Affected Parties (I&APs) (Figure 18). The site notices were erected and the Background Information Documents (BIDs) were distributed to the nearby landowners and occupants on 6 April 2022. In addition, a newspaper advertisement will be placed in The Kouga Express to notify further potential I&APs

From: Tamara Botha

Sent: Tuesday, 26 July 2022 16:03

Cc: Roberto Almanza <roberto@habitatlink.co.za>

Subject: Notification of Application for Environmental Authorisation: Portion 8 of the Farm Stuurmans kop 55 and Portion 125 of the Farm Quacha 49 (Kwagga Citrus)

Dear Key Stakeholder

Please find attached letter of notification and Background Information Document (BID) pertaining to the application for Environmental Authorisation (EA) for the proposed agricultural development on Portion 8 of the Farm Stuurmans kop 55 and Portion 125 of the Farm Quacha 49, near Patensie, within the Kouga Local Municipality, Eastern Cape.

Kind regards,
Tamara



Tamara Botha (MSc)
Environmental Consultant

tamara@habitatlink.co.za
083 844 3180

117 Cape Road
Mount Croix
6001

www.habitatlink.co.za

Figure 18: Preview of the notification sent via email on 16 March 2022. Please refer to Appendix E for the detailed notification.

Distribution of Background Information Documents (BIDs)

The purpose of the Background Information Document (BID) is to ensure that the relevant information, including the process being followed, was made available to a wide range of stakeholders. The BID formed part of the notification that was sent to all I&APs. The BID included information regarding the project details, the public participation process and the contact details for commenting on the development (Figure 19).

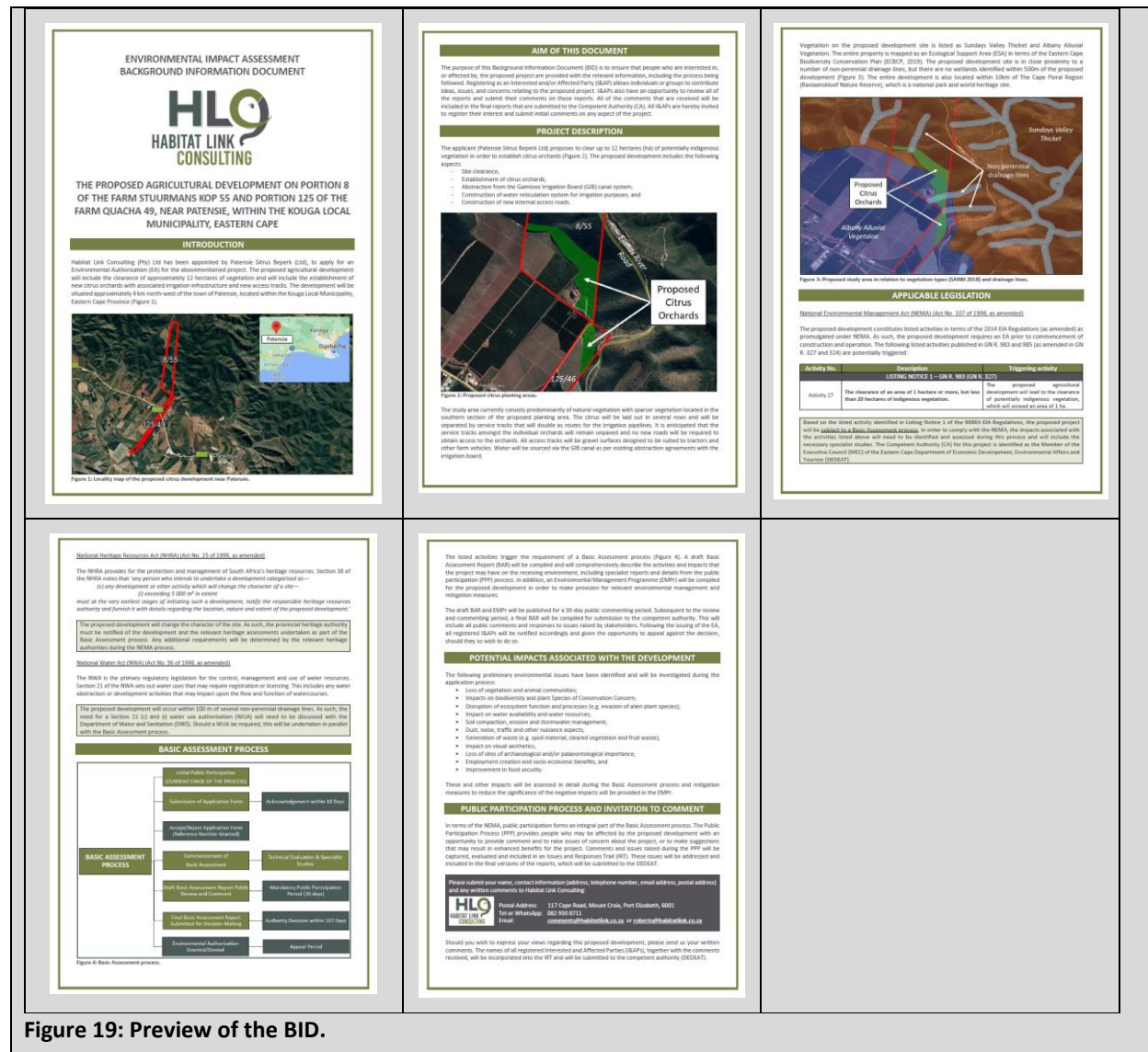


Figure 19: Preview of the BID.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations. Advertisements and notices must make provision for all alternatives.

Advertisement

A newspaper advertisement will be placed in The Kouga Express, a provincial publication that is distributed throughout the Kouga Local Municipality. The advertisement will be used to notify the general public of the proposed project and the availability of the Draft BAR for public review. Proof of placement of the newspaper advertisement will be included in the Final BAR.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

The public participation process to be undertaken for this project aligns with the requirements of the 2014 NEMA EIA Regulations (as amended).

Completed Public Participation

In order to ensure that all Interested and/or Affected Parties (I&APs) are aware of the proposed project and afforded sufficient opportunity to raise comments and or concerns, the Basic Assessment process was announced using the following methods:

- Site notices;
- Electronic distribution of written notifications (via email);
- Notification of the proposed development via SMS/WhatsApp;
- Newspaper advertisement; and
- Electronic distribution of Background Information Documents (BIDs) (via email).

Not only did the abovementioned methods allow for the notification of the proposed development, but they also made provision for I&APs to request, review and comment on all draft reports. The contact details of the EAP (including email address, telephone number and postal address) was provided on all notification documentation, allowing the I&APs to contact the EAP and request project information and/or reports, via numerous communication methods. All comments and concerns provided by the I&APs will be included and addressed in the final reports.

Public Participation on the Draft BAR

The Draft BAR will be made available for a thirty (30) day review period. All stakeholders and I&APs have been notified of the availability of the draft reports draft reports via the newspaper advertisement and via email notifications, following confirmation that they are able to access the reports electronically. The Draft BAR (this report) will be made available for the prescribed period and can be viewed/downloaded from the Habitat Link Consulting website (www.habitatlink.co.za/current-projects). Please refer to additional details regarding the PPP process included in Appendix E.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

Please refer to [Appendix E](#) for the detailed email correspondences between I&APs and the EAP as well as the detailed Issues & Response Trail (IRT). Any additional issues or concerns received during the BA process will be added to the IRT summary for inclusion in the Final BAR.

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

A full I&AP list can be viewed in [Appendix E](#) of this report together with relevant proof of notifications.

List of authorities from whom comments have been received:

Comments received during the pre-application phase:

- **Department of Agriculture, Land Reform & Rural Development (DARLLD)** (after notification was sent out).
- **Department of Agriculture, Forestry and Fisheries (DAFF)** (after notification was sent out).

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

During the inception phase of the EIA process, I&APs and other key stakeholders were identified for the proposed development. This included identification of surrounding landowners, land occupants, farmers associations, ward councillor and relevant governmental officials. The engagement with I&APs and other stakeholders will continue throughout the Basic Assessment process. All I&AP information (including contact details) is maintained by the EAP and recorded in a comprehensive I&AP database. This database will be updated on an on-going basis throughout the project and will act as a record of the communication and involvement process.

Has any comment been received from stakeholders?

YES X

If “YES”, briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Comments received during the pre-application phase:

- The DARLLD provided initial comments on the requirement for an application for virgin soils.
- The DAFF provided a comment on the requirement to apply for a license to do clearing of natural forest or protected trees.

Detailed proof of placement of PPP material, as well as the full I&AP list and correspondence received from all I&APs is provided in Appendix E.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 as amended, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

The following issues were raised by I&APs to date:

1. A cultivation permit is required before virgin soils may be disturbed;
2. A license is required to do any clearing of natural forest or protected trees.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

The EAP's response to the abovementioned issues raised to date are as follows:

1. The applicant will obtain the required cultivation permit in terms of CARA, before disturbance of the virgin soil of a natural veld will take place.
2. The applicant will obtain the required license from DAFF, before clearing of natural forest or protected trees takes place.

Please refer to [Appendix E](#) for the detailed correspondences from the EAP to all I&APs. Any issues or concerns received during the Basic Assessment process will be added to the Issues & Response Trail (IRT) summary for inclusion in the Final BAR.

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

The identified impacts associated with the proposed development, as well as the proposed mitigation measures, are provided below. The impact assessment methodology is provided in [Appendix G.4](#) of this report.

Planning and Design Phase Impacts

Activities associated with the design and pre-construction phase pertain mostly to planning and design around the proposed development, and is done at a desktop level. In some cases, site visits need to take place but the impact of these visits is negligible, if any, e.g., photographs, GPS point's etc.

Construction Phase Impacts

These impacts pertain to the clearing of approximately 12 ha of indigenous vegetation with a bulldozer, the chipping and mulching of the cleared vegetation for use as organic compost, the levelling and shaping of the cultivation area, the establishment of citrus orchards, the installation of the irrigation networks and the upgrading of existing access roads.

Table 5: Construction phase impacts associated with the proposed development together with the relevant mitigation measures and resultant impact significance.

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
1. Loss of natural vegetation - Direct Negative Impact Clearing will result in the loss of up to 12 ha of endemic thicket and thornveld vegetation. Layout Alternative 2 and Layout Alternative 3 would each have a slightly smaller footprint and thus less loss of natural vegetation.	Layout Alternative 1	Local	Permanent	High	Partly Reversible	Resource cannot be replaced	Definite	Moderate	HIGH -	<ul style="list-style-type: none"> The construction footprint must be surveyed and demarcated prior to construction commencing. All contractors must be made aware of this demarcation. 	MODERATE -
	Layout Alternative 2	Local	Permanent	Moderate	Partly Reversible	Resource cannot be replaced	Definite	Moderate	HIGH -	<ul style="list-style-type: none"> All areas outside the demarcated footprint will be considered as No-Go areas. No construction activities (temporary or permanent) will be allowed in these No-Go areas. 	MODERATE -
	Layout Alternative 3	Site	Permanent	Moderate	Partly Reversible	Resource cannot be replaced	Definite	Moderate	MODERATE -	<ul style="list-style-type: none"> Temporary infrastructure such as the site camp, laydown areas and storage areas must be placed in areas already transformed and within the construction footprint. No on-site fires will be permitted. 	MODERATE -
2. Loss of plant SCC - Direct Negative Impact Clearing may result in the loss of identified and non-identified plant SCC. Layout Alternative 2 and Layout Alternative 3 would each have a slightly smaller footprint and thus less loss of plant SCC.	Layout Alternative 1 and 2	Local	Permanent	High	Partly Reversible	Resource cannot be replaced	Definite	Moderate	HIGH -	<ul style="list-style-type: none"> Permits must be obtained to remove any plant SCC identified during the construction process. Relocate or replant as many SCC as possible into the surrounding areas. SCCs should either be housed in an onsite nursery for use during landscaping or be relocated to suitable areas north of the site where vegetation clearance will not occur. No plant harvesting by construction staff will be allowed. 	MODERATE -
	Layout Alternative 3	Site	Permanent	Moderate	Partly Reversible	Resource cannot be replaced	Definite	Moderate	MODERATE -		MODERATE -
3. Loss of animal SCC - Direct Negative Impact Removal of natural habitats may result in the loss of identified and non-identified animal SCC. Layout Alternative 2 and Layout Alternative 3 would each have a slightly smaller footprint and thus less loss of animal SCC.	Layout Alternative 1 and 2	Local	Permanent	Moderate	Partly Reversible	Resource cannot be replaced	Highly Probable	Moderate	MODERATE -	<ul style="list-style-type: none"> Clearing must occur from the south and west to allow animals to migrate into the natural habitats located in the north and east. The site must be checked every morning for any animals hiding in/on plant and other construction infrastructure. This includes any trenches dug. 	LOW -
	Layout Alternative 3	Site	Short-term	Moderate	Partly Reversible	Resource cannot be replaced	Highly Probable	Moderate	LOW -	<ul style="list-style-type: none"> A member on site should be trained in handling of dangerous and venomous snakes, spiders and scorpions. No animal poaching must be allowed. 	NEGLECTIBLE -
4. Invasion of alien vegetation – Indirect and Cumulative Negative Impact After the clearing of vegetation, the exposed soils would allow for alien vegetation to grow within the area. This would be similar for all three (3) layout alternatives.	All alternatives	Local	Long-term	Moderate	Completely Reversible	Resource will not be lost	Highly Probable	High	MODERATE -	<ul style="list-style-type: none"> Develop and implement an Alien Vegetation Management Plan to mitigate the establishment and spread of undesirable alien plant species during construction and operations. 	LOW -

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
										<ul style="list-style-type: none"> All visible alien plants must be removed prior to top-and subsoil removal. Removal must occur through appropriate methods such as hand pulling, application of chemicals, cutting, etc. as in accordance with the NEMBA: Alien Invasive Species Regulations. 	
5. Sedimentation and soil erosional impacts – Direct and Cumulative Negative Impact With the removal of vegetation during construction, bare exposed soils will be created and topsoil may be lost. This may result in erosion and sedimentation, following rainfall and subsequent sheet-wash. Together with the existing orchards in the area, this may cumulatively contribute to reduced water quality due to sedimentation and turbidity increases in the nearby watercourses. In addition, the soils will be traversed by a number of vehicles during the construction phase which is likely to result in soil compaction. This may result in degradation of the soil over time. Layout Alternative 1 and Layout Alternative 2 will have similar impacts with regards to sedimentation and soil erosion. Layout Alternative 3 avoids the areas around the drainage lines and will therefore have less of a negative impact in this regard.	Layout Alternative 1	Local	Long-term	Moderate	Completely Reversible	Resource will not be lost	Definite	Moderate	MODERATE –	<ul style="list-style-type: none"> Clearing of vegetation to only be undertaken immediately preceding commencement of construction; Care must be taken to ensure that runoff is well dispersed so as to limit erosion; Appropriate erosion control measures must be implemented to ensure that no erosion is taking place. At the first sign of erosion the necessary remedial action must be taken; Temporary stabilisation measures (e.g. silt traps) should be implemented at the first signs of any erosion; and 	LOW –
	Layout Alternative 2	Local	Long-term	Moderate	Completely Reversible	Resource will not be lost	Definite	Moderate	MODERATE –	<ul style="list-style-type: none"> Any additional impacted areas must be rehabilitated with indigenous vegetation should construction affect areas outside of the approved footprint. During the planning phase, appropriate stormwater structures must be designed to minimise erosion. 	LOW –
	Layout Alternative 3	Site	Short-term	Low	Completely Reversible	Resource will not be lost	Possible	High	NEGLIGIBLE –		NEGLIGIBLE –
6. Pollution of surface water resources – Direct Negative Impact Spills and leaks from any plant during the construction phase of the development could potentially impact the water quality via chemical pollution. Layout Alternative 1 and Layout Alternative 2 will have similar impacts with regards to pollution of surface water resource. Layout Alternative 3 avoids the areas around the drainage lines and will therefore have less of a negative impact in this regard.	Layout Alternative 1 and 2	Local	Short-term	Moderate	Partly Reversible	Resource may be partly destroyed	Probable	High	LOW –	<ul style="list-style-type: none"> Chemicals used for construction must be stored safely on site and surrounded by bunds. Chemical storage containers must be regularly inspected so that any leaks are detected early; All fuel storage areas, wash bays and vehicle servicing areas must be located within bunded areas with a separate dirty water handling system and oil/grease trap. It is also recommended that the wash bay water is filtered for reuse and that any ablution facilities are disposed of at a licensed WWTW. General sediment traps should also be included where suitable; The ablution facilities meant for construction workers must not be located in any of the delineated watercourses or wetlands; 	NEGLIGIBLE –

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
	Layout Alternative 3	Site	Short-term	Low	Partly Reversible	Resource may be partly destroyed	Probable	High	LOW -	<ul style="list-style-type: none"> Toilets must be emptied regularly and before any extended site shutdown or builder's break. Hazardous waste bins/skips to be made weather proof; Littering and contamination of water sources during construction must be prevented by effective on-site management; No stockpiling should take place within a watercourse or wetland; All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds; and Once construction has been completed the disturbed areas must be grubbed and levelled, i.e., no raised areas should occur that would divert or impound any surface water flows. 	NEGLIGIBLE –
7. Solid Waste Pollution – Direct Negative Impact The construction phase of the activity will produce construction waste in the form of discarded construction material (e.g. pipeline cut-offs, packaging material etc.), excess soil/spoil (from levelling) and a large volume of cleared bush vegetation (thicket and alien vegetation). The incorrect management of these wastes may result in pollution of the surrounding natural areas.	All alternatives	Site	Short-term	Low	Completely Reversible	Resource will not be lost	Highly Probable	High	LOW –	<ul style="list-style-type: none"> Construction material must be reused or recycled where possible (e.g., mulching of cleared vegetation); Other waste to be removed to a licenced landfill site; General good house-keeping must be implemented. No litter to remain on site; Spills must be avoided during transportation of material; and Sufficient and appropriate weather- and scavenger-proof bins must be made available on-site during construction and removed/emptied on a daily basis. 	NEGLIGIBLE –
8. Dust Creation – Direct Negative Impact The construction activities will increase the potential for dust especially from the clearing of vegetation. During the construction phase of the activity, materials will be moved to and from the project site and this could result in dust pollution not only from the materials, but also from the construction vehicles which will be operating on site. The effects of dust will be exacerbated during high wind conditions.	All alternatives	Site	Short-term	Moderate	Completely Reversible	Resource will not be lost	Highly Probable	High	LOW –	<ul style="list-style-type: none"> Ensure that exposed areas are dampened following vegetation clearance; Construction work to be halted during periods of strong wind; and Maintain vegetation as a windbreak in the area facing the prevailing wind direction until the completion of construction. 	NEGLIGIBLE –
9. Noise Nuisance – Direct Negative Impact It can be expected that there will be an increase in noise levels during the site preparation and construction phase of the development. The increase in noise will be associated with the operation of construction equipment, labourers and vehicles, especially the bulldozer used to clear vegetation and conduct maintenance on the internal roads.	All alternatives	Site	Short-term	Low	Completely Reversible	Resource will not be lost	Highly Probable	High	LOW –	<ul style="list-style-type: none"> Construction vehicles to be in sound working order and fitted with mufflers if necessary; Limit construction to daylight hours; and Restrict unnecessary noise (e.g., portable radios, vehicle radios, whistles etc.). 	NEGLIGIBLE –

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
10. Construction Traffic and Road Impacts – Direct Negative Impact During construction, there will be an increase in the number of vehicles using the nearby farm roads, including heavy construction vehicles. This may result in damage to the roads. The construction vehicles could also impede other farmers at certain sections of the roads to the site if not adequately managed and controlled.	All alternatives	Local	Short-term	Low	Completely Reversible	Resource will not be lost	Possible	High	LOW –	<ul style="list-style-type: none"> All drivers to have the necessary driving permits to operate the plant/vehicles; All traffic laws must be obeyed at all times. Avoid transportation of construction material during peak hours; Any abnormal loads must be approved with the traffic authorities and must comply with any conditions imposed by the authorities; Avoid transportation of construction material during peak hours; The Contractor must employ flag staff in order to prevent on-site accidents; Speed must be limited to 30 km/h on site; Overloading of vehicles must not occur; and Any damage to existing access roads as a result of the construction activities must be immediately repaired. 	NEGLIGIBLE –
11. Impact on the Visual Aesthetics of the Area – Direct Negative Impact During construction, the proposed project site will be transformed as a result of construction vehicles and workers moving throughout the area. The clearance of a large area of natural vegetation will visually change the aesthetics of the site however, due to the remoteness of the site, there are no identified sensitive receptors that will be impacted.	All alternatives	Site	Short-term	Low	Partly Reversible	Resource will not be lost	Definite	Moderate	LOW –	<ul style="list-style-type: none"> Good house-keeping to be implemented on site; Construction materials to be stored neatly and waste to be collected on a regular basis; Erosion, waste vegetation and dust to be mitigated as per the abovementioned mitigation measures; and All disturbed areas surrounding the proposed development must be rehabilitated and all alien vegetation and weeds removed from these areas. 	NEGLIGIBLE –
12. Impacts on Health, Safety and Fire Risk – Direct Negative Impact The use of construction machinery during the construction phase poses a potential risk to the health and safety of people working at the construction site. The movement of construction vehicles also increases the risk of accidents along farm roads. The risk of accidents, fires and potential injuries must be mitigated effectively.	All alternatives	Site	Short-term	High	Partly Reversible	Resource may be partly destroyed	Possible	High	LOW –	<ul style="list-style-type: none"> All relevant Health and Safety legislation as required in South Africa should be strictly adhered to, including but not limited to the Occupational Health and Safety Act, 1993 (No. 85 of 1993); Smoking should be restricted to a designated smoking area; Ensure availability of fire extinguishers; and All employees must be aware of emergency/ contingency plans to ensure an understanding of the hazards and procedures required during an emergency situation. 	NEGLIGIBLE –

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
13. Impact on Archaeological Remains – Direct Negative Impact Several graves were observed in proximity to the proposed development area and there is a possibility that there are additional graves within the proposed development area. Although it is unlikely that other archaeological remains will be found <i>in situ</i> , there is always a possibility that other archaeological and historical material may be uncovered during the development. Should this be the case, there is a possibility that archaeological remains could be damaged or lost during the construction of the proposed development. Layout Alternative 3 proposes a 15m buffer around the graves and therefore will have a lesser impact in this regard.	Layout Alternative 1	Site	Permanent	Very High	Irreversible	Resource cannot be replaced	Probable	High	MODERATE –	<ul style="list-style-type: none"> Should such material be exposed then work must cease in the immediate area of the finds and it must be reported to the Albany Museum (046 622 2312) or to the Eastern Cape Provincial Heritage Resources Authority (043 642 2811), so that a systematic and professional investigation can be undertaken; and Sufficient time should be allowed to remove/collect such material. 	NEGLIGIBLE –
	Layout Alternative 2	Site	Permanent	Very High	Irreversible	Resource cannot be replaced	Probable	High	MODERATE –		NEGLIGIBLE –
	Layout Alternative 3	Site	Permanent	Minor	Irreversible	Resource cannot be replaced	Unlikely	High	NEGLIGIBLE –		NEGLIGIBLE –
14. Impact on Paleontological Resources – Direct Negative Impact Although highly unlikely, it is possible that the discovery or exposure of substantial fossil remains may occur during the construction phase. Should this be the case, it is also possible that these fossils will be damaged or lost during the construction phase.	All alternatives	Site	Permanent	Low	Irreversible	Resource cannot be replaced	Probable	High	LOW –	<ul style="list-style-type: none"> The Contractor and ECO responsible for these developments should be alerted to the possibility of fossil remains being found either on the surface or exposed by fresh excavations during construction; and Should fossil remains be discovered during construction, these should be safeguarded (preferably <i>in situ</i>) and the ECO should alert the Eastern Cape Provincial Heritage Resources Authority (ECPHRA. Contact details: Ayanda MaMncwabe Mama, 74 Alexander Road, King Williams Town 5600; Email: amncwabe@gmail.com.). 	NEGLIGIBLE –
15. Employment Creation and Local Business Development – Direct and Indirect Positive Impact The construction phase of the proposed development will create temporary jobs for locals within the area. Where possible, materials will be sourced from local businesses and this will result in a boost of the local economy of the immediate vicinity and surrounding areas.	All alternatives	Local	Short-term	Moderate	Completely Reversible	Not Applicable	Highly Probable	High	LOW +	<ul style="list-style-type: none"> Employ local people wherever possible; and Purchase materials from local businesses wherever possible. 	MODERATE +

Operational Phase Impacts

These impacts pertain to the operation of citrus orchards, which will include the annual harvesting of fruit, the transportation of the fruit to the exiting packaging warehouse and the ongoing irrigation of the trees (Table 6).

Table 6: Operational phase impacts associated with both alternatives of the proposed development together with the relevant mitigation measures and resultant impact significance.

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
1. Spread of Alien Vegetation into the Terrestrial Environment – Direct Negative Impact Several invasive species could colonise areas of disturbance and could be exacerbated during the operation of the citrus orchards.	All Alternatives	Site	Long-term	Moderate	Completely Reversible	Resource may be partly destroyed	Highly Probable	High	MODERATE –	<ul style="list-style-type: none"> Clearing of vegetation should be kept to a minimum, keeping the width and length of the disturbed area to a minimum and, where possible, in already disturbed areas or servitudes; Alien plant regrowth should also be monitored, and any such species should be removed at regular intervals throughout the operational phase; Only local topsoil maybe used and If any are imported, these should be certified alien plant free; and Any area slow to recover must be revegetated through active means of seeding and watering as required. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. 	LOW –
2. Impact on surface water runoff patterns – Direct and Cumulative Negative Impact The dense vegetation will be replaced with irrigated areas, additional roads and access tracks that have the ability to increase run-off in downstream areas, due to reduced vegetation cover. By intercepting and slowing precipitation hitting the ground, vegetation substantially reduces the volume and rate of runoff. This then prevents soil erosion. Layout Alternative 1 and Layout Alternative 2 will have similar impacts with regards to impacts on surface water runoff patterns. Layout Alternative 3 avoids the areas around the drainage lines and will therefore have less of a negative impact in this regard.	Alternatives 1 and 2	Local	Long-term	High	Partly Reversible	Resource may be partly destroyed	Definite	Moderate	MODERATE –	<ul style="list-style-type: none"> No excessive run-off should be allowed to leave the site directly and any flows should be contained; Development footprints should be minimised, where possible, to reduce hardened surfaces which contribute to stormwater generation; and 	LOW –
	Alternative 3	Local	Long-term	High	Partly Reversible	Resource may be partly destroyed	Probable	Moderate	LOW -	<ul style="list-style-type: none"> Should further erosion be observed, additional stormwater management and erosion measures must be put in place. 	LOW –
3. Utilisation of Water Resources – Direct and Cumulative Negative Impact The proposed development will rely on water from Gamtoos irrigation Board, to meet the demands of the irrigation for the fruits. Irrigation, via drip-irrigation, needs to ensure that the citrus orchards receive all the water made available and not result in a lot of water being lost to evaporation and, potentially, a lot more water being lost during irrigation.	All Alternatives	Local	Long-term	Moderate	Completely Reversible	Resource may be partly destroyed	Definite	Moderate	MODERATE –	<ul style="list-style-type: none"> Monitor water consumption to ensure water utilised is within water allocation rights for property; Irrigation of citrus must be done conservatively and on an as-and-when required basis; Application rates of water to be in line with orchard requirements, and excessive use of water to be avoided; Ensure that all irrigation infrastructure is monitored and maintained regularly to avoid leaks; and 	LOW –

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
										<ul style="list-style-type: none"> Irrigate orchards at suitable times in order to avoid excess evaporation. 	
4. Risks on the water resources due to water pollution – Indirect and Cumulative Negative Impact This impact is mostly related to the proposed agricultural activities that would generate return flows, especially if areas are over irrigated, which could then contain elevated nutrient loads from the use of herbicides and pesticides. Layout Alternative 1 and Layout Alternative 2 will have similar impacts with regards to impacts on surface water pollution. Layout Alternative 3 avoids the areas around the drainage lines and will therefore have less of a negative impact in this regard.	Layout Alternative 1 and 2	Local	Long-term	Very High	Partly Reversible	Resource may be partly destroyed	Probable	Moderate	MODERATE –	<ul style="list-style-type: none"> It is important that no surface water runoff is allowed to be directed into any water courses. Make use of environmentally friendly herbicides and pesticides. 	LOW –
	Layout Alternative 3	Site	Long-term	Moderate	Partly Reversible	Resource may be partly destroyed	Probable	Moderate	LOW –	<ul style="list-style-type: none"> Limit the use of herbicides and pesticides to the minimum requirements for citrus production. Application of fertilizers and herbicides to be undertaken by adequately trained personnel. 	NEGLIGIBLE –
5. Health, Safety and Fire Impacts – Direct Negative Impact Potential injury of employees working with harvesting tools and machinery, as well as the effects of herbicides and pesticides, could result in several negative health impacts on staff at the site. In addition, any dry vegetation or old trees resulting from the project could proliferate a fire, which is a higher risk as a result of increased workers on site, especially during the harvesting season.	All Alternatives	Site	Long-term	High	Partly Reversible	Resource may be partly destroyed	Possible	High	MODERATE –	<ul style="list-style-type: none"> Ensure all harvesting equipment is safe for use and maintained/serviced on a regular basis; Remove dry/dead trees immediately to avoid fire hazards; Smoking to be prohibited on site; No open flames permitted on the site; and. Operations to be conducted as per the Occupational Health and Safety Act. Application of fertilizers and herbicides to be undertaken by adequately trained personnel utilising the necessary PPE. Chemicals to be stored in a locked storage area to prevent unauthorised access. All containers to be properly labelled 	LOW –
6. Traffic Impacts – Direct Negative Impact Potential impact on traffic as fruit will be transported via truck or tractor from the orchards to the packaging warehouse in town. The increased traffic volume has the potential to result in road accidents and injuries and potential inconvenience to other road users.	All Alternatives	Local	Long-term	Moderate	Completely Reversible	Resource will not be lost	Probable	High	LOW –	<ul style="list-style-type: none"> Limiting trips Travel during off-peak times to and from town Transporting maximum fruit per trip Making use of alternative routes to avoid main roads during peak hours. 	NEGLIGIBLE –
7. Air Quality Impacts – Direct Negative Impact Air emissions include dust that will be generated from vehicles travelling to and from the site during harvesting, especially during periods of strong winds. Other air emissions, including odours, may result from incorrect or excessive use of herbicide or pesticide, should this be required at some stage during the farming process.	All Alternatives	Local	Long-term	Moderate	Completely Reversible	Resource will not be lost	Probable	High	LOW –	<ul style="list-style-type: none"> Speeds may not exceed 40 km/h on site or on the farm roads leading to the site in order to reduce dust; Areas of bare soil must be re-vegetated to in order to limit dust; The application of herbicides and pesticides must be done in a controlled manner and must be limited to the minimum required for the citrus orchards; Ensure that herbicide and pesticide spray equipment is correctly calibrated to spray only over the citrus area and not the surrounding lands; and 	NEGLIGIBLE –

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
										<ul style="list-style-type: none"> Choose low-emission management methods and avoid emulsifiable concentrate (EC) formulations. 	
8. Noise Disturbance – Direct Negative Impact During the operational phase, noise will be generated by vehicles and staff conducting harvesting activities on site. Due to the remoteness of the site, this unlikely to have any significant impact on sensitive receptors.	All Alternatives	Site	Long-term	Low	Completely Reversible	Resource will not be lost	Highly Probable	High	LOW –	<ul style="list-style-type: none"> All farm equipment, including tractors and other vehicles, to be properly serviced in order to meet the necessary noise level requirements; Restriction of noise-producing equipment to daylight hours where possible; Restriction of any unnecessary noise e.g., portable radios, vehicle radios, whistles etc.; and General adherence to the municipal by-laws regarding noise in rural areas. 	NEGLIGIBLE –
9. Solid Waste Pollution– Direct Negative Impact During the operational phase, the proposed development will produce solid waste in the form of organic waste (fruit waste). The incorrect management of this waste will have a negative impact on the environment as it can cause unnecessary pollution and also have a detrimental effect on the aesthetics of the proposed site as well as on surface- and ground-water quality.	All Alternatives	Local	Long-term	Moderate	Completely Reversible	Resource will not be lost	Definite	High	MODERATE –	<ul style="list-style-type: none"> General good house-keeping should be practiced on site; Litter must be controlled by ensuring that adequate bins are made available. These must be made scavenger proof and must be emptied on a regular basis; General waste must be disposed of at suitably licenced waste disposal sites; While transporting the waste, care must be taken as to not spill waste between the property and the disposal site; Excess fruit waste must be taken to a suitable disposal facility. 	LOW –
10. Impact on Archaeological Remains – Direct Negative Impact Several graves were observed in proximity to the proposed development area and there is a possibility that there are graves within 15 m from the proposed development area. During the operational phase activities in close proximity to the graves could result in damage and loss of these heritage resources.	Alternative 1 and 2	Site	Permanent	Very High	Irreversible	Resource cannot be replaced	Probable	High	MODERATE –	<ul style="list-style-type: none"> The general area where the overgrown graves are located should first be cleared of all vegetation to determine the number of graves and the entire area should be fenced off. 	LOW –
	Alternative 3	Site	Permanent	Moderate	Irreversible	Resource cannot be replaced	Possible	High	LOW –	<ul style="list-style-type: none"> The fence should be at least 2 metres away from the perimeter of the graves with an entrance gate to allow visits by family members or the community. No development should be allowed within 15 metres from the fence. 	LOW -
11. Climate Change – water resources– Indirect and Cumulative Negative Impact Climate change is likely to increase stress on water resources through increasing evapotranspiration, more variable and very likely reduced rainfall and increasing crop water demand.	All Alternatives	Regional	Long-term	Moderate	Partly Reversible	Resource may be partly destroyed	Highly Probable	Moderate	MODERATE –	<ul style="list-style-type: none"> Improved management of water resources to optimise water use efficiency, reduce water losses in the system, and preserve and restore good water quality. Monitor soil moisture levels and depletion rates carefully and irrigate 	LOW –

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
										orchards optimally according to best practice. <ul style="list-style-type: none"> • Aim to maintain an organic soil cover at all times to retain moisture. • Water infrastructure must be well maintained to prevent losses and crises. • Catchments and wetlands require conservation and good management – maintain the necessary buffer of unfarmed and undisturbed land between riverbanks / wetlands and the cultivated lands. 	
12. <u>Climate Change – heat stress– Indirect and Cumulative Negative Impact</u> Climate change is likely to increase heat stress on crops/orchards through increasing temperatures, more variable and very likely reduced rainfall and increasing crop water demand.	All Alternatives	Regional	Long-term	Moderate	Partly Reversible	Resource may be partly destroyed	Highly Probable	Moderate	MODERATE –	<ul style="list-style-type: none"> • Install shade netting over orchards to reduce heat stress and improve fruit quality. • Since the research on shade netting for citrus is still in its infancy, use this technology carefully at first and begin with on-farm trials. • Monitor the positive and negative impacts. • Discuss this technology with industry researchers and extension personnel in order to optimise the benefits. 	LOW –
13. <u>Climate Change – natural hazards and pests– Indirect and Cumulative Negative Impact</u> Climate change is likely to increase the occurrence of natural hazards (fire and drought) as well as pests and diseases, which can negatively impact the proposed citrus orchards.	All Alternatives	Regional	Long-term	Moderate	Partly Reversible	Resource may be partly destroyed	Highly Probable	Moderate	MODERATE –	<ul style="list-style-type: none"> • Natural hazards and pest and disease outbreaks pose a high risk in some parts of the region and pro-active risk management should be practiced by farmers. • These should include learning from established long-term experience of dealing with droughts, better holistic flood and drought planning by all role players (farmers and government in partnership), greater attention to firebreak management, and accessing the best available weather forecasts for decision making purposes. • In the future, the development of early warning systems relating to pests and diseases will be critical. 	LOW –
14. <u>Employment Creation and Local Business Development – Direct and Indirect Positive Impact</u> The operational phase of the proposed development will create a few permanent jobs and numerous seasonal jobs for locals within the area. Where possible, materials (e.g. harvesting equipment) will be sourced from local businesses and this will result in a boost of the local economy of the immediate vicinity and surrounding areas.	All Alternatives	Local	Long-term	Moderate	Completely Reversible	N/A	Definite	High	MODERATE +	<ul style="list-style-type: none"> • As far as possible, local labour should be used during harvesting and during other farming activities; • Ensure that the maximum employment is generated during the harvesting season by using hand labour for picking, and encourage seasonal workers to return each year; and • Purchase materials from local businesses wherever possible. 	HIGH +

IMPACT	Alternative	Spatial Extent (E)	Duration (D)	Severity (S)	Reversibility (R)	Irreplaceable Loss (I)	Probability (P)	Mitigation Potential	SIGNIFICANCE (before mitigation)	Mitigation	SIGNIFICANCE (after mitigation)
15. Improvement to Food Security – Direct and Cumulative Positive Impact The proposed development aims to provide food to local and international markets in the form of citrus. This, together with the numerous other fruit developments in the Patensie area and throughout the region, has a cumulative impact on reducing food insecurity by contributing to the agricultural sector. The different layouts proposed for the development will result in different tonnages of fruit being produced on an annual basis. The Layout Alternative 1 is the applicants preferred layout, as it includes all the areas suitable for citrus orchards.	Alternative 1	National	Long-term	Moderate	Completely Reversible	N/A	Definite	High	HIGH +	<ul style="list-style-type: none"> Ensure that the production of fruit is maintained to the highest possible quality; and Avoid any food waste (e.g., fruit that cannot be sold to international markets should be distributed to the local communities). 	HIGH +
	Alternative 2	National	Long-term	Low	Completely Reversible	N/A	Definite	High	MODERATE +		HIGH +
	Alternative 3	National	Long-term	Small	Completely Reversible	N/A	Definite	High	LOW +		MODERATE +
16. Contribution to the Local and National GDP – Direct and Cumulative Positive Impact The proposed development aims to produce citrus for the national and international markets. This, together with the numerous other soft fruit farms in the area, can have a positive cumulative impact on economic growth. The export of the fruits will also have a positive impact on the National GDP. The different layouts proposed for the development will result in different tonnages of fruit being produced on an annual basis.	Alternative 1	National	Long-term	Moderate	Completely Reversible	N/A	Definite	High	HIGH +	<ul style="list-style-type: none"> Maximise yield per hectare to maximise economic benefit; Production of high-quality fruits, suitable for the international markets; Ensure correct maintenance of fruit tonnage logs and sales; and Ensure that prices are market-related and competitive in order to obtain the best profit. 	HIGH +
	Alternative 2	National	Long-term	Low	Completely Reversible	N/A	Definite	High	MODERATE +		HIGH +
	Alternative 3	National	Long-term	Small	Completely Reversible	N/A	Definite	High	LOW +		MODERATE +

Decommissioning Phase Impacts

Once operational, it is unlikely that the proposed agricultural development and associated infrastructure will be decommissioned in the near future. Should decommissioning of the orchards take place, the impacts relevant to decommissioning would be similar to those listed for the construction phase above.

3. CLIMATE CHANGE IMPACT ASSESSMENT

Climate change issues must be considered as part of the EIA process Please consider the Climate Change guideline. EAP must determine:

- a) The potential impact of climate change on society and the economy, whether the impact is negative or positive, considering that society needs to be at the centre of the proposed development;
- b) The potential alternatives of the proposed development, alternatives that will have less impact on climate change (environment and generation of waste included), the society and economy;
- c) whether, and to what extent, the proposed development will result in the release of greenhouse gas (GHG) emissions;
- d) whether the proposed development is necessary to achieve long term decarbonisation goals;
- e) the impact of the development on social, economic, natural and built environment that are crucial for climate change, adaptation and resilience;
- f) the projected impact of climate change on proposed development; and surrounding environment, and implications for the development.
- g) Explanation of how the impacts is likely to be exacerbated or minimised as result of climate change and what measures are likely to be implemented to accommodate and manage (adapt to) the anticipated worst scenario where applicable
- h) whether, and to what extent, the impacts identified in (a) -(g) can be mitigated.

Climate Change Considerations

Responding to climate-related risks involves decision-making in a changing but uncertain world. The agricultural sector of the Eastern Cape is adapting by responding to the demands posed by current climate variability and extremes in the context of other equally challenging socio-economic drivers and pressures. Irrespective of production system, location or resource status, if producers and their value chain partners have access to a wider choice of appropriate options, they are able to innovate and improve their practices tailored to their own situation and needs (Greenagri, 2016).

In the agricultural sector, technology plays an important part in productive potential and ability to adapt. It includes physical infrastructure, machinery and equipment, knowledge and skills, the capacity to organise and use all of these, as well as the biological technology with which farmers produce (Greenagri, 2016).

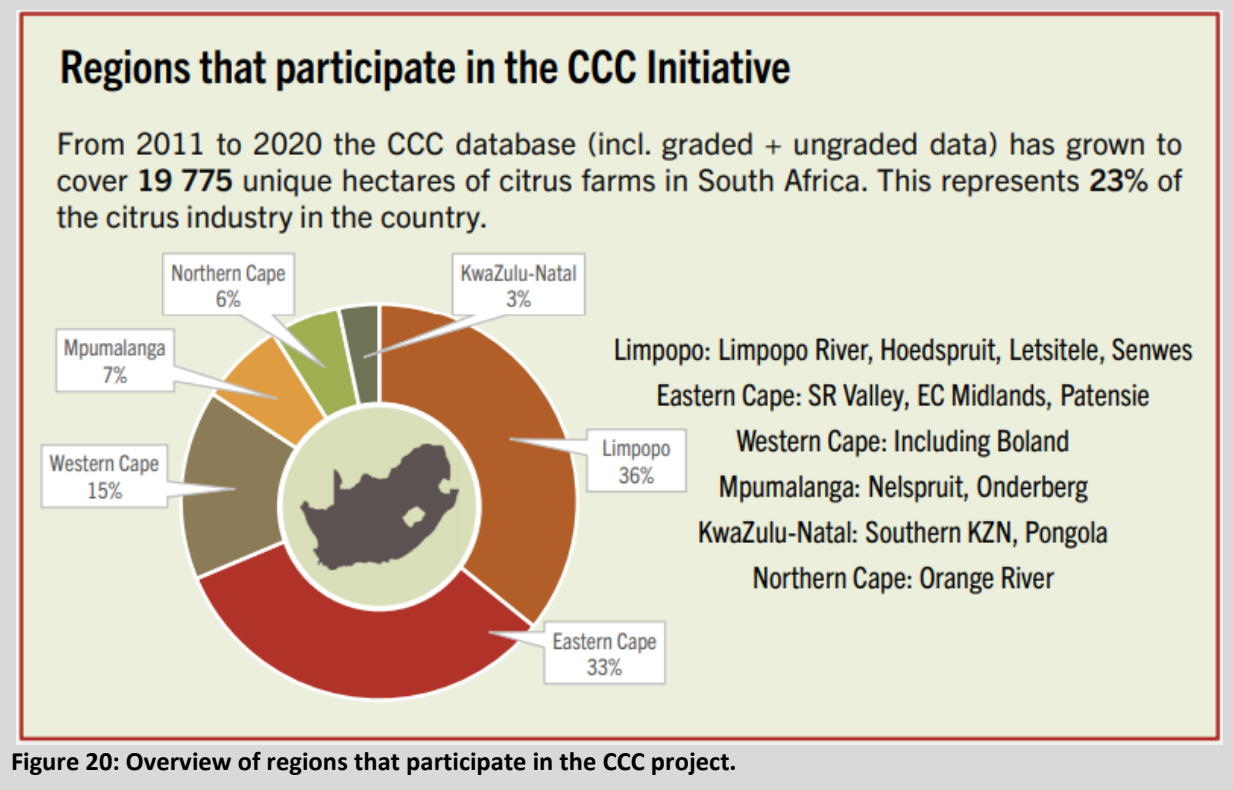
For citrus crops in the Eastern Cape, it is expected that flexible adaptation approaches such as the use of heat-hardy cultivars and rootstocks, careful soil management, best practice Integrated Pest Management and new technologies such as shade netting, combined with the fertilising effects of rising atmospheric CO₂, could provide some resilience to warming of up to ~+2 °C (Greenagri, 2016).

The greatest threat may arise through malfunctioning water storage infrastructure and irrigation systems, as well as increasing competition from other water users such as growing settlements, particularly in times of drought, which could lead to reductions in water allocations to farms. Some of the greatest gains in water use efficiency can still be made in reducing losses from seepage and the

conveyance system (i.e. from river or dam to the field edge), but these have added challenges such as costs and ownership of infrastructure. Restoration of natural ecosystems including riparian buffers and wetlands is required. Innovative solutions such as those being implemented as part of the Gamtoos Irrigation Board plans for water availability should also be considered as this will reduce the current water quality risk as well as the potential increased water quality risk under future climates. In all cases marketing and processing options should be re-evaluated on a continuous basis in order to optimise the opportunities presented by local shifts in production and shifting global markets.

Green House Gas Emissions

The generation of electricity and the use of liquid fossil fuels such as diesel leads to greenhouse gas emissions which cause climate change, but energy is an essential input in agricultural production and processing. The economic competitiveness of the agricultural sector must be maintained and increased. One component of this is to ensure international acceptability of agricultural products from the province by minimising the environmental impact of their production and complying with agreed standards for energy use and emissions. The carbon footprint of citrus production, packaging and storage in South Africa is being measured through the Confronting Climate Change (CCC) project (CCC, 2020) (Figure 20). The results show that the largest sources of greenhouse gas emissions are electricity usage (especially for irrigation pumping, packhouse operations and cold storage), the use of nitrogen-based fertilisers, diesel usage, and packaging (Figure 21). Measures to reduce emissions include the reduction of electricity consumption through improved efficiencies and switching to renewable (non-fossil) energy sources such as wind or solar, or the more efficient and lower use of nitrogen-based fertilisers. Where organic waste is high, waste-to-energy technologies provide opportunities to generate energy and reduce emissions (CCC, 2020).



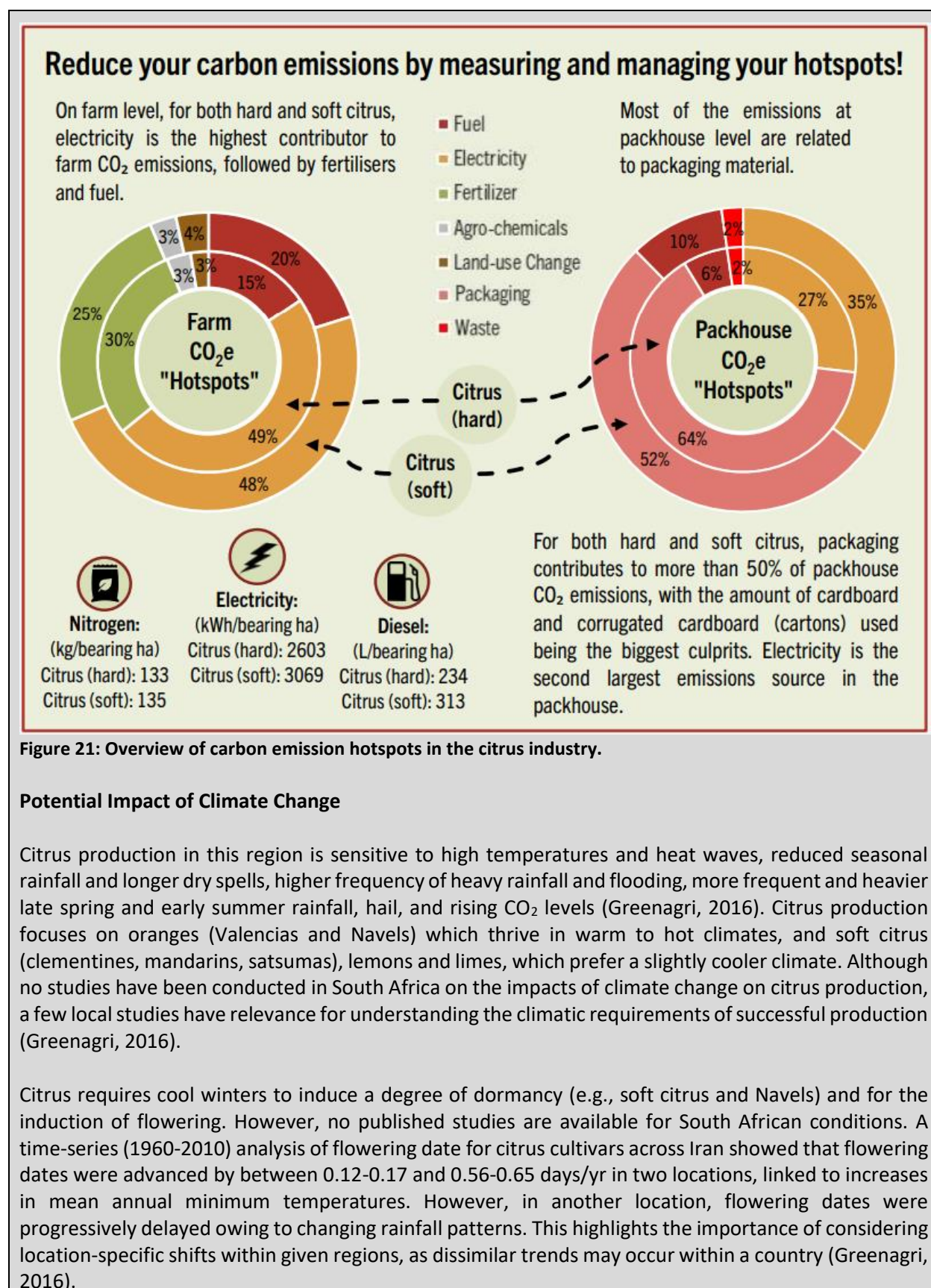


Figure 21: Overview of carbon emission hotspots in the citrus industry.

Potential Impact of Climate Change

Citrus production in this region is sensitive to high temperatures and heat waves, reduced seasonal rainfall and longer dry spells, higher frequency of heavy rainfall and flooding, more frequent and heavier late spring and early summer rainfall, hail, and rising CO₂ levels (Greenagri, 2016). Citrus production focuses on oranges (Valencias and Navels) which thrive in warm to hot climates, and soft citrus (clementines, mandarins, satsumas), lemons and limes, which prefer a slightly cooler climate. Although no studies have been conducted in South Africa on the impacts of climate change on citrus production, a few local studies have relevance for understanding the climatic requirements of successful production (Greenagri, 2016).

Citrus requires cool winters to induce a degree of dormancy (e.g., soft citrus and Navels) and for the induction of flowering. However, no published studies are available for South African conditions. A time-series (1960-2010) analysis of flowering date for citrus cultivars across Iran showed that flowering dates were advanced by between 0.12-0.17 and 0.56-0.65 days/yr in two locations, linked to increases in mean annual minimum temperatures. However, in another location, flowering dates were progressively delayed owing to changing rainfall patterns. This highlights the importance of considering location-specific shifts within given regions, as dissimilar trends may occur within a country (Greenagri, 2016).

While warmer spring temperatures could be beneficial to fruit set and early cell division, hot conditions during the period of fruit set are detrimental to set and yield. Local studies are underway to identify the impacts. Heat stress can also lead to small fruit size and sunburn. Rind colour of citrus fruit, which develops after the so-called 'colour break', is largely determined by prevailing weather conditions during fruit maturation and is linked to the passing of 'cold fronts' in the south-western Cape and possibly to cold shocks. The most favourable temperature combination leading to a bright orange citrus rind is mild days, cold night air temperatures and cool soil temperatures. Large day-night temperature fluctuations are particularly beneficial for excellent fruit colour (Greenagri, 2016).

A day/night temperature of 20°C/ 5°C appears to be optimal, whereas a day/ night temperature of 30°C/ 10°C produces less well-coloured fruit. It is thought that high day temperatures may inhibit colour development even if night temperatures are adequately low. Citrus trees require water all year round, provided by a combination of rainfall and irrigation. Around half of the annual water use occurs during the period of fruit growth and development. The focus of local research on citrus water requirements has been predominantly on measurement approaches and technologies, and the difficulties associated with using measurements to aid in irrigation scheduling and prevent drought stress. No climate change simulations have been attempted. Higher temperatures are likely to increase crop water requirements, with more water being needed per irrigated hectare. Citrus is sensitive to water stress, with flowering and fruit-set periods being the most critical phases. Several studies have reported negative effects of low water availability on growth, yield and fruit quality. Application of a water balance model to Spanish irrigated citrus production under climate change scenarios similar to those for the Patensie region suggested increases in irrigation requirement of +6 % to +16 % for the 2050s and 2080s, respectively. Other climate-related sensitivities in citrus production include frost, waterlogging and flooding, soil salinity, strong wind, hail and air pollution such as ozone (Greenagri, 2016).

A considerable amount of research has been conducted internationally on the effects of rising atmospheric CO₂ concentrations on citrus physiology and production. Biomass and yield are expected to increase significantly (in some cases over 80 %) through CO₂ fertilisation, with the greatest increases projected for warm and dry regions. No studies have been conducted in South Africa (Greenagri, 2016).

Significant threats of climate change (warming, changes in humidity and changes in rainfall) to citrus production are likely to lie in changes to the distribution and intensity of pest species, the spread of diseases and growth of weeds. Very little is known about this. Higher pest pressure would increase the need for pesticides, thus raising the costs of plant protection and increasing the risk of pesticide resistance and negative impacts on natural predators. Additional sprays can also jeopardise the acceptability of fruit in the export market due to residues. The distribution and competitiveness of weeds changes with increasing temperatures, changing rainfall patterns and rising CO₂. Weed control could also become more difficult (Greenagri, 2016).

All-in-all, citrus fruit production in core global production regions, may benefit from climate change due to the reduced incidence of very cold weather, and warming combined with increased rainfall. The responses in the Eastern Cape where warming and drying are projected and citrus could well benefit, with new production areas opening up provided that access to sufficient irrigation water is not limiting and pests and diseases can be managed.

The reduction of woody vegetation is generally considered negative in a climate change context, since the vegetation serves as a sink for carbon dioxide which is considered the main driver of climate change. But the thicket vegetation which will be impacted by the proposed development will not make a

substantial contribution to reducing atmospheric greenhouse gas concentrations by itself. However, natural vegetation is still of great value in mitigating the predicted effects of climate change, such as increased frequency of extreme weather events. Thicket vegetation are important for soil retention and also acts as nutrient sumps in many areas in the Eastern Cape. Thicket plays a substantial role in flood attenuation by promoting water infiltration and reducing runoff velocities. These thicket systems are also important for water security since they promote water infiltration during rainfall events, and retain water slowly releasing the water after precipitation events.

The impacts on rural communities need to be considered. Adverse impacts on the sector and its extensive value chain, and the employment it offers could heighten levels of poverty, drive urbanisation, and increase food insecurity. The well-being of agricultural workers is likely to be affected by increasing heat stress, diseases associated with floods and poor water quality, and physical danger associated with storms, floods and fires. Poor nutritional status and other health threats (stunting, obesity, HIV/AIDS) prevalent in the region render rural workers less resilient to the demands of agricultural labour under stressful conditions (Greenagri, 2016).

Mitigation and Management of Impacts Related to Climate Change

The proposed mitigation measures to address the impact are listed in Table 4.2 above – please refer to Impacts #11-13.

1. Improved management of water resources to optimise water use efficiency, reduce water losses in the system, and preserve and restore good water quality. Monitor soil moisture levels and depletion rates carefully and irrigate orchards optimally according to best practice. Aim to maintain an organic soil cover at all times to retain moisture. Water infrastructure must be well maintained to prevent losses and crises. Catchments and wetlands require conservation and good management – maintain the necessary buffer of unfarmed and undisturbed land between riverbanks and the cultivated lands.
2. Install shade netting over orchards to reduce heat stress and improve fruit quality. Since the research on shade netting for citrus is still in its infancy, use this technology carefully at first and begin with on-farm trials. Monitor the positive and negative impacts. Discuss this technology with industry researchers and extension personnel in order to optimise the benefits.
3. Natural hazards and pest and disease outbreaks pose a high risk in some parts of the region and pro-active risk management should be practiced by farmers. These should include learning from established long-term experience of dealing with droughts, better holistic flood and drought planning by all role players (farmers and government in partnership), greater attention to firebreak management, and accessing the best available weather forecasts for decision making purposes. In the future, the development of early warning systems relating to pests and diseases will be critical.
4. The energy crisis and climate change are both driving the need for increased efficiencies of energy use and the greater use of renewable energy on-farm. Farmers who need energy for irrigation pumping and maintenance of the cold chain for perishable produce are particularly vulnerable. The use of variable speed pumps and strategic irrigation scheduling can reduce pumping costs (and water use) significantly. Farmers can install photovoltaic systems on the roofs of farm buildings (e.g. sheds, packhouses), or attached to water pumps, to increase reliability of supply, bring down costs, and simultaneously reduce the carbon footprint of the farm operations. In addition, reduce the synthetic nitrogen fertiliser usage, which can be achieved through more precise application as and when the plant needs it, and utilize small scale waste-to-energy technology which could provide an opportunity to both reduce waste-related emissions and reduce the reliance on grid electricity.

Need for a Specialist Assessment

The relatively low potential for GHG emissions associated with the proposed development, together with the overall 'low' impact ratings for the impacts associated with climate change (together with the prescribed mitigation measures) means that the issue of climate change can be adequately assessed by the EAP. For these reasons, it was not deemed necessary to conduct a detailed Climate Change Specialist Assessment. However, the Terrestrial Biodiversity Specialist Assessment does address the climate change impact.

Conclusion

The citrus sector is faced with numerous difficulties and climate change will exert its influence in the context of multiple interacting drivers and pressure points. It can thus be regarded as a stress multiplier. Agriculture is highly dependent on effective risk management covering economic, environmental and social sustainability.

All farms in the citrus production regions can experience exposure to variable and extreme weather, but some are able to draw on resources and skills to 'bounce back' relatively unscathed, whereas others never fully recover and become morbid or fail. Economies of scale and diversification across commodities and agro-climatic zones renders larger farming groups with greater resources much more resilient than small, undiversified and resource-poor farming operations. A shift to more resilient crop types, cultivars and farming systems (climate smart agriculture) can buffer agriculture against some aridification without negatively impacting profitability or jobs.

The proposed development is part of a larger farm operations that already make use of resilient crop types, cultivars and farming systems. A combination with this and the proposed mitigation measures discussed will assist the farmer to succeed and support climate adaptation within the Patensie region.

4. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Table 7: Summary of the impacts and their significance before and after mitigation.

IMPACT	Alternative	SIGNIFICANCE (before mitigation)	SIGNIFICANCE (after mitigation)
CONSTRUCTION PHASE			
1. Loss of natural vegetation	Layout Alternative 1 and 3	HIGH -	MODERATE -
	Layout Alternative 3	MODERATE -	MODERATE -
2. Loss of plant SCC	Layout Alternative 1 and 2	HIGH -	MODERATE -
	Layout Alternative 3	MODERATE -	MODERATE -
3. Loss of animal SCC	Layout Alternative 1 and 2	MODERATE -	LOW -
	Layout Alternative 3	LOW -	NEGLECTIBLE -
4. Invasion of alien vegetation	All Layout Alternatives	MODERATE -	LOW -
5. Sedimentation and soil erosional impacts	Layout Alternative 1 and 2	MODERATE -	LOW -
	Layout Alternative 3	NEGLECTIBLE -	NEGLECTIBLE -

6. Pollution of surface water resources	Layout Alternative 1 and 2	LOW –	NEGLIGIBLE –
	Layout Alternative 3	LOW –	NEGLIGIBLE –
7. Solid Waste Pollution	All Layout Alternatives	LOW –	NEGLIGIBLE –
8. Dust Creation	All Layout Alternatives	LOW –	NEGLIGIBLE –
9. Noise Nuisance	All Layout Alternatives	LOW –	NEGLIGIBLE –
10. Construction Traffic and Road Impacts	All Layout Alternatives	LOW –	NEGLIGIBLE –
11. Impact on the Visual Aesthetics of the Area	All Layout Alternatives	LOW –	NEGLIGIBLE –
12. Impacts on Health, Safety and Fire Risk	All Layout Alternatives	LOW –	NEGLIGIBLE –
13. Impact on Archaeological Remains	Layout Alternative 1 and 2	MODERATE –	NEGLIGIBLE –
	Layout Alternative 3	NEGLIGIBLE –	NEGLIGIBLE –
14. Impact on Paleontological Resources	All Layout Alternatives	LOW –	NEGLIGIBLE –
15. Employment Creation and Local Business Development	All Layout Alternatives	LOW +	MODERATE +
OPERATIONAL PHASE			
1. Spread of Alien Vegetation into the Terrestrial Environment	All Layout Alternatives	MODERATE –	LOW –
2. Impact on surface water runoff patterns	Layout Alternatives 1 and 2	MODERATE –	LOW –
	Layout Alternative 3	LOW –	LOW –
3. Utilisation of Water Resources	All Layout Alternatives	MODERATE –	LOW –
4. Risks on the water resources due to water pollution	Layout Alternative 1 and 2	MODERATE –	LOW –
	Layout Alternative 3	LOW –	NEGLIGIBLE –
5. Health, Safety and Fire Impacts	All Layout Alternatives	MODERATE –	LOW –
6. Traffic Impacts	All Layout Alternatives	LOW –	NEGLIGIBLE –
7. Air Quality Impacts	All Layout Alternatives	LOW –	NEGLIGIBLE –
8. Noise Disturbance	All Layout Alternatives	LOW –	NEGLIGIBLE –
9. Solid Waste Pollution	All Layout Alternatives	MODERATE –	LOW –
10. Impact on Archaeological Remains	Layout Alternatives 1 and 2	MODERATE –	LOW –
	Layout Alternative 3	LOW –	LOW –
11. Climate Change – water resources	All Layout Alternatives	MODERATE –	LOW –
12. Climate Change – heat stress	All Layout Alternatives	MODERATE –	LOW –
13. Climate Change – natural hazards and pests	All Layout Alternatives	MODERATE –	LOW –
14. Employment Creation and Local Business Development	All Layout Alternatives	MODERATE +	HIGH +
15. Improvement to Food Security	Layout Alternative 1	HIGH +	HIGH +
	Layout Alternative 2	MODERATE+	HIGH +
	Layout Alternative 3	LOW +	MODERATE +
16. Contribution to the Local and National GDP	Layout Alternative 1	HIGH +	HIGH +
	Layout Alternative 2	MODERATE+	HIGH +
	Layout Alternative 3	LOW +	MODERATE +

Alternative 1 (preferred alternative)

A summary of the impacts as well as the significance of the impacts before and after mitigation has been tabulated above (Table 7). For the preferred alternative, thirty-one (31) impacts have been identified. This consists of 15 construction phase impacts and 16 operational phase impacts. Without mitigation, there will be 2 negative impact of high significance, 14 negative impacts of moderate significance, 11 negative impacts of low significance. There will also be 4 positive impacts (1 low, 1 moderate and 2 high). With the implementation of mitigation measures, there will be 2 negative impacts of moderate, 13 negative impacts of low significance and 12 negligible impacts. There will also be 4 positive impacts (3 high and 1 moderate) following implementation of mitigation. Although there are a greater number of negative impacts, the significance of the positive impacts outweighs the significance of the negative impacts, the majority of which are considered to be negligible or low if correct mitigation measures are implemented (Table 8).

Table 8: Summary of the number of impacts before and after mitigation for alternative 1.

IMPACT SIGNIFICANCE	Before Mitigation			After Mitigation		
	CONSTRUCTION	OPERATION	TOTAL	CONSTRUCTION	OPERATION	TOTAL
NEGATIVE IMPACTS (-)						
NEGLIGIBLE –	0	0	0	9	3	12
LOW –	8	3	11	3	10	13
MODERATE –	4	10	14	2	0	2
HIGH –	2	0	2	0	0	0
VERY HIGH –	0	0	0	0	0	0
POSITIVE IMPACTS (+)						
NEGLIGIBLE +	0	0	0	0	0	0
LOW +	1	0	1	0	0	0
MODERATE +	0	1	1	1	0	1
HIGH +	0	2	2	0	3	3
VERY HIGH +	0	0	0	0	0	0

Alternative 2

For alternative 2, without mitigation, there will be 2 negative impact of high significance, 14 negative impacts of moderate significance, 11 negative impacts of low significance. There will also be 4 positive impacts (1 low, 3 moderate). With the implementation of mitigation measures, there will be 2 negative impacts of moderate, 13 negative impacts of low significance and 12 negligible impacts. There will also be 4 positive impacts (3 high and 1 moderate) following implementation of mitigation. Although there are a greater number of negative impacts, the significance of the positive impacts outweighs the significance of the negative impacts, the majority of which are considered to be negligible or low if correct mitigation measures are implemented (Table 9).

Table 9: Summary of the number of impacts before and after mitigation for alternative 2.

IMPACT SIGNIFICANCE	Before Mitigation			After Mitigation		
	CONSTRUCTION	OPERATION	TOTAL	CONSTRUCTION	OPERATION	TOTAL
NEGATIVE IMPACTS (-)						
NEGLIGIBLE –	0	0	0	9	3	12
LOW –	8	3	11	3	10	13
MODERATE –	4	10	14	2	0	2
HIGH –	2	0	2	0	0	0
VERY HIGH –	0	0	0	0	0	0
POSITIVE IMPACTS (+)						
NEGLIGIBLE +	0	0	0	0	0	0
LOW +	1	0	1	0	0	0
MODERATE +	0	3	3	1	0	1
HIGH +	0	0	0	0	3	3
VERY HIGH +	0	0	0	0	0	0

Alternative 3

For alternative 3, without mitigation, there will be 2 negative impacts of high significance, 10 negative impacts of moderate significance, 15 negative impacts of low significance and 2 of negligible impact. There will also be 4 positive impacts (3 low and 1 moderate). With the implementation of mitigation measures, there will be 2 negative impact of moderate significance, 10 impacts of low significance and 15 negligible impacts. There will also be 4 positive impacts (3 moderate and 1 high) following implementation of mitigation. Although there are a greater number of negative impacts, the

significance of the positive impacts outweighs the significance of the negative impacts, the majority of which are considered to be negligible or low if correct mitigation measures are implemented (Table 10).

Table 10: Summary of the number of impacts before and after mitigation for alternative 3.

IMPACT SIGNIFICANCE	Before Mitigation			After Mitigation		
	CONSTRUCTION	OPERATION	TOTAL	CONSTRUCTION	OPERATION	TOTAL
NEGATIVE IMPACTS (-)						
NEGLIGIBLE –	2	0	2	11	4	15
LOW –	9	6	15	1	9	10
MODERATE –	3	7	10	2	0	2
HIGH –	0	0	0	0	0	0
VERY HIGH –	0	0	0	0	0	0
POSITIVE IMPACTS (+)						
NEGLIGIBLE +	0	0	0	0	0	0
LOW +	1	2	3	0	0	0
MODERATE +	0	1	1	1	2	3
HIGH +	0	0	0	0	1	1
VERY HIGH +	0	0	0	0	0	0

When comparing the impacts associated with the three layout alternatives, it is clear that, prior to mitigation, Layout Alternative 3 has less of an environmental impact in comparison with Layout Alternatives 1 and 2 as there are no high negative impacts associated with Layout Alternative 3. However, once mitigation is taken into consideration, all layout alternatives have zero negative impacts of high significance and have the same number of moderate negative impacts. Layout Alternative 3 does however have more negligible impacts in comparison to Layout Alternatives 1 and 2. The significance of the positive impacts is higher for Layout Alternative 1 and 2 in comparison to Layout Alternative 3 (Table 11).

Table 11: Comparison of impacts for the Alternative 1 (following mitigation), Alternative 2 (following mitigation), Alternative 3 (following mitigation) for the project.

IMPACT SIGNIFICANCE	PREFERRED ALTERNATIVE	ALTERNATIVE 2	ALTERNATIVE 3
NEGATIVE IMPACTS (-)			
NEGLIGIBLE –	12	12	15
LOW –	13	13	10
MODERATE –	2	2	2
HIGH –	0	0	0
POSITIVE IMPACTS (+)			
MODERATE +	1	1	3
HIGH +	3	3	1

SECTION E: RECOMMENDATIONS OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES
X

Is an EMPr attached?

YES
X

The EMPr must be attached as Appendix F.

Please refer to Appendix F for the Environmental Management Programme (EMPr).

If “NO”, indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

Not Applicable. All aspects associated with the proposed development are sufficiently assessed in this Basic Assessment Report.

If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

EAP's Recommendations

Based on the outcome of the impact study, it would seem unnecessary to deviate from the applicant's preferred alternative (Layout Alternative 1). However, for the purposes of ensuring best environmental practice and conservation of resources, it is recommended that Layout Alternative 3 is approved and implemented for the proposed development. The preferred technology, Technology Alternative 1 (drip irrigation), is recommended as it is likely to result in reduced maintenance cost while still keeping water evaporation to a minimum.

A detailed sensitivity map for the study area and immediate surroundings were developed based on the identified environmental characteristics found within the site. Most of the site is in a highly sensitive area (Figure 22). This allocation does not classify the site as a No-Go area but merely refers to a high level of mitigation requirement during and prior to clearing. This is done to reduce the risk of major impacts on the remaining natural extent of the surrounding areas and to limit loss to the study site only. If all areas of high sensitivity were to be avoided, the cultivation area would not be large enough to warrant the development and all positive impacts and benefits associated with the development of citrus orchards in this area would be lost.

Some plant SCC do occur and will require a vegetation Search and Rescue (S&R) prior to clearing by a qualified botanist. There is also a risk of animal SCC found in these areas. The remainder of the site has a low sensitivity allocation. No Plant SCC occur, and the areas has been transformed by human activities. No animal SCC will occur in these areas. Additional recommendations have been made to mitigate the project site area in an acceptable manner to ensure minimal negative impacts on the environment.

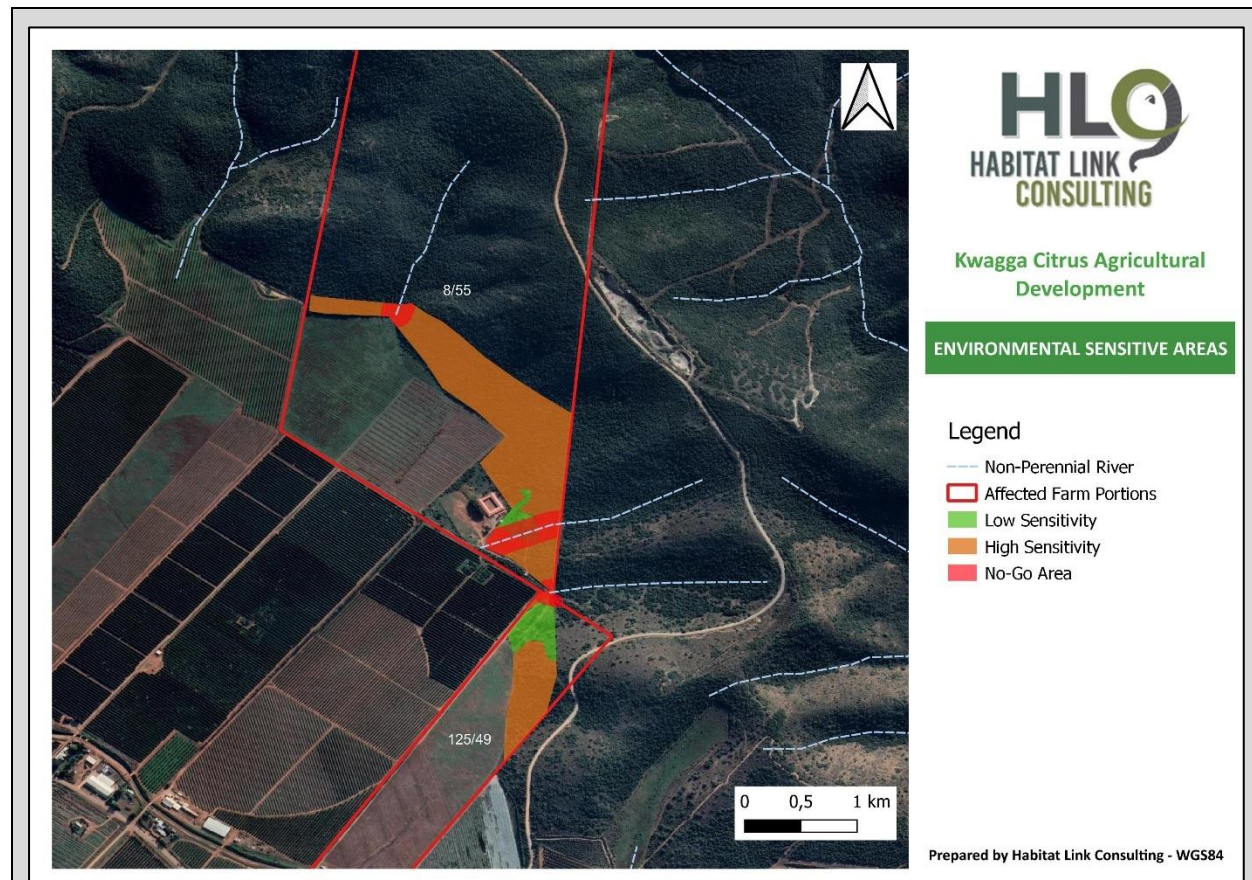


Figure 22: Environmental sensitivity map of the project area detailing areas that must be considered.

Pre-Construction

- The Contractor is encouraged to use an already disturbed area (or area demarcated for this development) for construction material laydown purposes and must ensure that all materials required during construction are available prior to the commencement of vegetation clearance;
- Environmental sensitivities outlined in this report must be considered prior to the finalisation of the layout for the citrus orchards and associated infrastructure; and

Construction Phase

- Ongoing rehabilitation must be implemented in the areas which will be affected during the construction phase;
- The proponent must appoint a full-time Environmental Site Officer (ESO) to oversee the construction phase, to ensure that the construction activities remain within the designated area and that no unauthorised activities occur; and
- The appointment of an external qualified Environmental Control Officer (ECO) must take place to conduct regular construction site audits of the proposed development. It is recommended that the ECO conducts two (2) monthly site visits and submits one (1) report to the DEDEAT at the completion of rehabilitation.

Operational Phase

- Ongoing eradication of alien invasive species within the study area must be undertaken by the project proponent;

- The proponent must inspect the irrigation infrastructure on a regular basis to ensure that no leaks or unnecessary water losses are occurring; and
- Should the proponent wish to discontinue the cultivation of citrus, a specialist must be consulted to advise on the correct and appropriate rehabilitation of the site.

All mitigation measures, which have been outlined in this report as well as in the EMPr and specialist reports, must be fully adhered to.

EAP's Opinion

It is the opinion of the EAP that no fatal flaws are associated with the proposed development and that all impacts can be adequately mitigated to reduce the risk or significance of the impacts to an acceptable level. Although it is unavoidable that an area of sensitive vegetation will be cleared during the construction phase of the development, the correct implementation of mitigation measures proposed by the terrestrial biodiversity specialist will significantly mitigate the impacts on these high sensitive areas. It is therefore of utmost importance that the proponent demarcates the final citrus area, as proposed, prior to the commencement of clearance of large areas of vegetation.

Due to the type of agricultural project proposed, the significance of the benefits associated with the proposed development outweighs the significance of the negative aspects, most of which will be low or negligible following the correct implementation of mitigation measures. It is the opinion of the EAP that the Basic Assessment process contains sufficient information to allow the DEDEAT to make an informed decision.

Period of Environmental Authorisation:

The Environmental Authorisation (EA) for the construction of the proposed development is required for a period of two (2) years. This will allow sufficient time for the applicant to undertake the procurement process to appoint a Contractor, to furnish the appointed Contractor with the details of the EA and the conditions included in the EMPr, to complete the construction of the proposed agricultural development.

The operational phase of the proposed development is expected to continue into the long-term future. The EA for the operational phase should thus be authorised without an expiry date provided the proponent adheres to the recommendations included in this report as well as the conditions of the EMPr.

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site Plan(s)

Appendix B: Photographs

Appendix C: Facility Illustration(s)

Appendix D: Specialist Reports

- D.1: Site Sensitivity Verification Report
- D.2: Terrestrial Biodiversity Plant and Animal Species Assessment
- D.3: Agricultural Compliance Statement
- D.4: Aquatic Biodiversity Compliance Statement
- D.5: Archaeology Impact Assessment
- D.6: Palaeontological Impact Assessment

Appendix E: Comments and Responses Report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other Information

- G.1: EAP declaration and CV
- G.2: Specialist Declarations and CVs
- G.3: Gamtoos Irrigation Board Certificate
- G.4: HLC Impact Assessment Methodology
- G.5: Soil Classification
- G.6: Soil Suitability Map
- G.7: Screening Tool Report